



Molecular Crystals and Liquid Crystals

Publication details, including instructions for authors and
subscription information:

<http://www.tandfonline.com/loi/gmcl16>

Spectroscopy of Molecular Crystals A Bibliography for 1980

E. F. Sheka^a, E. F. Sheka^a, V. S. Makarova^a & T. A. Krivenko^a

^a Institute of Solid State Physics, Academy of Sciences of the U. S. S.
R., Chernogolovka, 142432, U.S.S.R.

Version of record first published: 28 Mar 2007.

To cite this article: E. F. Sheka, E. F. Sheka, V. S. Makarova & T. A. Krivenko (1983): Spectroscopy of
Molecular Crystals A Bibliography for 1980, *Molecular Crystals and Liquid Crystals*, 91:3-4, 197-276

To link to this article: <http://dx.doi.org/10.1080/00268948308083688>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.tandfonline.com/page/terms-and-conditions>

This article may be used for research, teaching, and private study purposes. Any
substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing,
systematic supply, or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation
that the contents will be complete or accurate or up to date. The accuracy of any
instructions, formulae, and drug doses should be independently verified with primary
sources. The publisher shall not be liable for any loss, actions, claims, proceedings,
demand, or costs or damages whatsoever or howsoever caused arising directly or
indirectly in connection with or arising out of the use of this material.

Spectroscopy of Molecular Crystals

A Bibliography for 1980

Compiled by E. F. SHEKA, V. S. MAKAROVA, and T. A. KRIVENKO

Edited by E. F. SHEKA

*Institute of Solid State Physics,
Academy of Sciences of the U. S. S. R.,
Chernogolovka, 142432 U. S. S. R.*

(Received September 14, 1982)

Contents

1. Introduction	198
2. Books and Reports of Meetings	198
3. Spectra of Aromatic Molecules in Gaseous and Condensed States	200
1. Electronic states	200
2. Singlet absorption spectra	203
3. Triplet absorption spectra and ESR spectra	205
4. Electronic-vibrational interaction and vibronic spectra	206
5. Vibrational spectra	208
6. Fluorescence	213
7. Phosphorescence	216
8. Dissipation and migration of molecular excitation energy, time constants	216
9. Laser excitation, stimulated emission and light generation	221
10. Spectroscopy of photochemical reactions	224
4. Absorption and Luminescence Spectra of Intermolecular Complexes	226
1. Charge-transfer complexes	226
2. Excimers, dimers and other homomolecular complexes	227
5. Spectra of Pure Molecular Crystals	229
1. Phonon spectra	229
2. Electronic and vibronic states and absorption spectra	232
3. Fluorescence and phosphorescence	234
6. Spectra of Impurity and Disordered Molecular Crystals	237
7. Exciton Problem of Molecular Crystals	242
1. Lattice dynamics and phonon spectra	242
2. Singlet exciton and cooperative effects	245
3. Triplet excitons	247
4. Exciton-phonon interaction (shape of bands, energy dissipation, vibronic spectra)	248

5. Excitons in mixed crystals	249
6. Excitonic mechanism of energy migration	251
8. Photoconductivity of Molecular Crystals. Photoelectronic Emission	252
9. Effects of High Exciton Concentration in Non-metallic Crystals	253
10. Molecular Crystal Structure. Thermodynamic Data	254
11. Neutron Spectroscopy of Crystals	258
12. Author Index	259

1 INTRODUCTION

The 1980 Bibliography continues the series of annual issues of Bibliographies Spectroscopy of Molecular Crystals. The full list of these issues from 1957–1968 may be found in *Molecular Crystals and Liquid Crystals*, **6**, 175, 1969. The issues for 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977 and 1978 are published *ibid.* **14**, 329(1971), **17**, 55(1972), **19**, 331(1973), **26**, 87(1974), **30**, 239(1975), **33**, 261(1976), **39**, 259(1977), **46**, 25(1978), **54**, 59(1979) and **61**, 251(1980).

As all previous issues, the 1980 Bibliography is established on the basis of scientific-bibliography work carried out in the Institute of Solid State Physics in Chernogolovka.

2. BOOKS AND REPORTS OF MEETINGS

1. *21 All-Union Conference on Physics of Low Temperatures*. Pt. 1. Superconductivity—320 p. Pt. 2. Low-temperature magnetism—252 p. (1980) (Russ).
2. Bagratashvili, V. N., Letokhov, V. S., Makarov, A. A., and Ryabov, E. A., *Multi-photon Processes in Molecules in Infrared Laser Field*. Moscow, 192 p. (1980) (Russ).
3. Becker, E. D., *High Resolution NMR. Theory and Chemical Applications*. Second edition. New York, London, Toronto, Sydney, San Francisco, Academic Press, 354 p. (1980) (Eng).
4. Belen'kii, V. Z., *Geometric-Probabilistic Models of Crystallization. Phenomenological Method*. Moscow, Nauka, 84 p. (1980) (Russ).
5. Birman, J. L., et al., Ed., *Light Scattering in Solids*: Proc. of the second Joint USA-USSR symposium on light scattering in condensed matter, held in New York, May 21–25, 1979. New York, London: Plenum Press, XXI, 535 p. (1979) (Eng).
6. Bond, W. L., *Crystal Technology*. New York, London, Sydney, Toronto, John Wiley and Sons (1976) (Eng).
7. Cardona, M., Ed., *Light Scattering in Solids*. Berlin etc., Springer-Verlag, 342 p. (1975) (Eng) (Topics in Appl. Phys. 8).
8. Chang, R., *Physical Chemistry with Applications to Biological Systems*. New York, London, Macmillan Publishing Co., Inc. (1977) (Eng).
9. *Cholesteric Liquid Crystals. Producing, Investigation, Application*. Moscow, Niitekhim, 67 p. (1980) (Russ).
10. *Crystal Growth*. **13**. Moscow, Nauka, 328 p. (1980) (Russ).
11. Di Bartolo, B. and Powell, R. C., *Phonons and Resonances in Solids*. New York, London, Sydney, Toronto, John Wiley and Sons, 515 p. (1976) (Eng).

12. Ehrenreich, H., Seitz, F., and Turnbull, D., Ed., *Solid State Physics*. Advances in research and applications. **33**. New York, San Francisco, London, Academic Press, 416 p. (1978) (Eng).
13. Elyashberg, M. E., Gribov, L. A., and Serov, V. V., *Molecular Spectral Analysis and Computer*. Moscow, Nauka, 308 p. (1980) (Russ).
14. *XIIIth European Congress on Molecular Spectroscopy*. Wrocław, Poland, September 12–16, 1977. Abstracts. Wrocław, 541 p. (1977) (Eng).
15. Gerasimov, Ya. I. and Akishin, P. A., Ed., *Spectra and Structure of Molecules*. Moscow, Izd-vo Moscow. Univ., 216 p. (1980) (Russ).
16. Haken, H., *Quantenfeldtheorie des Festkörpers*. Stuttgart, B.G. Teubner. (1973) (Ger).
17. Hayes, W. and Loudon, R., *Scattering of Light by Crystals*. New York etc., John Wiley and Sons, 360 p. (1978) (Eng).
18. *High Pressure Science and Technology*. Proceedings of the VIIth International AIRAPT conference. Le Creusot, France, 30 July–3 Aug. 1979. Oxford, England: Pergamon Press (1980) (Eng).
19. Ladd, M. F. C. and Palmer, R. A., Ed., *Theory and Practice of Direct Methods in Crystallography*. New York and London, Plenum Press, 421 p. (1980) (Eng).
20. Lovesey, S. W. and Springer, T., Ed., *Dynamics of Solids and Liquids by Neutron Scattering*. Berlin, Heidelberg, New York, Springer-Verlag. (Topics in Current Physics. Founded by H. K. V. Lotsch. **3** (1977) (Eng).
21. Madelung, O., *Introduction to Solid-State Theory*. Berlin, Heidelberg, New York, Springer-Verlag, 486 p. (Springer series in solid-state sciences. **2** (1978) (Eng).
22. Maltsev, A. A., *Molecular Spectroscopy (Theory, Practical works, Problems)*. Moscow, Izd-vo Moskov. Univ., 272 p. (1980) (Russ).
23. Maradudin, A. A., Wallis, R. F., and Dobrzynski, L., Ed., *Handbook of Surfaces and Interfaces*. **3**. Surface phonons and polaritons. New York, London, Garland STPM Press, 415 p. (1980) (Eng).
24. Maris, H. J., Ed., *Phonon Scattering in Condensed Matter*. New York and London, Plenum Press, 481 p. (1980) (Eng).
25. *Modern Crystallography*. **3**. Crystal formation. Moscow, Nauka, 408 p. (1980) (Russ).
26. O'Shea, D. C., Callen, W. R., and Rhodes, W. T., *Introduction to Lasers and Their Applications*. Menlo Park, London, Amsterdam, Ontario, Sydney, Addison-Wesley Publishing Company (1977) (Eng).
27. Plate, N. A. and Shibaev, V. P., *Crest-Like Polymers and Liquid Crystals*. Moscow, Khimiya, 304 p. (1980) (Russ).
28. Prigogine, I. and Rice, S. A., Ed., *Advances in Chemical Physics*. **37**. New York, Chichester, Brisbane, Toronto, John Wiley and Sons, 397 p. (1978) (Eng).
29. Prigogine, I. and Rice, S. A., Ed., *Advances in Chemical Physics*. **40**. New York, Chichester, Brisbane, Toronto, John Wiley and Sons, 504 p. (1979) (Eng).
30. Proceedings of the XXVI conference on luminescence (molecular luminescence). Samarkand, 4–6 Oktober 1979, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 674–896 (1980) (Russ).
31. Pullman, B., Ed., *Intermolecular Interactions: from Diatomics to Biopolymers*. Chichester etc., John Wiley and Sons, 447 p. (1978) (Eng).
32. Segal, G. A., Ed., *Semiempirical Methods of Electronic Structure Calculation*. Part A: Techniques. New York and London, Plenum Press (1977) (Eng).
33. Sheka, E. F., Makarova, V. S., and Krivenko, T. A., Spectroscopy of molecular crystals. A bibliography for 1978, *Mol. Cryst. and Liquid Cryst.* **61**, No. 3–4, 251–322 (1980) (Eng).
34. Use of computers in spectroscopy of molecules and chemical studies. 5th all-union conference. 9–12 September, 1980. Theses of papers. Novosibirsk, 267 p. (1980) (Russ).
35. *Vibrations of Oxide Lattices*. Leningrad, Nauka, 304 p. (1980) (Russ).

3. SPECTRA OF AROMATIC MOLECULES IN GASEOUS AND CONDENSED STATES

3.1. Electronic states

36. Aartsma, T. J., Hesselink, W. H., and Wiersma, D. A., Resonant CARS spectroscopy of s-tetrazine vapour, *Chem. Phys. Lett.* **71**, No. 3, 424–428 (1980) (Eng) (*P. A.* **83**: 78614).
37. Akiyama, M., Determination of effective-charge distribution on some deuterobenzenes from their out-of-plane gas-band intensities, *J. Mol. Spectrosc.* **84**, No. 1, 49–56 (1980) (Eng) (*P. A.* **84**: 37192).
38. Anisimov, O. A., Vogel, S. V., and Molin, Yu. N., The influence of aromatic admixtures on positron lifetime spectra in saturated hydrocarbons, *Chem. Phys.* **53**, No. 1, 2, 123–129 (1980) (Eng).
39. Botvich, A. N., Podoprigora, V. G., Shabanov, V. F., and Shestakov, N. P., Application of computers for calculation of effective polarizabilities of molecules and their derivatives in condensed state. In: *Use of computers in spectroscopy of molecules and chemical studies. Novosibirsk*, 77–78 (1980) (Russ).
40. Bounds, P. J., Calculation of molecular polarizabilities: the INDO method applied to some aromatic hydrocarbons, *Chem. Phys. Lett.* **70**, No. 1, 143–146 (1980) (Eng) (*P. A.* **83**: 52886).
41. Bourceanu, G. and Ababi, V., Phenol obtention from benzene in oxygen plasma generated by high frequency discharges. 4. Influence of argon in metastable state on phenol yield by Penning effect, *Rev. Roum. Phys.* **25**, No. 7, 807–813 (1980) (Eng).
42. Case, D. A., Cook, M., and Karplus, M., Application of X multiple-scattering theory to planar organic molecules: one-electron properties and ionization potentials of benzene, pyridine, pyrazine, pyrrole, and imidazole, *J. Chem. Phys.* **73**, No. 7, 3294–3313 (1980) (Eng) (*P. A.* **84**: 1105).
43. Chablo, A. and Hinchliffe, A., Ab initio calculation of the dipole polarizabilities of unsaturated hydrocarbons, *Chem. Phys. Lett.* **72**, No. 1, 149–151 (1980) (Eng) (*P. A.* **83**: 83255).
44. Chiang, H. J. and Worley, S. D., The use of the MNDO SCF MO method in UPS band-assignments for unsaturated hydrocarbons and fluorocarbons, *J. Electron Spectrosc. and Relat. Phenom.* **21**, No. 2, 121–134 (1980) (Eng) (*P. A.* **84**: 14821).
45. De Giambiagi, M. S., Giambiagi, M., and Lins De Barros, H. G. P., Convergence problems and energetic region in excited states of certain conjugated molecules, *Z. Naturforsch. A* **35**, No. 10, 1006–1012 (1980) (Eng) (*P. A.* **84**: 6185).
46. Del Bene, J. E., Molecular orbital theory of the hydrogen bond. $n \rightarrow \pi^*$ transitions in monosubstituted pyridines and their complexes with H_2O , *Chem. Phys.* **50**, No. 1, 1–10 (1980) (Eng) (*P. A.* **83**: 95550).
47. Fabian, W., Investigation on calculation of fluorescence spectra of organic dyes, *J. Mol. Struct.* **69**, 227–231 (1980) (Eng) (*P. A.* **84**: 24186).
48. Godik, V. A., Konoplev, G. G., Davydov, S. N., Rodionov, A. N., and Shigorin, D. N., Quantum-mechanical study of orbital nature of polyatomic molecules electronic states. 2. Fluorene derivatives of nitrogen, phosphorus, arsenic and stibium, *Zh. Fiz. Khim.* **54**, No. 12, 3001–3003 (1980) (Russ).
49. Godik, V. A., Konoplev, G. G., Rodionov, A. N., and Shigorin, D. N., Quantum-mechanical study of orbital nature of polyatomic molecules electronic states. 3. Structure and luminescence of some out-of-plane molecules, *Zh. Fiz. Khim.* **54**, No. 12, 3004–3007 (1980) (Russ).
50. Godik, V. A., Konoplev, G. G., Rodionov, A. N., and Shigorin, D. N., Semiempirical calculations of orbital nature and spectral-luminescence properties of polyatomic heteroaromatic molecules. In: *Use of computers in spectroscopy of molecules and chemical studies. Novosibirsk*, 124 (1980) (Russ).

51. Gogolinskii, V. I., Grushetskii, K. M., Zyat'kov, I. P., and Sagaidak, D. I., Automatic construction of potential function of polyatomic organic molecules. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 141–142 (1980) (Russ).
52. Goodman, L., Lamotte, M., and Koyanagi, M., $^3n\pi^*$ spectra of benzaldehyde. 2. In methylcyclohexane, *Chem. Phys.* **47**, No. 3, 329–345 (1980) (Eng) (P. A. **83**: 63627).
53. Gordon, R. D., Gransden, S. E., and Marion, R., $n\pi^*$ transitions in trimethyl-1, 3-cyclobutanedithione- h_{12} and - d_{12} , *J. Mol. Spectrosc.* **81**, No. 2, 340–348 (1980) (Eng) (P. A. **83**: 97297).
54. Gruzinsky, V. V., Davydov, S. V., and Kukhto, A. V., Study of excitation of polyatomic organic molecules in a gas phase pumped by an electron beam, *Zh. Prikl. Spektrosk.* **33**, No. 3, 420–429 (1980) (Russ).
55. Gustav, K., Kempka, U., and Sühnel, J., Molecular geometry and excited electronic states. Theoretical study on the molecular geometry and the fluorescence lifetime difference of isomeric phenylanthralenes, *Chem. Phys. Lett.* **71**, No. 2, 280–283 (1980) (Eng) (P. A. **83**: 69176).
56. Hara, K. and Ware, W. R., Influence of solvent perturbation on the radiative transition probability from the $^1B_{1u}$ state of pyrene, *Chem. Phys.* **51**, No. 1, 2, 61–68 (1980) (Eng) (P. A. **84**: 1275).
57. Hiratsuka, H., Okamura, T., Tanaka, I., and Tanizaki, Y., Electronic spectra of benzyl and methyl-substituted benzyl radicals, *J. Phys. Chem.* **84**, No. 3, 285–289 (1980) (Eng).
58. Johri, G. K. and Rishishwar, R. P., A new approximation under the perturbation theory for microwave line-width calculation and quadrupole moment of benzene, *Indian J. Pure and Appl. Phys.* **18**, No. 4, 248–253 (1980) (Eng).
59. Kamisuki, T., Moriyama, I., Igarashi, R., Adachi, Y., and Maeda, S., Resonance CARS of pyrene in excited state and of pyrene-N, N-diethylaniline exciplex, *J. Chem. Phys.* **73**, No. 7, 3500–3501 (1980) (Eng).
60. Klochkov, V. P., Study of transient excited states of organic molecules, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 745–749 (1980) (Russ).
61. Konarski, J., Konarzewski, A., and Radomska, K., NMR spectra of trisubstituted benzene derivatives in nematic solvents. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 483 (1977) (Eng).
62. Krogh-Jespersen, K., Rava, R. P., and Goodman, L., Multiphoton ionization spectrum of fluorobenzene, *Chem. Phys.* **47**, No. 3, 321–328 (1980) (Eng) (P. A. **83**: 63727).
63. Lai, T.-i. and Lim, E. C., Photophysical behavior of aromatic carbonyl compounds related to proximity effect: thioxanthone, *Chem. Phys. Lett.* **73**, No. 2, 244–248 (1980) (Eng).
64. Lawlor, L., Vasudevan, K., and Grein, F., Bond functions and 3d polarization functions for fluorine bonded molecules, *Chem. Phys. Lett.* **75**, No. 1, 79–83 (1980) (Eng).
65. Lianos, P., Lux, B., and Gerard, D., Photophysical properties of pyrene and its derivatives of biophysical importance, *J. Chim. Phys. et Phys.-Chim. Biol.* **77**, No. 10, 907–912 (1980) (Eng) (P. A. **84**: 29024).
66. Liu, M. T. H., Tanaka, T., Hirotsu, T., Fukui, K., Fujita, I., and Kuwata, K., Excitation and dissociation of 3-chloro-3-methyl-diazirine and 1-pyrazoline by low-energy electron impact, *J. Phys. Chem.* **84**, No. 24, 3184–3187 (1980) (Eng) (P. A. **84**: 59670).
67. Lubman, D. M., Naaman, R., and Zare, R. N., Multiphoton ionization of azulene and naphthalene, *J. Chem. Phys.* **72**, No. 5, 3034–3040 (1980) (Eng).
68. Meek, J. T., Jones, R. K., and Reilly, J. P., Photoelectron energy distribution following UV laser ionization of gas phase benzene, *J. Chem. Phys.* **73**, No. 7, 3503–3505 (1980) (Eng) (P. A. **84**: 1290).

69. Morozov, Yu. V., Correlation between electron structure, absorption-luminescence properties and photoreactivity of some organic compounds, *Zh. Prikl. Spektrosk.* **32**, No. 6, 1030–1035 (1980) (Russ) (*P. A.* **84**: 68234).
70. Murakami, J.-i., Kaya, K., and Ito, M., Multiphoton ionization spectra of benzene, fluorobenzene, and chlorobenzene resonant with S_0 - S_1 transitions by use of nozzle beam method, *J. Chem. Phys.* **72**, No. 5, 3263–3270 (1980) (Eng).
71. Ogilvie, J. F., Brillante, A., and Taliani, C., Electronic states of benzene at $5\ \mu\text{m}^{-1}$. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 362 (1977) (Eng).
72. Ohmine, I., Cluster configuration method: Application to the spectra of π -electron systems, *Chem. Phys. Lett.* **72**, No. 1, 53–58 (1980) (Eng) (*P. A.* **83**: 78546).
73. Palchevskii, V. V., Semenov, S. G., and Tulub, A. A., Interpretation of electronic absorption spectra and determination of tautomeric equilibrium in organic dye solutions using computer quantum-mechanical calculations. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 122 (1980) (Russ).
74. Plantenga, T. M. and Maclean, C., The determination of the dipole moment orientation in 1-chloro-2, 4-dinitrobenzene by ^{13}C NMR, *Chem. Phys. Lett.* **75**, No. 2, 294–297 (1980) (Eng).
75. Plotnikov, V. G. and Rashev, S. S., Relative positions of the $\pi\pi^*$ and $n\pi^*$ states of molecules and their optical properties. Some necessary conditions for the fulfillment of Vavilov's law, *Opt. and Spektrosk.* **49**, No. 4, 699–706 (1980) (Russ) (*P. A.* **84**: 99821).
76. Popov, K. R. and Platonova, N. V., Excited electronic states and polarization of electron transitions in molecules of 1,2-disubstituted naphthalenes containing the donor and acceptor groups, *Zh. Prikl. Spektrosk.* **33**, No. 5, 876–882 (1980) (Russ).
77. Pucci, R., Baeri, P., Baldo, M., Parisi, R., and Tomasello, P., Many-body theory of π -electron systems. The benzene molecule, *Mol. Phys.* **39**, No. 5, 1189–1199 (1980) (Eng) (*P. A.* **83**: 52876).
78. Rashev, S., Dolgikh, B. A., and Plotnikov, V. G., Probabilities of singlet-singlet $n \rightarrow \pi^*$ transition, *Opt. and Spektrosk.* **48**, No. 1, 166–169 (1980) (Russ) (*P. A.* **83**: 95689).
79. Raxumaeva, A. E. and Zorkii, P. M., A quantitative comparison of organic molecular geometry, *Zh. Strukt. Khim.* **21**, No. 2, 77–82 (1980) (Russ) (*P. A.* **84**: 73555).
80. Reilly, J. P. and Kompa, K. L., Laser induced multiphoton ionization mass spectrum of benzene, *J. Chem. Phys.* **73**, No. 11, 5468–5476 (1980) (Eng) (*P. A.* **84**: 29051).
81. Rodionova, G. N., Krutovskaya, I. V., Rodionov, A. N., Tuchin, Yu. G., and Karpov, V. V., The electron spectra and the constitution of some aminoanthraquinone derivatives in different states of aggregation, *Zh. Prikl. Spektrosk.* **32**, No. 4, 623–628 (1980) (Russ).
82. Sairam, R., Ray, N. K., Molecular orbital study of some laser dyes: Pariser-Parr-Pople and extended Hückel calculations on coumarin azacoumarin, 2-quinolone and aza-quinolone, *Indian J. Chem.* **B 19**, No. 11, 989–991 (1980) (Eng) (*P. A.* **84**: 99701).
83. Smirnov, V. P. and Evarestov, R. A., Total and local symmetries in group-theory analysis of molecular states, *Teor. and Eksp. Khim.* **16**, No. 2, 215–219 (1980) (Russ) (*P. A.* **84**: 59429).
84. Srivastava, S. K. and Mishra, P. C., Electronic structure of pyrazine: a study of the geometries in the lowest excited singlet $\pi^* \leftarrow n$ and $\pi^* \leftarrow \pi$ states, *J. Mol. Struct.* **68**, 183–187 (1980) (Eng) (*P. A.* **84**: 14819).
85. Tegeler, E., Wiech, G., and Faessler, A., X-ray spectroscopic study of the electronic structure of benzene, monofluoro- and monochlorobenzene, *J. Phys. B: Atom. and Mol. Phys.* **13**, No. 24, 4771–4780 (1980) (Eng) (*P. A.* **84**: 26310).
86. Traverso, G. and Brunet, J. E., Lowest energy singlet transition in biphenyl, *Spectrosc. Lett.* **13**, No. 9, 657–661 (1980) (Eng).
87. Uneberg, G. O., Campo, P. A., and Johnson, P., A study of the 3p Rydberg transitions of the methylbenzenes by multiphoton ionization spectroscopy, *J. Chem. Phys.* **73**, No. 3, 1110–1116 (1980) (Eng) (*P. A.* **83**: 95644).

88. Vysotsky, Yu. B. and Sokolenko, V. A., Electronic structure of the excited states and spectroscopic properties of pyridine, quinoline and their protonated forms, *Zh. Prikl. Spektrosk.* **32**, No. 4, 695–700 (1980) (Russ) (P. A. **84**: 59498).
89. Wakayama, N. I., The $T \leftrightarrow S_0$ transitions and molecular conformations of *p*-terphenyl, *Chem. Phys. Lett.* **70**, No. 2, 397–399 (1980) (Eng).
90. Weigmann, H.-J., Lenz, K., Lau, A., Pfeiffer, M., and Werncke, W., Comparison of resonance CARS spectra of chrysene in the lowest excited singlet and triplet state, *Chem. Phys. Lett.* **73**, No. 1, 175–177 (1980) (Eng) (P. A. **83**: 83374).

3.2. Singlet absorption spectra

91. Amirav, A., Even, U., and Jortner, J., Spectroscopy of large molecules in inert-gas clusters, *Chem. Phys. Lett.* **72**, No. 1, 16–20 (1980) (Eng) (P. A. **83**: 78674).
92. Asmuth, G. G., Innes, K. K., and Job, V. A., Dymethyl-s-tetrazine vapor: visible absorption, laser-excited fluorescence, and photophysics, *J. Mol. Spectrosc.* **83**, No. 2, 266–278 (1980) (Eng) (P. A. **84**: 24118).
93. Azarov, V. Yu. and Nurmukhametov, R. N., Appearance of latent electronic transitions of molecules in the polarization spectra of oriented polymer films, *Opt. and Spektrosk.* **48**, No. 4, 770–774 (1980) (Russ) (P. A. **84**: 33495).
94. Babaev, V. S., Zhilinsky, A. G., Izmailov, A. M., Kuchinsky, V. V., and Fafurina, E. N., Simultaneous spectroscopic determination of several parameters of the complex spectral line output profile, *Zh. Prikl. Spektrosk.* **32**, No. 5, 787–792 (1980) (Russ).
95. Babkov, L., Kaimykova, G., Kovner, M., Kraynova, I., Malykhina, N., and Puchkovskaya, G., Vibronic luminescence and absorption spectra and infrared spectra of some chloro derivatives of naphthalene, and their theoretical interpretation. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts.* Wrocław, 415 (1977) (Eng).
96. Balint, E., Vass, I., Hevesi, J., and Marek, N., The light absorption and fluorescence yield of thionine in sodium lauryl sulphate micellar solutions, *Acta Phys. Pol.* **A58**, No. 3, 345–351 (1980) (Eng).
97. Bogdanova, T. F., Garber, P. R., Glazkov, S. Yu., and Dubinina, T. I., The automatic processing of absorption, excitation and luminescence spectra in UV and visible range. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 233–234 (1980) (Russ).
98. Burenin, A. V. and Shchapin, S. M., Program for solving of incorrect inverse spectral problem. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 245–246 (1980) (Russ).
99. David, C. and Baeyens-Volant, D., Absorption and fluorescence spectra of 4-cyanobiphenyl and 4'-alkyl- or 4'-alkoxy-substituted liquid crystalline derivatives, *Mol. Cryst. and Liquid Cryst.* **59**, No. 3–4, 181–196 (1980) (Eng).
100. Deme, A. K., Tirzitz, G. D., Uldrikis, Ya. R., and Dubur, G. Ya., Electron absorption spectra of 3,5-dicarbonyl derivatives of 1,4-dihydropyridine, *Zh. Prikl. Spektrosk.* **33**, No. 4, 759 (1980) (Russ).
101. Ding, K., Kranitzky, W., Fischer, S. F., and Kaiser, W., Structured UV-spectrum of naphthalene obtained by ultrafast two-pulse excitation, *Chem. Phys. Lett.* **72**, No. 1, 39–42 (1980) (Eng) (P. A. **83**: 78630).
102. Dunand, A., Ferguson, J., Puza, M., and Robertson, G. B., Conformational effects in the absorption spectra and photochemistry of [2.n] (9,10) anthracenophanes ($n=2, 3$), *Chem. Phys.* **53**, No. 1, 2, 225–235 (1980) (Eng).
103. Dygdała, R. St. and Stefanski, K., Absorption investigation of anthracene vapour, *Chem. Phys.* **53**, No. 1, 2, 51–62 (1980) (Eng) (P. A. **84**: 28988).
104. Friedrich, D. M., Van Alsten, J., and Walters, M. A., Polarization and concentration dependence of two-photon forbidden electronic origins: the $^1B_{2u}$ of benzene in solution, *Chem. Phys. Lett.* **76**, No. 3, 504–509 (1980) (Eng) (P. A. **84**: 29065).

105. Fuke, K., Sakamoto, S., Ueda, M., and Itoh, M., Two-photon absorption spectrum of trans-stilbene. Trans-cis photoisomerization via upper 1A_g state, *Chem. Phys. Lett.* **74**, No. 3, 546–548 (1980) (Eng).
106. Granville, M. F., Holton, G. R., and Kohler, B. E., High-resolution one and two photon excitation spectra of trans, trans-1,3,5,7-octatetraene, *J. Chem. Phys.* **72**, No. 9, 4671–4675 (1980) (Eng) (*P. A.* **83**: 78669).
107. Hammond, P. R., Comparison of experimental and theoretical excited-state spectra for rhodamine 6G, *IEEE J. Quantum Electron.* **QE-16**, No. 11, 1157–1160 (1980) (Eng) (*P. A.* **84**: 19329).
108. Hopkins, J. B., Powers, D. E., and Smalley, R. E., Vibrational relaxation in jet-cooled alkylbenzenes. 1. Absorption spectra, *J. Chem. Phys.* **72**, No. 9, 5039–5048 (1980) (Eng) (*P. A.* **83**: 74236).
109. Jain, K. M., Mallik, B., and Misra, T. N., Electronic absorption spectra of 2-nitrofluorene: solvent effect on $^1A \rightarrow ^1L_a$ transition, *Indian J. Pure and Appl. Phys.* **15**, No. 4, 267–269 (1977) (Eng).
110. Kalibabchuk, V., Spectroscopy of substituted o-naphtaquinon-diasides. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 467 (1977) (Eng).
111. Nakashima, N., Inoue, H., Sumitani, M., and Yoshihara, K., Laser flash photolysis of benzene. 3. $S_n \leftarrow S_1$ absorption of gaseous benzene, *J. Chem. Phys.* **73**, No. 12, 5976–5980 (1980) (Eng).
112. Pereygin, I. S., Krauze, A. S., Shatokhin, S. A., and Mikhailov, G. P., Complex program for decomposition of a complicated spectrum on components and for calculation of overlapping band correlative functions. In: Use of computers in spectroscopy of molecules and chemical studies. Novosibirsk, 239–240 (1980) (Russ).
113. Rava, R. P. and Goodman, L., Kinematic perturbations on the benzene $^1B_{2u} \leftarrow ^1A_{1g}$ two-photon spectrum: $s\text{-C}_6\text{H}_5\text{D}_3$, *Chem. Phys. Lett.* **76**, No. 2, 234–236 (1980) (Eng) (*P. A.* **84**: 29064).
114. Razumova, T. K. and Starobogatov, I. O., Two-photon spectroscopy of liquid benzene and toluene, *Opt. and Spektrosk.* **49**, No. 6, 1192–1195 (1980) (Russ) (*P. A.* **84**: 103769).
115. Reffy, J., Karger-Kocsis, J., Veszpremi, T., and Nagy, J., Ultraviolet and quantumchemical study of trimethylsilyl substituted aromatic systems. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 466 (1977) (Eng).
116. Sanyal, N. K., Srivastava, S. L., and Devi, M. A., Vapour absorption spectra of 4,7-dichloroquinoline in the near ultraviolet region, *Indian J. Phys.* **53B**, No. 4–5, 221–223 (1979) (Eng) (*P. A.* **84**: 72436).
117. Scott, G. W., Talley, L. D., and Anderson, R. W., Jr., Excited state absorption spectra and intersystem crossing kinetics in diazanaphthalenes, *J. Chem. Phys.* **72**, No. 9, 5002–5013 (1980) (Eng) (*P. A.* **83**: 74176).
118. Shanbhag, P. V., Shashidhar, M. A., and Suryanarayana Rao, K., Ultra-violet absorption spectrum of 2-aminopyrimidine, *Indian J. Phys.* **53B**, No. 4–5, 248–249 (1979) (Eng) (*P. A.* **84**: 72437).
119. Sheremet'eva, T. A. and Borisova, N. F., On possibility of spectra parameters determination in the case of unknown apparatus function of instrument. In: Use of computers in spectroscopy of molecules and chemical studies. Novosibirsk, 241–242 (1980) (Russ).
120. Singh, S. K. and Upadhyay, K. N., Electronic spectra of parafluorobromobenzene, *Pramana* **14**, No. 5, 389–393 (1980) (Eng) (*P. A.* **83**: 87147).
121. Stockburger, M. and Gattermann, H., Two-photon spectroscopy of naphthalene in the gas-phase. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 356 (1977) (Eng).
122. Taliani, C., Edelson, M. and Bree, A., Two-photon excitation spectrum of biphenyl. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 355 (1977) (Eng).

123. Tikhomirov, S. A. and Tolstorozhev, G. B., Study of phthalimide molecule rotary motion in liquid and gas phases by kinetics of amplification dichroism and induced absorption, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 873–878 (1980) (Russ).
124. Yamamoto, N., Matsuo, N., and Tsubomura, H., Overtones of liquid benzene in the visible region by direct absorbance measurement, *Chem. Phys. Lett.* **71**, No. 3, 463–466 (1980) (Eng) (P. A. **83**: 78625).
125. Zharkov, I. P., Kondratenko, P. A., and Kurik, M. V., On the nature of concentration shift of absorption and fluorescence spectra of eosine in a polymer matrix, *Opt. and Spektrosk.* **49**, No. 3, 523–527 (1980) (Russ).
126. Ziegler, L. D. and Hudson, B. S., The thermal blooming spectrum of liquid benzene in the near ultraviolet, *Chem. Phys. Lett.* **71**, No. 1, 113–116 (1980) (Eng) (P. A. **83**: 66216).

3.3. Triplet absorption spectra and ESR spectra

127. Anisimov, O. A., Grigoryants, V. M., and Molin, Yu. N., Optical detection of the ESR spectrum of hexafluorobenzene anion-radicals in squalane at room temperature, *Chem. Phys. Lett.* **74**, No. 1, 15–18 (1980) (Eng) (P. A. **83**: 95655).
128. Baranov, A. V., Bobovich, Ya. S., and Ermolaev, V. L., Resonant Raman spectra of triplet molecules, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **32**, No. 8, 513–516 (1980) (Russ).
129. Brauchle, Chr., Kabza, H., and Voigtländer, J., A concept to explain the variation of the triplet zero-field splitting parameters with the structure of aromatic hydrocarbons in terms of local benzenoid characteristics, *Chem. Phys.* **48**, No. 3, 369–385 (1980) (Eng) (P. A. **83**: 78636).
130. Chodkowska, A., Grabowska, A., and Herbich, J., Hydrogen bond effects on zero field splitting parameters of excited triplet states of some 1,4-diazaaromatics. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts.* Wrocław, 374 (1977).
131. Furrer, R., Fujara, F., Lange, C., Stehlik, D., Vieth, H. M., and Volimann, W., Transient ESR nutation signals in excited aromatic triplet states, *Chem. Phys. Lett.* **75**, No. 2, 332–339 (1980) (Eng).
132. Gerko, V. I., Popov, L. S., and Alfimov, M. V., On some peculiarities in triplet-triplet absorption spectra of multifragment molecules. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts.* Wrocław, 372 (1977) (Eng).
133. Inoue, A., Webster, D., and Lim, E. C., Triplet-triplet absorption of pyrazine related to the $n, \pi^*(B_{3u}) - n, \pi^*(B_{2g})$ splitting, *J. Chem. Phys.* **72**, No. 2, 1419–1420 (1980) (Eng).
134. Korotaev, O., Naumova, T., Karpov, V., and Kaliteevskii, M., The T - T absorption band shape study of aromatic hydrocarbons. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts.* Wrocław, 411 (1977) (Eng).
135. Lemaistre, J. P. and Zewail, A. H., Spin-quantization and spin-orbit coupling effects on the line shapes of triplet states. II. The "small" exciton problem, *J. Chem. Phys.* **72**, No. 2, 1055–1070 (1980) (Eng).
136. O'Connor, C. J., Sinn, E., Bucelot, T. J., and Deaver, B. S., Jr., Photomagnetism of the triplet state of coronene, *Chem. Phys. Lett.* **74**, No. 1, 27–31 (1980) (Eng).
137. Orlandi, G., Monti, S., Barigelletti, F., and Balzani, V., Triplet energy transfer to cis and trans stilbene. A quantum mechanical approach, *Chem. Phys.* **52**, No. 3, 313–319 (1980) (Eng).
138. Petrov, S. N., Bocherkov, A. I., Shatrov, V. D., Kuznetsov, V. S., Batekha, I. G., and El'tsov, A. V., Triplet-triplet absorption of aza- and diazaphenanthrenes, *Zh. Prikl. Spektrosk.* **33**, No. 4, 675–679 (1980) (Russ).

139. Pitts, W. M. and El-Sayed, M. A., Optical detection of spectral diffusion of the triplet state zero-field transition energy, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1-2, 19-38 (1980) (Eng).
140. Popov, L. S., Gerko, V. I., Razumov, V. I., and Alfimov, M. V., Abnormal broadening in triplet-triplet absorption spectra caused by aromatic solvents. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12-16, 1977. *Abstracts*. Wrocław, 354 (1977) (Eng).
141. Pyatosin, V. E. and Tsvirko, M. P., Triplet-triplet absorption spectra of phthalocyanine and its metal complexes, *Zh. Prikl. Spektrosk.* **33**, No. 2, 320-325 (1980) (Russ).
142. Rudakoff, G. and Oehme, K.-L., The molecular reorientation of fluorobenzene and the influence of weak molecular interaction- T_1 -study, *Acta phys. pol.* **A57**, No. 5, 865-871 (1980) (Eng).
143. Schaaf, R. and Perkampus, H.-H., Zero-field splitting parameters of mono- and di-azaphenanthrenes, *Chem. Phys. Lett.* **71**, No. 3, 467-470 (1980) (Eng).
144. Shinohara, H. and Hirota, N., Zero-field ODMR studies of the T_1 states of bromine-containing 1,4-dihalobenzenes, *J. Chem. Phys.* **72**, No. 8, 4445-4457 (1980) (Eng).
145. Tabakova, S. and Karpukhina, T., IR and ESR study of the structure of oxidated copolymer of 2-methyl-5-vinylpyridine and divinylbenzene. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12-16, 1977. *Abstracts*. Wrocław, 225 (1977) (Eng).
146. Woning, J., Van Der Velden, G. P. M., and Veeman, W. S., The lowest triplet state of 4,4'-diiodobenzophenone, *Chem. Phys.* **51**, No. 1, 2, 97-105 (1980) (Eng) (*P. A.* **84**: 1133).

3.4. Electronic-vibrational interaction and vibronic spectra

147. Allen, C. S., Schatz, G. C., and Van Duyne, R. P., Tunable laser excitation profile of surface enhanced Raman scattering from pyridine adsorbed on a copper electrode surface, *Chem. Phys. Lett.* **75**, No. 2, 201-205 (1980) (Eng).
148. Asano, M. and Koningstein, J. A., Raman scattering from excited states with picosecond lifetimes. In: *Picosecond phenomena II*. Proceedings of the second international conference on picosecond phenomena, Cape Cod, Ma, USA, 18-20 June 1980. Berlin, Germany: Springer-Verlag, 351-356 (1980) (Eng) (*P. A.* **84**: 64070).
149. Atkinson, G. H. and Dosser, L. R., Vibrational Raman scattering from excited triplet state chrysene by time-resolved resonance Raman spectroscopy, *J. Chem. Phys.* **72**, No. 3, 2195-2197 (1980) (Eng) (*P. A.* **83**: 58264).
150. Babkov, L., Kalmykova, G., Kovner, M., Kraynova, I., Malykhina, N., and Puchkovskaya, G., Vibronic luminescence and absorption spectra and infrared spectra of some chloro derivatives of naphthalene, and their theoretical interpretation. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12-16, 1977. *Abstracts*. Wrocław, 415 (1977) (Eng).
151. Baranov, S. A. and Kovarskii, V. A., On the theory of non-adiabatic excitation of molecules by the resonance infra-red radiation, *Zh. Prikl. Spektrosk.* **32**, No. 1, 175-177 (1980) (Russ).
152. Baranov, V. I. and Gribov, L. A., Exact method for calculating superposition integrals of vibrational wave functions, *Opt. and Spektrosk.* **49**, No. 1, 198-199 (1980) (Russ) (*P. A.* **84**: 46028).
153. Belousov, A. V., Kovarskii, V. A., and Sinyavskii, E. P., Optical properties of molecules in the field of resonant low-frequency laser radiation, *Zh. Eksp. and Teor. Fiz.* **78**, No. 5, 1649-1658 (1980) (Russ) (*P. A.* **83**: 78628).
154. Borisov, B. D., Gusev, A. Yu., and Chebotaev, V. P., Automation of measurements in high-resolved laser spectroscopy. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 232 (1980) (Russ).

155. But'ko, A. I., Voropai, E. S., Gaisenok, V. A., Saechnikov, V. A. and Sarzhevsky, A. M., To the problem on the evidence of electron-vibrational interaction in the anisotropy of emission of complex molecules at two-photon excitation, *Opt. and Spektrosk.* **48**, No. 6, 1216–1219 (1980) (Russ).
156. Cossart-Magos, C. and Leach S. Jahn-Teller effects in substituted benzene cations. IV. Intermode interactions and intensity anomalies in sym-trifluorobenzene ions, *Chem. Phys.* **48**, No. 3, 329–348 (1980) (Eng) (P. A. **83**: 78553).
157. Cossart-Magos, C. and Leach, S., Jahn-Teller effects in substituted benzene cations. V. Quadratic coupling, *Chem. Phys.* **48**, No. 3, 349–358 (1980) (Eng) (P. A. **83**: 78554).
158. Decola, P. L., Andrews, J. R., Hochstrasser, R. M. and Trommsdorff, H. P., Simultaneous narrow-line Raman spectra of ground and excited electronic states, *J. Chem. Phys.* **73**, No. 9, 4695–4696 (1980) (Eng) (P. A. **84**: 24153).
159. Fainberg, B. D. and Neporent, B. S., Influence of the reorganization of low-frequency intra- and intermolecular vibrations in electronic transitions on absorption and luminescence spectra of molecules. Realization of a "four-level" system of transitions, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 799–805 (1980) (Russ).
160. Fainberg, B. D. and Neporent, B. S., Spectral evidence of the reorganization of low-frequency intramolecular and intermolecular vibrations in electronic transitions. Realization of a four-level system of transitions, *Opt. and Spektrosk.* **48**, No. 4, 712–722 (1980) (Russ) (P. A. **84**: 33452).
161. Fainberg, B. D., To the problem of replacement the group of oscillators by one effective oscillator in the description of electron-vibrational spectra, *Opt. and Spektrosk.* **49**, No. 1, 178–181 (1980) (Russ).
162. Fleurov, V. N. and Goldanskii, V. I., Electronic transitions in molecules due to neutron scattering, *Chem. Phys. Lett.* **71**, No. 1, 17–21 (1980) (Eng) (P. A. **83**: 63844).
163. Fujimura, Y., Nakajima, T., and Lin, S. H., Calculation of Raman spectra of pyrazine resonant to the S_2 (π , π^*) state, *Chem. Phys. Lett.* **70**, No. 1, 97–99 (1980) (Eng).
164. Kiefer, W., Active Raman spectroscopy: high resolution molecular spectroscopical methods, *J. Mol. Struct.* **59**, 305–319 (1980) (Eng) (P. A. **83**: 52998).
165. Lenz, K., Lau, A., Patzold, H.-L., Weigmann, H.-J., and Werncke, W., Raman spectra of excited electronic states in dye molecules. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts. Wrocław*, 491 (1977) (Eng).
166. Mikami, Y., The numerical evaluations of the density of states weighted Franck-Condon factor in large molecules. Effects of frequency changes, *J. Chem. Phys.* **73**, No. 7, 3314–3320 (1980) (Eng) (P. A. **84**: 1280).
167. Mikhailenko, V. I., Vibronic states and quasi-linear spectra of molecules with end phenyl rings. 1. Theoretical analysis, *Ukr. Fiz. Zh.* **25**, No. 7, 1151–1155 (1980) (Russ) (P. A. **83**: 95597).
168. Mikhailenko, V. I., Mel'nik, V. I., Nelipovich, K. I., and Grosul, V. P., Vibronic states and quasi-linear spectra of molecules with end phenyl rings. 2. Comparison with experiment, *Ukr. Fiz. Zh.* **25**, No. 7, 1156–1161 (1980) (Russ) (P. A. **83**: 95598).
169. Neporent, B. S., Spiro, A. G., Shilov, V. B., and Fainberg, B. D., To the problem on the interpretation of the shape of Raman spectra of superluminescent molecular systems, *Opt. and Spektrosk.* **49**, No. 6, 1109–1113 (1980) (Russ) (P. A. **84**: 97587).
170. Ohno, K., Vibronic calculations in aromatic hydrocarbons, *Chem. Phys. Lett.* **70**, No. 3, 526–531 (1980) (Eng) (P. A. **83**: 58238).
171. Osadko, I. S. and Kulagin, S. A., Manifestation of large conformational changes in the optical spectra of molecules and impurity centers, *Opt. and Spektrosk.* **49**, No. 2, 290–295 (1980) (Russ) (P. A. **84**: 59574).
172. Priyutov, M. V. and Elkin, M. D., Algorithm for intensity distribution calculation of electronic-vibrational absorption spectra of polyatomic molecules. In: Use of computers in spectroscopy of molecules and chemical studies, *Novosibirsk*, 82–83 (1980) (Russ).

173. Seo, K., Kono, H., and Fujimura, Y., Non-adiabatic coupling effects on the resonance Raman scattering from a molecular system, *Chem. Phys. Lett.* **74**, No. 3, 549–553 (1980) (Eng).
174. Shapiro, S. L. and Winn, K. R., Picosecond time-resolved spectral shifts in emission: dynamics of excited state interactions in coumarin 102, *Chem. Phys. Lett.* **71**, No. 3, 440–444 (1980) (Eng) (*P. A.* **84**: 78624).
175. Siebrand, W. and Zgierski, M. Z., Vibrational structure of multiplicity-forbidden spectra. Non-Condon effects and vibronic interference in hetero-aromatics, *Chem. Phys.* **52**, No. 3, 321–335 (1980) (Eng).
176. Sobolewski, A., Effect of frequency change of molecular vibrations on Franck-Condon factors, *Acta Phys. Pol.* **A58**, No. 3, 353–357 (1980) (Eng).
177. Sokolov, M. N. and Sverdlov, L. M., Fluorescence spectrum of naphthalene. A theoretical study, *Opt. and Spektrosk.* **49**, No. 1, 192–193 (1980) (Russ) (*P. A.* **84**: 46016).
178. Sokolov, M. N. and Sverdlov, L. M., Theoretical study of the electronic-vibrational spectrum of anthracene, *Zh. Prikl. Spektrosk.* **32**, No. 1, 152–154 (1980) (Russ).
179. Tripathi, R. and Rai, S. B., Influence of vibration rotation interaction on Franck-Condon factors, *Indian J. Pure and Appl. Phys.* **18**, No. 5, 372–377 (1980) (Eng).
180. Wessel, J. and McClure, D. S., Vibronic interactions in the naphthalene molecule, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 121–153 (1980) (Eng) (*P. A.* **83**: 84755).

3.5. Vibrational spectra

181. Akulin, V. M. and Karlov, N. V., Redistribution of the vibrational energy on laser excitation of high vibrational levels of polyatomic molecules, *Zh. Eksp. and Teor. Fiz.* **79**, No. 6, 2104–2118 (1980) (Russ) (*P. A.* **84**: 33450).
182. Aminzadeh, A., Fawcett, V., and Long, D. A., Intensities of some vibrational bands in the pre-resonance Raman spectra of quinoxaline, phthalazine and pyridazine, *J. Raman Spectrosc.* **9**, No. 4, 214–218 (1980) (Eng) (*P. A.* **83**: 102514).
183. Aminzadeh, A., Fawcett, V., and Long, D. A., A study of some vibrational band intensities in the pre-resonance Raman spectra of naphthalene, phenazine, cinnoline and quinazoline, *J. Raman Spectrosc.* **9**, No. 4, 219–223 (1980) (Eng) (*P. A.* **83**: 102515).
184. Amirav, A., Even, U., and Jortner, J., Butterfly motion of the isolated pentacene molecule in its first-excited singlet state, *Chem. Phys. Lett.* **72**, No. 1, 21–24 (1980) (Eng) (*P. A.* **83**: 78615).
185. Angeloni, L., Castellucci, E., Neto, N., and Sbrana, G., Infrared and Raman spectra and frequency calculation of 2,2'-bipyridyl. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts.* Wrocław, 214 (1977) (Eng).
186. Ansari, A. K. and Verma, P. K., Infrared absorption spectrum of pyrogallol, *Indian J. Phys.* **53B**, No. 3, 136–139 (1979) (Eng) (*P. A.* **84**: 59509).
187. Babkov, L., Kalmykova, G., Kovner, M., Kraynova, I., Malykhina, N., and Puchkovskaya, G., Vibronic luminescence and absorption spectra and infrared spectra of some chloro derivatives of naphthalene, and their theoretical interpretation. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts.* Wrocław, 415 (1977) (Eng).
188. Bagratashvili, V. N., Vainer, Y. G., Doljnikov, V. S., Koliakov, S. F., Makarov, A. A., Malyavkin, L. P., Ryabov, E. A., Silkis, E. G., and Titov, V. D., Raman spectroscopy of infrared multiple-photon excited molecules, *Appl. Phys.* **22**, No. 1, 101–105 (1980) (Eng) (*P. A.* **83**: 74207).
189. Barnes, A. J., Szczepaniak, K., Orville-Thomas, W. J., Study of intermolecular interactions by matrix isolation vibrational spectroscopy, *J. Mol. Struct.* **59**, 39–53 (1980) (Eng) (*P. A.* **83**: 52995).

190. Blom, C. E., Vibrational spectra of polyatomic molecules and polymers. In: *Recent Advances in the Quantum Theory of Polymers*, workshop proceedings, Namur, Belgium, 11–14 Feb. 1979. Berlin, Germany: Springer-Verlag, 233–239 (1980) (Eng) (P. A. 84: 19081).
191. Bogachev, N. V., Gavva, S. P., Sverdlov, L. M. and Elkin, M. D., Computer analysis of molecular systems structure and spectra. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 60 (1980) (Russ).
192. Borkovskii, N. B., Kovrikov, A. B., Lyudchik, A. M. and Popov, V. G., Group theory method applications to creating of optimum algorithms of molecular spectrum calculation programs. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 167–168 (1980) (Russ).
193. Bree, A. and Edelson, M., An investigation of the low-frequency torsional modes of trans-stilbene using Raman spectroscopy, *Chem. Phys.* 51, No. 1, 2, 77–88 (1980) (Eng) (P. A. 84: 1241).
194. Bunding, K. A., Lombardi, J. R., and Birke, R. L., Surface enhanced Raman spectra of methylpyridines, *Chem. Phys.* 49, No. 1, 53–58 (1980) (Eng) (P. A. 83: 83376).
195. Caudle, G. F. and Izatt, J. R., Infrared saturable absorption in benzene, chlorobenzene, and bromobenzene, *Can. J. Phys.* 58, No. 4, 569–578 (1980) (Eng).
196. Cavanaugh, D. B. and Wang, C. H., Studies of molecular reorientation, translation, and vibrational relaxation of liquid 1,2,4-trichlorobenzene by depolarized Rayleigh and Raman spectroscopy, *J. Chem. Phys.* 73, No. 2, 636–641 (1980) (Eng) (P. A. 83: 95632).
197. Colombo, L. and Blazevic, J., Interpretation of the low-frequency spectrum of benzo-phenone molecule. In: Proceedings of the VIIth International Conference on Raman Spectroscopy. *Linear and Non Linear Processes*, Ottawa, Canada, 1980. Amsterdam, Netherlands: North-Holland, 212–213 (1980) (Eng) (P. A. 85: 721).
198. Cyvin, B. N., Neerland, G., Brunvoll, J., and Cyvin, S. J., Condensed aromatics. VI. Force-field approximation for the out-of-plane molecular vibrations, *Z. Naturforsch.* 35A, No. 7, 731–738 (1980) (Eng) (P. A. 83: 91538).
199. Cyvin, S. J., Brunvoll, J., Neerland, G., and Cyvin, B. N., Condensed aromatics. IX. Mean amplitudes and perpendicular amplitude coefficients for benzene and naphthalene, *Spectrosc. Lett.* 13, No. 8, 527–535 (1980) (Eng).
200. Cyvin, S. J., Neerland, G., Cyvin, B. N., and Brunvoll, J., Condensed aromatics. Out-of-plane vibrations of naphthacene and pentacene, *J. Mol. Spectrosc.* 83, No. 2, 471–473 (1980) (Eng) (P. A. 84: 24111).
201. Dementiev, V. A., The state of calculation methods of molecular vibration analysis. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 55–56 (1980) (Russ).
202. Demuth, J. E., Christmann, K., and Sanda, P. N., The vibrations and structure of pyridine chemisorbed on Ag(111): the occurrence of a compressional phase transformation, *Chem. Phys. Lett.* 76, No. 2, 201–206 (1980) (Eng).
203. DiLella, D. P., Vibrational spectra of C_2 , deuterium substituted pyridines. 3. Pyridine-3,5- d_2 and pyridine-3,4,5- d_3 , *J. Raman Spectrosc.* 9, No. 4, 239–246 (1980) (Eng) (P. A. 83: 102518).
204. Earl, B. L. and Scott, L. T., Infrared and CO_2 -laser absorption spectra of azulene vapor, *Spectrochim. acta* 36A, No. 7, 649–651 (1980) (Eng).
205. El'kin, M. D., Kredentser, A. E., Tomashevskii, Yu. B., and Sverdlov, L. M., Anharmonic analysis of polyatomic molecule vibrational spectra. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 57–58 (1980) (Russ).
206. El'kin, M. D., Popov, A. F., Pulin, V. F., and Sverdlov, L. M., Computer procedure packet for calculation of molecular parameters in the molecule vibrational spectra theory. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 59 (1980) (Russ).
207. El'kin, M. D., Gavva, S. P., and Sverdlov, S. M., Formules, algorithm and program for calculation of intensities of compound frequencies and overtones in Raman and IR

- spectra. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 61 (1980) (Russ).
208. Erdheim, G. R., Birke, R. L., and Lombardi, J. R., Surface enhanced Raman spectrum of pyrazine. Observation of forbidden lines at the electrode surface, *Chem. Phys. Lett.* **69**, No. 3, 495–498 (1980) (Eng).
 209. Genack, A. Z., Weitz D. A., and Gramila, T. J., Very low frequency surface enhanced Raman scattering, *Surf. Sci.* **101**, No. 1–3, 381–386 (1980) (Eng) (*P. A.* **84**: 35050).
 210. Gersten, J. I., The effect of surface roughness on surface enhanced Raman scattering, *J. Chem. Phys.* **72**, No. 10, 5779–5780 (1980) (Eng) (*P. A.* **83**: 83377).
 211. Gersten, J. I., Rayleigh, Mie, and Raman scattering by molecules adsorbed on rough surfaces, *J. Chem. Phys.* **72**, No. 10, 5780–5781 (1980) (Eng) (*P. A.* **83**: 83378).
 212. Giorgianni, S., Passerini, A., Gambi, A., and Ghersetti, S., Infrared spectra of benzophenone and its *p*-halogen derivatives, *Spectrosc. Lett.* **13**, No. 7, 445–455 (1980) (Eng).
 213. Girlando, A., Gordon, J. G. II, Heitmann, D., Philpott, M. R., Seki, H., and Swalen, J. D., Raman spectra of molecules on metal surfaces, *Surf. Sci.* **101**, No. 1–3, 417–424 (1980) (Eng) (*P. A.* **84**: 35054).
 214. Goel, R. K., Sharma, S. D., Kansal, K. P., and Sharma, S. N., Infrared absorption spectra of 2-amino-3-methyl- and 6-amino-2-methyl-pyridine, *Indian J. Pure and Appl. Phys.* **18**, No. 11, 930–932 (1980) (Eng).
 215. Goel, R. K., Sharma, S. (Smt), Kansal, K. P., and Sharma, S. N., Infrared absorption spectra of 2-amino-*p*-cresol and 2-amino-4-chlorophenol, *Indian J. Pure and Appl. Phys.* **18**, No. 4, 281–284 (1980) (Eng).
 216. Goel, R. K., Gupta, S. K., and Sharma, S. N., Infrared studies on some di-substituted pyridines, *Indian J. Pure and Appl. Phys.* **18**, No. 11, 928–930 (1980) (Eng) (*P. A.* **84**: 33458).
 217. Goel, R. K., Kansal, K. P., and Sharma, S. K., Vibrational spectra of 2,6-dichloroanisole, *Acta Phys. Pol.* **A58**, No. 4, 453–458 (1980) (Eng) (*P. A.* **84**: 14879).
 218. Gribov, L. A., Recent advances in the theory of vibrational spectra of polyatomic molecules. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 96 (1977) (Eng).
 219. Harsanyi, L. and Kilar, F., Calculation of the in-plane force constants and vibrational spectra of pyridine and its deuterated derivatives by the CNDO/2 force method, *J. Mol. Struct.* **65**, 141–152 (1980) (Eng) (*P. A.* **83**: 95540).
 220. Hartstein, A., Kriley, J. R., and Tsang, J. C., Enhancement of the infrared absorption from molecular monolayers with thin metal overlayers, *Phys. Rev. Lett.* **45**, No. 3, 201–204 (1980) (Eng) (*P. A.* **83**: 88995).
 221. Henry, B. R. and Greenlay, W. R. A., Detailed features in the local mode overtone bands of ethane, neopentane, tetramethylbutane, and hexamethylbenzene, *J. Chem. Phys.* **72**, No. 10, 5516–5524 (1980) (Eng) (*P. A.* **83**: 83444).
 222. Hollas, J. M. and Ridley, T., The C(1)-C(α) torsional potential function in the ground electronic state of styrene obtained from the single vibronic level fluorescence and other spectra, *Chem. Phys. Lett.* **75**, No. 1, 94–98 (1980) (Eng).
 223. Howard, M. W., Cooney, R. P., and McQuillan, A. J., The origin of intense Raman spectra from pyridine at silver electrode surfaces: the role of surface carbon, *J. Raman Spectrosc.* **9**, No. 4, 273–278 (1980) (Eng) (*P. A.* **83**: 103954).
 224. Kalasinsky, V. F. and Little, T. S., Vibrational spectra and structure of cyclopentylamine, *J. Raman Spectrosc.* **9**, No. 4, 224–229 (1980) (Eng) (*P. A.* **83**: 102516).
 225. Krasser, W., Ervens, H., Fadini, A., and Renouprez, A. J., Raman scattering of benzene and deuterated benzene chemisorbed on silica-supported nickel, *J. Raman Spectrosc.* **9**, No. 2, 80–84 (1980) (Eng) (*P. A.* **83**: 84737).
 226. Kredentser, A. E., Popov, A. F., Sverdlov, L. M., and El'kin, M. D., Algorithm and program for calculation of coefficients of the bond between exact and approximate

- vibrational coordinates. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 62–63 (1980) (Russ).
227. Kredentser, E. I., Popov, A. F., Potapova, V. Ya., Tomashevskii, Yu. B., and El'kin, M. D., Algorithms and programs of linear algebra, group theory and theory of special functions in molecular spectroscopy problems. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 174 (1980) (Russ).
228. Loo, B. H. and Furtak, T. E., The giant Raman effect from pyridine on a chemically modified gold substrate, *Chem. Phys. Lett.* **71**, No. 1, 68–71 (1980) (Eng).
229. McHale, J. L. and Wang, C. H., Fermi resonance of Raman modes in the condensed phase: a theoretical investigation of the concentration dependent effects in molecular liquids, *J. Chem. Phys.* **73**, No. 8, 3600–3606 (1980) (Eng) (*P. A.* **84**: 16560).
230. Makkambaev, D., Narziev, B. N., and Sechkarev, A. V., Possibility of quantized rotation of molecules in liquid pyridine and its manifestations in IR absorption spectra, *Zh. Prikl. Spektrosk.* **33**, No. 1, 170–172 (1980) (Russ).
231. Maniv, T. and Metiu, H., Some comments concerning the microscopic theory of Raman scattering by adsorbed molecules, *Surf. Sci.* **101**, No. 1–3, 399–408 (1980) (Eng) (*P. A.* **84**: 35052).
232. Meic, Z. and Gusten, H., Vibrational studies of transstilbenes. 2. Infrared and Raman spectra of fluorinated transstilbenes, *Spectrochim. acta* **36A**, No. 12, 1021–1027 (1980) (Eng).
233. Mikhailov, V. M. and Aliev, M. R., Pure rotational absorption spectra of nonpolar molecules in degenerate vibrational states, *Opt. and Spektrosk.* **47**, No. 5, 1012–1014 (1979) (Russ) (*P. A.* **83**: 78598).
234. Mille, G., Guiliano, M., Kister, J., Chouteau, J., and Metzger, J., Analyse des spectres de vibration des alkyl (allyl, benzyl) thio-2-pyrimidines, *Spectrochim. acta* **36A**, No. 7, 713–720 (1980) (Fr).
235. Mizugai, Y. and Katayama, M., The fifth overtones of the C-H stretching vibrations and the bond lengths in some heterocyclic compounds, *Chem. Phys. Lett.* **73**, No. 2, 240–243 (1980) (Eng).
236. Morawitz, H. and Koehler, T. R., A model for Raman-active librational modes on a metal surface. Pyridine and CN⁻ on silver, *Chem. Phys. Lett.* **71**, No. 1, 64–67 (1980) (Eng).
237. Moskovits, M. and DiLella, D. P., Surface-enhanced Raman spectroscopy of benzene and benzene-d₆ adsorbed on silver, *J. Chem. Phys.* **73**, No. 12, 6068–6075 (1980) (Eng) (*P. A.* **84**: 35022).
238. Neerland, G., Cyvin, B. N., and Cyvin, S. J., Condensed aromatics. Part X. Out-of-plane vibrations of polyacenes, *Spectrosc. Lett.* **13**, No. 9, 649–656 (1980) (Eng).
239. Painter, P. C. and Snyder, R. W., A corrected valence force field for benzene, *Spectrochim. acta* **36A**, No. 4, 337–339 (1980) (Eng) (*P. A.* **83**: 63868).
240. Passerini, A., Giorgianni, S., Gambi, A., Ghersetti, S., and Spunta, G., Infrared spectra and vibrational analysis of m-halogen benzophenones, *Spectrosc. Lett.* **13**, No. 10, 729–740 (1980) (Eng).
241. Pathak, A. N. and Sinha, B. K., Vibrational spectra of p-methoxy benzonitrile, *Indian J. Pure and Appl. Phys.* **18**, No. 8, 619–620 (1980) (Eng).
242. Pauling, L., Bond numbers and bond lengths in tetrabenzo de, no, st, c,d, heptacene and other condensed aromatic hydrocarbons: a valence-bond treatment, *Acta crystallogr.* **B36**, No. 8, 1898–1901 (1980) (Eng).
243. Pavlyuchko, A. I. and Gribov, L. A., Programmes for calculation of anharmonic vibrations of molecules, *Zh. Prikl. Spektrosk.* **33**, No. 5, 904–907 (1980) (Russ).
244. Peticolas, W. L., Strommen, D. P., and Lakshminarayanan, V., The use of resonant Raman intensities in refining molecular force fields for Wilson G-F calculations and obtaining excited state molecular geometries, *J. Chem. Phys.* **73**, No. 9, 4185–4191 (1980) (Eng) (*P. A.* **84**: 24152).
245. Pettinger, B., Wenning, U., and Wetzol, H., Surface plasmon enhanced Raman

- scattering frequency and angular resonance of Raman scattered light from pyridine on Au, Ag and Cu electrodes, *Surf. Sci.* **101**, No. 1–3, 409–416 (1980) (Eng) (P. A. **84**: 35053).
246. Pogorelov, V. E. and Salivon, G. I., Oscillatory relaxation and overtone band width in liquid benzene, *Ukr. Fiz. Zh.* **25**, No. 12, 1971–1974 (1980) (Russ) (P. A. **84**: 35058).
 247. Prima, A. M., Umreiko, D. S., Kovrikov, A. B., and Prima, I. A., Calculation of parameters determining intensities of benzene infrared bands by effective charge model and interrelation of intensities of valent and devormative frequencies, *Izv. VUZ Fiz.* No. 5, 123–124 (1980) (Russ).
 248. Ramanamurti, D. V., Venkatacharyulu, P., and Premaswarup, D., Vibrational spectrum of 2,6-dichlorobenzamide, *Indian J. Pure and Appl. Phys.* **18**, No. 8, 617–619 (1980) (Eng).
 249. Reimschuessel, W. and Abramczyk, H., Molecular motion of toluene and cyclohexane in benzene solutions, *Chem. Phys. Lett.* **73**, No. 3, 565–568 (1980) (Eng) (P. A. **83**: 96431).
 250. Robinson, G. W. and Auerbach, R. A., Theoretical absolute Raman cross sections in benzene. Totally summetric modes, *Chem. Phys. Lett.* **74**, No. 2, 237–242 (1980) (Eng) (P. A. **83**: 102510).
 251. Rowe, J. E., Shank, C. V., Zwemer, D. A., and Murray, C. A., Ultrahigh-vacuum studies of enhanced Raman scattering from pyridine on Ag surfaces, *Phys. Rev. Lett.* **44**, No. 26, 1770–1773 (1980) (Eng) (P. A. **83**: 88993).
 252. Sanyal, N. K., Goel, R. K., Kansal, K. P., and Sharma, S. N., Infrared spectra of the biological molecule 4,6-dihydroxy-2-methyl pyrimidine, *Indian J. Pure and Appl. Phys.* **18**, No. 12, 1032–1034 (1980) (Eng).
 253. Schatz, G. C. and Van Duyne, R. P., Image field theory of enhanced Raman scattering by molecules absorbed on metal surfaces: Detailed comparison with experimental results, *Surf. Sci.* **101**, No. 1–3, 425–438 (1980) (Eng) (P. A. **84**: 35055).
 254. Singh, R. N. and Prasad, S. C., Infrared and Raman spectra of 1-Br-2,6-dimethyl benzene, *Indian J. Pure and Appl. Phys.* **15**, No. 4, 264–266 (1977) (Eng).
 255. Smithson, T. L. and Wieser, H., The vapor phase infrared spectra of cyclohexene and 2,3-dihydropyran, 50–700 cm^{-1} , *J. Chem. Phys.* **72**, No. 4, 2340–2346 (1980) (Eng) (P. A. **83**: 63628).
 256. Sokolov, Yu. A., Grushetskii, K. M. and Akhrem, A. A., Calculation of vibrational spectra intensities by methods of MO LKAO. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 81 (1980) (Russ).
 257. Speiser, S. and Grunwald, E., Vibrational energy redistribution and hot-band spectrum for hexafluorobenzene following infrared multiphoton excitation, *Chem. Phys. Lett.* **73**, No. 3, 438–442 (1980) (Eng).
 258. Stidham, H. D. and DiLella, D. P., Vibrational spectra of C_2v deuterium substituted pyridines. 4. Pyridine-2,3,5,6- d_4 and pyridine- d_5 , *J. Raman Spectrosc.* **9**, No. 4, 247–256 (1980) (Eng) (P. A. **83**: 102519).
 259. Tanabe, K. and Hiraishi, J., Vibrational frequencies and linewidths of C-H stretching Raman bands of organic molecules in aqueous solution, *Chem. Phys. Lett.* **71**, No. 3, 460–462 (1980) (Eng) (P. A. **83**: 78622).
 260. Tripathi, G. N. R. and Tripathi, S. R., On the ground state frequencies of some mono-substituted pyridenes, *Indian J. Phys. B* **53**, No. 3, 130–135 (1979) (Eng) (P. A. **84**: 59508).
 261. Tripathi, G. N. R. and Pandey, V. M., Vibrational assignments of infrared spectra of 3,4-dichloro- and 2,4-dibromofluorobenzene and 2,5- and 3,4 dichlorobromobenzene molecules, *Indian J. Pure and Appl. Phys.* **15**, No. 6, 432–436 (1977) (Eng).
 262. Visser, T. and Van Der Maas, J. H., Systematic computer-aided interpretation of vibrational spectra, *Anal. Chim. Acta Comput. Tech. and Optimiz.* **122**, No. 4, 357–361 (1980) (Eng) (P. A. **84**: 45924).
 263. Wenning, U., Pettinger, B., and Wetzal, H., Angular-resolved Raman spectroscopy of pyridine on copper and gold electrodes, *Chem. Phys. Lett.* **70**, No. 1, 49–54 (1980) (Eng).

264. Zhizhin, G. N. and Popova, M. N., Use of the Fourier spectrometer for recording the Raman scattering of light, *Zh. Prikl. Spektrosk.* **32**, No. 6, 1110–1113 (1980) (Russ).

3.6. Fluorescence

265. Aravind, P. K. and Metiu, H., The enhancement of Raman and fluorescent intensity by small surface roughness. Changes in dipole emission, *Chem. Phys. Lett.* **74**, No. 2, 301–305 (1980) (Eng) (P. A. **83**: 102511).
266. Aristov, A. V., Maslov, V. G., Semenov, S. G., and Shevandin, V. S., Experimental and theoretical study of rhodamine luminescence polarization from high excited states using two-step laser excitation, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 750–753 (1980) (Russ).
267. Baba, H., Fujita, M., and Uchida, K., Rotational effects on fluorescence quantum yields of pyrazine and pyrimidine in the vapor phase, *Chem. Phys. Lett.* **73**, No. 3, 425–428 (1980) (Eng) (P. A. **83**: 95661).
268. Barbara, P. F., Rentzepis, P. M., and Brus, L. E., Direct pico-second observation of unrelaxed fluorescence from tetracene in condensed media, *J. Chem. Phys.* **72**, No. 12, 6802–6803 (1980) (Eng) (P. A. **83**: 89046).
269. Bendig, I., Sheneikh, R., and Kreyzig, D., Effect of the bandwidth of exciting radiation on fluorescence quantum yields, *Opt. and Spektrosk.* **49**, No. 1, 56–62 (1980) (Russ) (P. A. **84**: 41422).
270. Bhattacharyya, K., Roy, D., and Chowdhury, M., Fluorescence from relaxed and unrelaxed excited state of benzil, *J. Lumin.* **22**, No. 1, 95–101 (1980) (Eng) (P. A. **84**: 68231).
271. Birks, J. B., Bartocci, G., Aloisi, G. G., Dellonte, S., and Barigelletti, F., Fluorescence analysis of trans-2-styrylnaphthalene in solution, *Chem. Phys.* **51**, No. 1, 2, 113–120 (1980) (Eng) (P. A. **84**: 1268).
272. Borisevich, N. A., Activated by laser emission, retarded fluorescence of vapours of organic compounds, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 681–685 (1980) (Russ).
273. Bykovskaya, L. A., Gradyushko, A. T., Personov, R. I., Romanovskii, Yu. V., Soloviev, K. N., Starukhin, A. S., and Shulga, A. M., Method for determination of polarization of polyatomic molecule vibronic transitions in isotropic mediums by selective laser excitation, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 822–826 (1980) (Russ).
274. Coe, D. S. and Steinfeld, J. I., Fluorescence excitation and emission spectra of polycyclic aromatic hydrocarbons at flame temperatures, *Chem. Phys. Lett.* **76**, No. 3, 485–489 (1980) (Eng) (P. A. **84**: 29013).
275. David, C. and Baeyens-Volant, D., Absorption and fluorescence spectra of 4-cyanobiphenyl and 4'-alkyl- or 4'-alkoxy-substituted liquid crystalline derivatives, *Mol. Cryst. and Liquid Cryst.* **59**, No. 3–4 181–196 (1980) (Eng).
276. Demchuk, M. I., Byk, A. P., Vishnevskii, V. N., Mikhailov, V. P., Revinskii, V. V., and Yumashev, K. V., Use of mini-computers for automation of the experiment on fluorescence kinetics investigation of complex organic molecules at ultrashort time range. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 235 (1980) (Russ).
277. Freed, K. F. and Nitzan, A., Intramolecular vibrational energy redistribution and the time evolution of molecular fluorescence, *J. Chem. Phys.* **73**, No. 10, 4765–4778 (1980) (Eng) (P. A. **84**: 37309).
278. Gaisenk, V. A., Zholnerevich, I. I., and Sarzhevsky, A. M., Depolarization of fluorescence of complex-molecule solutions with consideration for inertia effects in rotation, *Opt. and Spektrosk.* **49**, No. 4, 714–718 (1980) (Russ).

279. Greene, B. I., Hochstrasser, R. M., and Weisman, R. B., Photoproperties of isolated cis and trans stilbene molecules, *Chem. Phys.* **48**, No. 3, 289–298 (1980) (Eng) (P. A. **83**: 78640).
280. Griesser, H. J. and Wild, U. P., Energy selection experiments in glassy matrices: The linewidths of the emissions $S_2 \rightarrow S_0$ and $S_2 \rightarrow S_1$ of azulene, *J. Chem. Phys.* **73**, No. 10, 4715–4719 (1980) (Eng) (P. A. **84**: 37174).
281. Grigorov, E. I. and Vershinin, V. I., Interpretation of qualitative composition of complex mixtures of polycyclic aromatic hydrocarbons using low-temperature luminescence spectra by means of computer EC 1033. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 189–190 (1980) (Russ).
282. Grzywacz, J., Fluorescence of lactonic form of fluorescein dye. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 381 (1977) (Eng).
283. Gustav, K., Kempka, U., and Sühnel, J., Molecular geometry and excited electronic states. Theoretical study on the molecular geometry and the fluorescence lifetime difference of isomeric phenylnaphthalenes, *Chem. Phys. Lett.* **71**, No. 2, 280–283 (1980) (Eng) (P. A. **83**: 69176).
284. Hopkins, J. B., Powers, D. E., Mukamel, S., and Smalley, R. E., Vibrational relaxation in jet-cooled alkylbenzenes. 2. Fluorescence spectra, *J. Chem. Phys.* **72**, No. 9, 5049–5061 (1980) (Eng) (P. A. **83**: 78694).
285. Johnson, G. E., Fluorescence quenching of carbazoles, *J. Phys. Chem.* **84**, No. 22, 2940–2946 (1980) (Eng).
286. Karstens, T. and Kobs, K., Rhodamine B and rhodamine 101 as reference substances for fluorescence quantum yield measurements, *J. Phys. Chem.* **84**, No. 14, 1871–1872 (1980) (Eng).
287. Karyakin, A. V., Structural luminescence spectra of some organic and inorganic compounds, *Zh. Prikl. Spektrosk.* **32**, No. 5, 881–885 (1980) (Russ) (P. A. **84**: 64100).
288. Kojima, T., Studies of molecular aggregation of a polybenzimidazole in solution by fluorescence spectroscopy, *J. Polym. Sci. Polym. Phys. Ed.* **18**, No. 8, 1685–1695 (1980) (Eng) (P. A. **84**: 35526).
289. Koyava, V. T., Popechits, V. I., and Sarzhevskii, A. M., Intermolecular interactions and their effect on spectral polarization properties of fluorescence, *Opt. and Spektrosk.* **48**, No. 5, 896–902 (1980) (Russ) (P. A. **84**: 29025).
290. Koyava, V. T., Popechits, V. I., and Sarzhevskii, A. M., Kinetics of fluorescence decay in solid solutions in the presence of resonant energy transfer, *Zh. Prikl. Spektrosk.* **32**, No. 2, 283–289 (1980) (Russ) (P. A. **84**: 46014).
291. Kray, H.-J. and Nickel, B., Triplet lifetime and delayed fluorescence of azulene, *Chem. Phys.* **53**, No. 1, 2, 235–241 (1980) (Eng) (P. A. **84**: 28892).
292. Lipovskii, I. M., Sverdlov, L. M., and Finkel', A. G., Study of the infrared fluorescence of molecular gases, *Zh. Prikl. Spektrosk.* **30**, No. 4, 662–666 (1979) (Russ) (P. A. **83**: 78619).
293. Maier, J. P., Marthaler, O., Mohraz, M., and Shiley, R. H., $\bar{B}(\pi^{-1}) \rightarrow \bar{A}(\pi^{-1})$, $\bar{X}(\pi^{-1})$ emission spectra of chlorofluorobenzene cations in the gaseous phase and their lifetimes in the $B(0^0)$ states, *Chem. Phys.* **47**, No. 3, 295–305 (1980) (Eng) (P. A. **83**: 63711).
294. Mazurenko, Yu. T., Dynamics of electronic spectra of solutions. Stochastic theory. Photoluminescence spectra, *Opt. and Spektrosk.* **48**, No. 4, 704–711 (1980) (Russ) (P. A. **84**: 33408).
295. Mikami, N., Laser spectroscopy of polyatomic molecules in supersonic free jets, *Oyo Buturi.* **49**, No. 8, 802–812 (1980) (Jap) (P. A. **84**: 33451).
296. Miller, J. H. and Andrews, L., Fluorescence spectrum of the benzene radical cation in solid argon, *Chem. Phys. Lett.* **72**, No. 1, 90–93 (1980) (Eng) (P. A. **83**: 83382).
297. Miller, T. A., Zegarski, B. R., Sears, T. J., and Bondybey, V. E., Gas-phase emission spectra of supercooled organic ions, *J. Phys. Chem.* **84**, No. 24, 3154–3156 (1980) (Eng) (P. A. **84**: 59669).

298. Mirumyants, S. O., Vandyukov, E. A., Demchuk, Yu. S., and Kozlov, V. K., Quantitative characteristics of a fluorescence spectrum quasiline of anthracene vapors depending on concentration and excitation frequency, *Zh. Prikl. Spektrosk.* **33**, No. 1, 94–99 (1980) (Russ).
299. Mukamel, S. and Smalley, R. E., Fluorescence of supercooled molecules as a probe for intramolecular vibrational redistribution rates, *J. Chem. Phys.* **73**, No. 9, 4156–4166 (1980) (Eng) (P. A. **84**: 24182).
300. Munro, I. H. and Sabersky, A. P., Synchrotron radiation as a modulated source for fluorescence lifetime measurements and for time-resolved spectroscopy. In: *Synchrotron Radiation Research*. Winick H., Doniach S., Ed. New York, USA: Plenum, 323–352 (1980) (Eng) (P. A. **84**: 59388).
301. Najbar, J., External heavy atom effects on the luminescence of aromatic hydrocarbons. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 360 (1977) (Eng).
302. Nemkovich, N. A., Gulis, I. M., and Tomin, V. I., The effect of directed energy transfer on kinetics of emission spectra of complex molecules solid solutions, *Zh. Prikl. Spektrosk.* **33**, No. 6, 1080–1084 (1980) (Russ).
303. Nickel, B. and Roden, G., Delayed fluorescence from upper excited singlet states of aromatic ketones, *Chem. Phys. Lett.* **74**, No. 2, 368–372 (1980) (Eng).
304. Nickel, B. and Roden, G., Delayed fluorescence of N-methylcarbazole in heptane and in toluene; energy transfer from upper excited singlet states of N-methylcarbazole to toluene, *Chem. Phys.* **53**, No. 1, 2, 243–250 (1980) (Eng) (P. A. **84**: 33489).
305. Nickel, B. and Roden, G., Distinction of the delayed fluorescence $S_1 \rightarrow S_0$ and $S_2 \rightarrow S_0$ of pyrene by selective quenching of $S_1 \rightarrow S_0$, *Chem. Phys. Lett.* **71**, No. 2, 238–241 (1980) (Eng) (P. A. **83**: 69175).
306. Nickel, B., Prompt and delayed fluorescence from upper excited singlet states of aromatic hydrocarbons. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 529 (1977) (Eng).
307. Olszowski, A., Pseudoazulenes: a new large group of compounds with anomalous fluorescence, *Chem. Phys. Lett.* **73**, No. 2, 256–262 (1980) (Eng).
308. Rabin, Y. and Ben-Reuven, A., Resonance fluorescence and resonance Raman line-shapes in strong radiation fields, *J. Phys. B: Atom. and Mol. Phys.* **13**, No. 10, 2011–2025 (1980) (Eng) (P. A. **83**: 87074).
309. Rice, J., McDonald, D. B., NG, L.-K., and Yang, N. C., Effect of viscosity on fluorescence of anthracene in solution, *J. Chem. Phys.* **73**, No. 8, 4144–4146 (1980) (Eng).
310. Shapiro, S. L. and Winn, K. R., Temperature dependence of the fluorescence decay of acridine measured with picosecond techniques, *J. Chem. Phys.* **73**, No. 3, 1469–1470 (1980) (Eng) (P. A. **83**: 99518).
311. Sokolov, M. N. and Sverdlov, L. M., Fluorescence spectrum of naphthalene. A theoretical study, *Opt. and Spektrosk.* **49**, No. 1, 192–193 (1980) (Russ) (P. A. **84**: 46016).
312. Soloviev, K. N., New results in investigation of polarized luminescence of molecular systems, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 686–692 (1980) (Russ).
313. Stel'makh, G. F. and Tsvirko, M. P., Delayed fluorescence from upper excited electron states of metalloporphyrins, *Opt. and Spektrosk.* **49**, No. 3, 511–516 (1980) (Russ).
314. Tamm, T. B. and Saari, P. M., On the highly resolved fluorescence spectrum of coumarin 6, *Zh. Prikl. Spektrosk.* **32**, No. 1, 150–151 (1980) (Russ).
315. Tan, K. L. and Treloar, F. E., Solubilization of 9-methylantracene by the hypercoiled form of poly(methacrylic acid) in water: fluorescence decay and rotational diffusion measurements, *Chem. Phys. Lett.* **73**, No. 2, 234–239 (1980) (Eng).
316. Udagawa, Y., Ito, M., and Suzuka, I., Single vibronic level fluorescence from n, π^* state of pyrazine vapor, *Chem. Phys.* **46**, No. 1, 2, 237–249 (1980) (Eng).
317. West, M. L. and Miller, J. H., Radiation quality effects in the quenching of benzene fluorescence in pulsed proton and alpha particle irradiation, *Chem. Phys. Lett.* **71**, No. 1, 110–112 (1980) (Eng) (P. A. **83**: 66259).

318. Zalesskaya, G. A., Delayed luminescence of benzophenone vapors initiated by multiphoton absorption of the CO₂-laser radiation by triplet molecules, *Zh. Prikl. Spektrosk.* **32**, No. 1, 34–40 (1980) (Russ).
319. Zalesskaya, G. A. and Blinov, S. I., Effect of laser vibrational excitation of triplet molecules of donor on mixed triplet-triplet annihilation in anthracene and diacetyl vapours, *Opt. and Spektrosk.* **49**, No. 6, 1114–1118 (1980) (Russ) (*P. A.* **84**: 95776).

3.7. Phosphorescence

320. Giachino, G. G., Phosphorescence spectra and lifetimes of symmetrical tetrachloronaphthalenes, *J. Phys. Chem.* **84**, No. 26, 3522–3524 (1980) (Eng).
321. Matsui, K., Morita, H., Nishi, N., Kinoshita, M., and Nagakura, S., Study on the triplet state of tetramethyl-*p*-phenylenediamine by microwave induced delayed phosphorescence, *J. Chem. Phys.* **73**, No. 11, 5514–5520 (1980) (Eng).
322. Murao, T. and Azumi, T., Sublevel phosphorescence spectra of anthraquinone. 2. Molecular distortion in pentane solvent, *J. Chem. Phys.* **72**, No. 8, 4401–4404 (1980) (Eng).
323. Saltiel, J., Khalil, G. -E., and Schanze, K., Trans-stilbene phosphorescence, *Chem. Phys. Lett.* **70**, No. 2, 233–235 (1980) (Eng) (*P. A.* **83**: 55153).
324. Takemura, T., Uchida, K., Fujita, M., Shindo, Y., Suzuki, N., and Baba, H., Phosphorescence from pyrimidine vapor, *Chem. Phys. Lett.* **73**, No. 1, 12–15 (1980) (Eng) (*P. A.* **83**: 83408).
325. Terada, T., Koyanagi, M., and Kanda, Y., Heat-pulse induced delayed phosphorescence (HIDP) of xanthone, *Chem. Phys. Lett.* **72**, No. 3, 408–410 (1980) (Eng) (*P. A.* **83**: 83404).
326. Turek, A. M. and Najbar, J., Naphthalene phosphorescence in rare gas matrices, *Acta Phys. Pol.* **A58**, No. 3, 317–329 (1980) (Eng).
327. Yagi, M. and Higuchi, J., Electron spin resonance of the phosphorescent triplet states of *p*-phenylphenol and *p*-phenylphenolate ion in stretched polyvinyl alcohol films, *Chem. Phys. Lett.* **72**, No. 1, 135–138 (1980) (Eng).

3.8 Dissipation and migration of molecular excitation energy, time constants

328. Akhmanov, S. A., Gordienko, V. M., Lazarev, V. V., Mikheyenko, A. V., and Panchenko, V. Ya., Nonlinear processes involved in vibration-translational relaxation in a gas of strongly excited molecules, *Zh. Eksp. and Teor. Fiz.* **78**, No. 6, 2171–2189 (1980) (Russ) (*P. A.* **83**: 91540).
329. Al-Chalabi, A. O., Fluorescence decay times and quantum yields for benzene in the solid and vapour phases, *Chem. Phys. Lett.* **70**, N 2, 371–373 (1980) (Eng) (*P. A.* **83**: 55154).
330. Amirav, A., Even, U., Jortner, J., and Kleinman, L., Coherent dynamics of multilevel systems, *J. Chem. Phys.* **73**, No. 9, 4217–4233 (1980) (Eng).
331. Amirav, A., Even, U., and Jortner, J., Spectroscopic identification of the onset of the vibrational quasicontinuum in large molecules, *Opt. Commun.* **32**, No. 2, 266–268 (1980) (Eng).
332. Andrews, J. R. and Hochstrasser, R. M., Transient grating studies of energy deposition in radiationless processes, *Chem. Phys. Lett.* **76**, No. 2, 207–212 (1980) (Eng).
333. Aron, K., Otis, C., Demaray, R. E., and Johnson, P., Linewidths and high resolution structure of the benzene ${}^1B_{2u} \leftarrow {}^1A_{1g}$ two photon transition by multiphoton ionization-supersonic beam techniques, *J. Chem. Phys.* **73**, No. 9, 4167–4174 (1980) (Eng) (*P. A.* **84**: 24132).

334. Asano, M. and Koningstein, J. A., Raman scattering from excited states with picosecond lifetimes. In: *Picosecond Phenomena II. Proceedings of the second international conference on picosecond phenomena*, Cape Cod, MA, USA, 18–20 June 1980. Berlin, Germany: *Springer-Verlag*, 351–356 (1980) (Eng) (*P. A.* **84**: 64070).
335. Balint, E., Vass, I., Hevesi, J., and Marek, N., The light absorption and fluorescence yield of thionine in sodium lauryl sulphate micellar solutions, *Acta Phys. Pol.* **A58**, No. 3, 345–351 (1980) (Eng).
336. Barbara, P. F., Brus, L. E., and Rentzepis, P. M., A picosecond time-resolved fluorescence study of s-tetrazine vibrational relaxation in solution, *Chem. Phys. Lett.* **69**, No. 3, 447–451 (1980) (Eng).
337. Bogdanov, V. L. and Klochkov, V. P., Resonant secondary radiation and hot energy transfer at the excitation of higher electron states of organic molecules, *Opt. and Spektrosk.* **48**, No. 1, 34–42 (1980) (Russ).
338. Bogdanov, V. L., Subpicosecond relaxation and hot energy transfer accompanying excitation of the higher electronic states of organic molecules, *Zh. Prikl. Spektrosk.* **33**, No. 1, 88–93 (1980) (Russ) (*P. A.* **84**: 103798).
339. Burkhart, R. D., Kinetics of the delayed luminescence decay of 1, 2-benzanthracene in polystyrene films, *Chem. Phys.* **46**, No. 1, 2, 11–21 (1980) (Eng).
340. Butrimovich, O. V., Isachenkova, L. A., and Sarzhevsky, A. M., The role of haloid methanes in quenching of fluorescence of organic solutions exposed to UV radiation, *Zh. Prikl. Spektrosk.* **32**, No. 5, 876–880 (1980) (Russ) (*P. A.* **84**: 64099).
341. Carmeli, B. and Nitzan, A., Random coupling models for intramolecular dynamics. 1. Mathematical approach, *J. Chem. Phys.* **72**, No. 3, 2054–2069 (1980) (Eng).
342. Carmeli, B. and Nitzan, A., Random coupling models for intramolecular dynamics. 2. Kinetic equations for collisionless multiphoton excitation of large molecules, *J. Chem. Phys.* **72**, No. 3, 2070–2080 (1980) (Eng).
343. Cherkasov, A. S. and Shirokov, V. I., Effect of temperature on the radiative lifetime of the excited state in solutions of anthracene compounds, *Opt. and Spektrosk.* **49**, No. 1, 63–66 (1980) (Russ) (*P. A.* **84**: 46027).
344. Choi, K.-J. and Topp, M. R., Vibrational relaxation in excited electronic states of aromatic hydrocarbons, *Chem. Phys. Lett.* **69**, No. 3, 441–446 (1980) (Eng).
345. Choi, P.-K., Takagi, K., and Negishi, K., Ultrasonic studies of intermolecular vibrational-vibrational energy transfer in liquid mixtures, *J. Phys. Soc. Japan* **48**, No. 4, 1316–1322 (1980) (Eng).
346. Coveleskie, R. A., Dolson, D. A., and Parmenter, C. S., A direct view of intramolecular vibrational redistribution in *S*₁ *p*-difluorobenzene, *J. Chem. Phys.* **72**, No. 10, 5774–5775 (1980) (Eng) (*P. A.* **83**: 83341).
347. Cremers, D. A. and Windsor, M. W., A study of the viscosity-dependent electronic relaxation of some triphenylmethane dyes using picosecond flash photolysis, *Chem. Phys. Lett.* **71**, No. 1, 27–32 (1980) (Eng) (*P. A.* **83**: 66258).
348. Davidson, R. S., Bonneau, R., Jousset-Dubien, J., and Trethewey, K. R., Intramolecular quenching of the excited singlet state of a naphthyl group by halogeno substituents, *Chem. Phys. Lett.* **74**, No. 2, 318–320 (1980) (Eng) (*P. A.* **83**: 102537).
349. Desando, M. A., Walker, S., and Baarschers, W. H., Relaxation processes of some aromatic sulfides, sulfoxides, and sulfones in a polystyrene matrix, *J. Chem. Phys.* **73**, No. 7, 3460–3466 (1980) (Eng).
350. Dudkiewicz, J., On the energy transfer in luminescence mixed solutions, *Acta phys. pol.* **A58**, No. 2, 227–236 (1980) (Eng) (*P. A.* **83**: 103976).
351. Ermolaev, V. L., Krashennnikov, A. A., Lyubimtsev, V. A., and Shablya, A. V., Energy transport from high singlet excited electronic states of organic molecules in liquid solutions, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 709–715 (1980) (Russ).
352. Gordon, D. W. and Coleman, W. F., Bidirectional wavelength dependent energy transfer in the system Cr (acac)₃-azulene, *J. Lumin.* **22**, No. 1, 23–28 (1980) (Eng) (*P. A.* **84**: 68229).

353. Gulis, I. M. and Komyak, A. I., Quenching of complex molecules luminescence during energy transfer with inhomogeneous broadening levels, *Zh. Prikl. Spektrosk.* **32**, No. 5, 897–902 (1980) (Russ) (*P. A.* **84**: 65742).
354. Guriev, K. I. and Udovenya, V. A., Program for calculation of nonradiative S-S transition probabilities. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 125 (1980) (Russ).
355. Gurinovich, G. P., Zen'kevich, E. I., and Sagun, E. I., Singlet-triplet-triplet electron excitation energy transfer in rigid solutions, *Dokl. Akad. Nauk BSSR* **24**, No. 4, 315–318 (1980) (Russ).
356. Halberstadt, N. and Tramer, A., Time-resolved study of intramolecular vibrational redistribution in *p*-difluorobenzene, *J. Chem. Phys.* **73**, No. 12, 6343–6344 (1980) (Eng) (*P. A.* **84**: 33580).
357. Hamanoue, K., Hirayama, S., Nakayama, T., and Teranishi, H., Nonradiative relaxation process of the higher excited states of meso-substituted anthracenes, *J. Phys. Chem.* **84**, No. 16, 2074–2078 (1980) (Eng).
358. Hess, P., Kung, A. H., and Moore, C. B., Vibration-vibration energy transfer in methane, *J. Chem. Phys.* **72**, No. 10, 5525–5531 (1980) (Eng).
359. Hirata, Y. and Lim, E. C., Intramolecular vibrational energy redistribution as revealed by excitation energy dependence of nonradiative decay rate: $T_1 \rightarrow S_0$ intersystem crossing in acetophenone and 1-indanone, *Chem. Phys. Lett.* **71**, No. 1, 167–170 (1980) (Eng) (*P. A.* **83**: 63609).
360. Hirata, Y. and Lim, E. C., Nonradiative electronic relaxation of gas phase aromatic carbonyl compounds: Benzaldehyde, *J. Chem. Phys.* **72**, No. 10, 5505–5510 (1980) (Eng) (*P. A.* **83**: 83413).
361. Hopkins, J. B., Powers, D. E., and Smalley, R. E., Vibrational relaxation in jet-cooled alkyl benzenes. 3. Nanosecond time evolution, *J. Chem. Phys.* **73**, No. 2, 683–687 (1980) (Eng) (*P. A.* **83**: 95584).
362. Inoue, N., A study on vibrational relaxation of liquid halogenated benzenes by Brillouin scattering, *J. Phys. D: Appl. Phys.* **13**, No. 9, 1699–1707 (1980) (Eng).
363. Itoh, T. and Baba, H., Radiative and nonradiative processes in naphthoquinone vapors at low pressure, *Chem. Phys.* **51**, No. 1, 2 179–187 (1980) (Eng) (*P. A.* **84**: 6304).
364. Kano, K., Kawazumi, H., Ogawa, T., and Sunamoto, J., Fluorescence quenching of pyrene and pyrenedecanoic acid by various kinds of N,N-dialkylanilines in dipalmitoylphosphatidylcholine liposomes, *Chem. Phys. Lett.* **74**, No. 3, 511–514 (1980) (Eng).
365. Kay, K. G., Numerical study of intramolecular vibrational energy transfer: Quantal, classical, and statistical behavior, *J. Chem. Phys.* **72**, No. 11, 5955–5975 (1980) (Eng).
366. Ketsle, G. A., Levshin, L. V., and Soinikov, Yu. A., Study of singlet-triplet energy transport between dye molecules and aromatic hydrocarbones, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 789–793 (1980) (Russ).
367. Kopylova, T. N. and Samsonova, L. S., Investigation of the intra and intermolecular heavy atom effect on the S-T transition of the substituted benzenes. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 361 (1977) (Eng).
368. Korshunov, L. I., Shatrov, V. D., Kuznetsov, V. S., Rachek, V. F., Mikhailov, Yu. A., Batekha, I. G., and El'tsov, A. V., Correlation between the rate constants of S-T and T-S intercombination transitions in aza- and diazaphenanthrenes, *Zh. Prikl. Spektrosk.* **33**, No. 4, 700–705 (1980) (Russ).
369. Koyava, V. T., Popechits, V. I., and Sarzhevskii, A. M., Kinetics of fluorescence decay in solid solutions in the presence of resonant energy transfer, *Zh. Prikl. Spektrosk.* **32**, No. 2, 283–289 (1980) (Russ) (*P. A.* **84**: 46014).
370. Laubereau, A., Ultrafast vibrational relaxation processes of polyatomic molecules, investigated by picosecond light pulses. In: *Relaxation of Elementary Excitations*. Proceedings of the Taniguchi International Symposium, Susono-shi, Japan, 12–16

- Oct. 1979. Berlin, Germany: Springer-Verlag, 101–117 (1980) (Eng) (*P. A.* **84**: 33768).
371. Lin, S. H., Theory of vibrational relaxation in isolated molecules, *Chem. Phys. Lett.* **70**, No. 3, 492–498 (1980) (Eng) (*P. A.* **83**: 58237).
372. Logan, L. M., Buduls, I., Knight, A. E. W., and Ross, I. G., Vibrational relaxation cross sections and rates of equilibration in electronically excited benzene (2537 Å excitation), *J. Chem. Phys.* **72**, No. 10, 5667–5672 (1980) (Eng).
373. Maier, G. V. and Plotnikov, V. G., On the dependence of fluorescence quantum yield on excitation energy in isolated polyatomic molecules, *Opt. and Spektrosk.* **48**, No. 3, 613–616 (1980) (Russ).
374. Makshantsev, B. I., Asymptotically exactly solvable problem of radiationless electronic transitions, *Chem. Phys.* **53**, No. 1,2, 157–164 (1980) (Eng).
375. Makshantsev, B. I. and Fleurov, V. N., Radiationless transitions in systems with quasi-discrete spectrum, *Chem. Phys.* **50**, No. 1, 71–77 (1980) (Eng) (*P. A.* **83**: 95665).
376. Makshantsev, B. I., Rate of radiationless electronic transitions for molecules in the condensed phase, *Chem. Phys.* **49**, No. 3, 397–415 (1980) (Eng) (*P. A.* **83**: 93373).
377. Mayer, G., Intramolecular vibrational redistribution in isolated large molecules. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 357 (1977) (Eng).
378. Michel, C. and Tric, C., Singlet-triplet radiationless processes in glyoxal in the presence of a magnetic field, *Chem. Phys.* **50**, No. 3, 341–352 (1980) (Eng).
379. Minaev, B. F., Intensities of spin-forbidden transitions in molecular oxygen and selective heavy-atom effects, *Int. J. Quantum Chem.* **17**, No. 2, 367–374 (1980) (Eng) (*P. A.* **83**: 58240).
380. Nemkovich, N. A., Matseiko, V. I., and Tomin, V. I., Intermolecular orientational “upwards” relaxation in solutions phthalimide derivatives under the excitation by a frequency-tuned laser on dye, *Opt and Spektrosk.* **49**, No. 2, 274–282 (1980) (Russ).
381. Nikitin, E. E. and Ovchinnikova, M. Ya., Role of anharmonic dynamics in the vibrational relaxation of impurity molecules in solids, *Zh. Eksp. and Teor. Fiz.* **78**, No. 4, 1551–1567 (1980) (Russ) (*P. A.* **83**: 75323).
382. Novak, F. A. and Rice, S. A., The influence of rotational motion on intersystem crossing in isolated molecules, *J. Chem. Phys.* **73**, No. 2, 858–864 (1980) (Eng).
383. Oxtoby, D. W., Dephasing of molecular vibrations in liquids. In: *Advances in Chemical Physics*. Vol. 40. Ed. by Prigogine I., Rice S. A. New York, Chichester, Brisbane, Toronto, John Wiley and Sons, 1–48 (1979) (Eng).
384. Platonenko, V. T. and Sukhareva, N. A., On vibrational energy exchange between strongly excited polyatomic molecules, *Zh. Eksp. and Teor. Fiz.* **78**, No. 6, 2126–2137 (1980) (Russ) (*P. A.* **83**: 91539).
385. Pogorelov, V. E., Lizengevich, A. I., Kondilenko, I. I., and Buyan, G. P., Vibrational relaxation in condensed media, *Usp. Fiz. Nauk* **127**, No. 4, 683–704 (1979) (Russ) (*P. A.* **83**: 80797).
386. Rettschnick, R. P. H., Ten Brink, H. M., and Langelaar, J., Application of single vibronic level spectroscopy to the study of relaxation processes in gases. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 358 (1977) (Eng).
387. Rossetti, R. and Brus, L. E., Time resolved molecular electronic energy transfer into a silver surface, *J. Chem. Phys.* **73**, No. 1, 572–577 (1980) (Eng) (*P. A.* **83**: 92957).
388. Russegger, P., Morris, J. V., and Huber, J. R., Temperature dependence of radiationless processes. Dihydrophenazine derivatives in solution, *Chem. Phys.* **46**, No. 1,2, 1–10 (1980) (Eng).
389. Sadkowski, P. J. and Fleming, G. R., The influence of solvent-solute interaction on radiationless processes: excited state dynamics of 1,8-anilino-naphthalene sulphonate and related molecules, *Chem. Phys.* **54**, No. 1, 79–89 (1980) (Eng) (*P. A.* **84**: 29020).
390. Saigusa, H., Azumi, T., Sumitani, M., and Yoshihara, K., Internal heavy atom effect on the triplet spin sublevels of the lowest triplet state of naphthalene. 2.

- Intersystem crossing processes from the singlet excited state to the individual spin sublevels of the lowest triplet state, *J. Chem. Phys.* **72**, No. 3, 1713–1715 (1980) (Eng) (*P. A.* **83**: 53035).
391. Sato, H., Kusumoto, Y., Nakashima, N., and Yoshihara, K., Picosecond study of energy transfer between rhodamine 6G and 3,3'-diethylthiacarbocyanine iodide in the premicellar region: Förster mechanism with increased local concentration, *Chem. Phys. Lett.* **71**, No. 2, 326–329 (1980) (Eng).
392. Shapiro, S. L. and Winn, K. R., Picosecond kinetics of acridine in solution, *J. Chem. Phys.* **73**, No. 12, 5958–5962 (1980) (Eng) (*P. A.* **84**: 33493).
393. Siebrand, W. and Zgierski, M. Z., Non-Condon effects on radiationless triplet decay in benzene and naphthalene, *Chem. Phys. Lett.* **72**, No. 3, 411–415 (1980) (Eng) (*P. A.* **83**: 83405).
394. Siebrand, W. and Zgierski, M. Z., Non-Condon effects on radiative lifetimes of induced electronic transitions, *Chem. Phys. Lett.* **70**, No. 2, 224–227 (1980) (Eng) (*P. A.* **83**: 53051).
395. Siebrand, W. and Zgierski, M. Z., Radiationless decay of vibronically coupled electronic states. 2. Non-Condon effects of nontotally symmetric accepting modes, *J. Chem. Phys.* **72**, No. 3, 1641–1646 (1980) (Eng) (*P. A.* **83**: 52966).
396. Stone, J., Thiele, E., and Goodman, M. F., Restricted quantum exchange theory for intramolecular vibrational relaxation in polyatomic molecules, *Chem. Phys. Lett.* **71**, No. 1, 171–176 (1980) (Eng) (*P. A.* **83**: 63610).
397. Struve, W. S., Influence of solvents in the relaxation mechanism of large organic molecules studied by picosecond spectroscopy. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 530 (1977) (Eng).
398. Tanabe, K. and Hiraishi, J., Raman study of vibrational and reorientational relaxation of chloroform in solution, *Adv. Mol. Relaxation and Interaction Processes* **16**, No. 4, 281–297 (1980) (Eng) (*P. A.* **83**: 63636).
399. Thirunamachandran, T., Intermolecular interactions in the presence of an intense radiation field, *Mol. Phys.* **40**, No. 2, 393–399 (1980) (Eng) (*P. A.* **83**: 78679).
400. Tobita, S. and Shizuka, H., On the mechanism of proton-induced fluorescence quenching of aromatic compounds, *Chem. Phys. Lett.* **75**, No. 1, 140–144 (1980) (Eng) (*P. A.* **84**: 6300).
401. Van Der Waals, J. H., Quantum beats on intersystem crossing, *J. Mol. Struct.* **59**, 259–264 (1980) (Eng) (*P. A.* **83**: 53037).
402. Velsko, S. and Oxtoby, D. W., Vibrational relaxation in the weak coupling limit: The role of molecular symmetry, *J. Chem. Phys.* **72**, No. 9, 4853–4857 (1980) (Eng) (*P. A.* **83**: 83337).
403. Vicharelli, P. A. and McDonald, F. A., Generalized classical theory of intramolecular coordinate relaxation in polyatomic molecules, *J. Chem. Phys.* **72**, No. 8, 4627–4636 (1980) (Eng) (*P. A.* **83**: 78589).
404. Voropai, E. S., Koyava, V. T., Saechnikov, V. A., and Sarzhevskii, A. M., Some aspects of heterogeneous broadening of the levels of anthracene derivatives under the conditions of electronic excitation energy transfer, *Zh. Prikl. Spektrosk.* **32**, No. 3, 457–463 (1980) (Russ).
405. Wassam, W. A., Jr. and Lim, E. C., "Proximity effects": the effect of methylation and vibrational excitation on bi-exponential decay in pyrimidine, *Chem. Phys.* **48**, No. 3, 299–305 (1980) (Eng) (*P. A.* **83**: 78641).
406. Watkins, A. R., Quenching of aromatic hydrocarbon triplet states by stable carbon free radicals, *Chem. Phys. Lett.* **75**, No. 2, 230–233 (1980) (Eng).
407. Wolters, F. C., Rabinovich, B. S., and Ko, A.-N., Initial state selection and intramolecular vibrational relaxation in reacting polyatomic molecules. Competitive channels with bicyclobutyl precursor, *Chem. Phys.* **49**, No. 1, 65–75 (1980) (Eng) (*P. A.* **83**: 83336).

408. Yajima, Y. and Lim, E. C., Spin sublevel-selective and position-dependent isotope effects in $T_1(\pi\pi^*) \rightarrow S_0$ intersystem crossing of polycyclic para-diazines, *Chem. Phys. Lett.* **73**, No. 2, 249–255 (1980) (Eng).
409. Zen'kevich, E. I., Sagun, E. I., Losev, A. P., and Gurinovich, G. P., Account of concentration effects when measuring quantum yields of intercombination conversion, *Zh. Prikl. Spektrosk.* **32**, No. 6, 1047–1055 (1980) (Russ) (*P. A.* **84**: 68236).
410. Zen'kevich, E. I., Sagun, E. I., Losev, A. P., and Gurinovich, G. P., Concentration quenching of lowest excited states of pigments and dyes, *Opt. and Spektrosk.* **49**, No. 5, 896–902 (1980) (Russ) (*P. A.* **84**: 81035).

3.9 Laser excitation, stimulated emission and light generation

411. Apanasevich, P. A., Zaporozhchenko, V. A., and Kachinskii, A. V., Application of generation in dye solutions on distributed back coupling for measurement of super-shot impulse duration, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 10, 2086–2088 (1980) (Russ).
412. Aristov, A. V. and Maslyukov, Yu. S., Effect of absorption of excited organo-luminophor molecules on quantum yield of induced radiation, *Opt. and Spektrosk.* **48**, No. 4, 815–818 (1980) (Russ) (*P. A.* **84**: 33496).
413. Aristov, A. V., Levin, M. B., and Cherkasov, A. S., Effect of reabsorption on the power of stimulated emission of rhodamine-6G solutions, *Opt. and Spektrosk.* **48**, No. 5, 958–962 (1980) (Russ) (*P. A.* **84**: 29273).
414. Aristov, A. V. and Shevandin, V. S., On the reasons of the resemblance of ultraviolet absorption spectra from ground and fluorescent states of rhodamine molecules, *Opt. and Spektrosk.* **48**, No. 3, 484–489 (1980) (Russ) (*P. A.* **84**: 1272).
415. Asmuth, G. G., Innes, K. K., and Job, V. A., Dimethyl-s-tetrazine vapor: visible absorption, laser-excited fluorescence, and photophysics, *J. Mol. Spectrosc.* **83**, No. 2, 266–278 (1980) (Eng) (*P. A.* **84**: 24118).
416. Bazyl, O. K., Gruzinsky, V. V., Danilova, V. I., Kopylova, T. N., and Maier, G. V., Study on the dependence of spectral-luminescent and generation properties of some aromatic derivatives of benzoxazol on their electron structure, *Opt. and Spektrosk.* **48**, No. 2, 262–267 (1980) (Russ) (*P. A.* **83**: 99519).
417. Blazhin, V. D., Mechanism of concentrational red shift of dye luminescence spectra, *Zh. Prikl. Spektrosk.* **30**, No. 4, 667–671 (1979) (Russ) (*P. A.* **83**: 83426).
418. Butenin, A. V. and Kogan, G. Ya., Quenching of fluorescence of alcohol solutions of rhodamine 6G by molecular oxygen, *Opt. and Spektrosk.* **49**, No. 2, 410–411 (1980) (Russ) (*P. A.* **84**: 59576).
419. Cherek, H., Numerical calculations of emission probabilities of primarily excited molecules in dye solutions, *J. Lumin.* **22**, No. 1, 103–108 (1980) (Eng) (*P. A.* **84**: 68232).
420. Danilova, V. I., Kopylova, T. N., Maier, G. V., Masarnovskii, L. V., Soldatov, A. N., and Sukhanov, V. B., Generation of colours by the radiation of lasers on Cu vapor, *Izv. VUZ Fiz.* No. 10, 44–48 (1980) (Russ).
421. Dzyubenko, M. I., Maslov, V. V., Naumenko, I. G., and Pelipenko, V. P., Effective generation in the green region on solutions of dyes of the new class, *Opt. and Spektrosk.* **49**, No. 4, 764–767 (1980) (Russ).
422. Fabian, W., Investigation on calculation of fluorescence spectra of organic dyes, *J. Mol. Struct.* **69**, 227–231 (1980) (Eng) (*P. A.* **84**: 24186).
423. Gandelman, I. L., Tikhonov, E. A., and Shpak, M. T., Effects of nonuniform excitation on output parameters of dye lasers with directional pumping, *Ukr. Fiz. Zh.* **25**, No. 9, 1497–1501 (1980) (Russ).

424. Gorobchenko, V. S., Naboikin, Yu. V., and Ogurtsova, L. A., On possibility to observe superradiation in vibrational transitions of composite organic molecules, *Ukr. Fiz. Zh.* **25**, No. 10, 1736–1738 (1980) (Russ).
425. Govindanunny, T. and Sivaram, B. M., Solvent effects on the gain of rhodamine 6G, *Appl. Phys.* **23**, 253–258 (1980) (Eng) (*P.A.* **84**: 19328).
426. Grabowska, E., Tyrzyk, J., and Bojarski, C., The influence of association of rhodamine 6G molecules in solutions on the concentration dependence of the fluorescence decay time, *Acta Phys. Pol.* **A57**, No. 5, 753–764 (1980) (Eng) (*P.A.* **83**: 80832).
427. Gruzinsky, V. V., Danilova, V. I., Degtyarenko, K. M., and Kopylova, T. N., Lasing in 2-phenylbenzoxazole vapors, *Zh. Prikl. Spektrosk.* **33**, No. 4, 745–747 (1980) (Russ).
428. Gruzinsky, V. V., Danilova, V. I., Kopylova, T. N., and Maier, G. V., On the short-wave fluorescence boundary and radiation generation of benzoxazoles, *Zh. Prikl. Spektrosk.* **33**, No. 5, 931–933 (1980) (Russ).
429. Gruzinsky, V. V., Danilova, V. I., Kopylova, T. N., Petrovich, P. I., and Shishkina, E. Yu., Stimulated emission of radiation in the UV spectral region from benzoxazoles, *Kvantovaya Elektronika* **7**, No. 6, 1180–1185 (1980) (Russ).
430. Hammond, P. R., Comparison of experimental and theoretical excited-state spectra for rhodamine 6G, *IEEE J. Quantum Electron.* **QE-16**, No. 11, 1157–1160 (1980) (Eng) (*P.A.* **84**: 19329).
431. Kabanov, V. B. and Rubanov, A. S., A spectral relation of the refraction index in the absorption and amplification band range of organic dyes, *Dokl. Akad. Nauk BSSR* **24**, No. 1, 34–37 (1980) (Russ).
432. Klemm, D., Klemm, E., Graness, A., and Kleinschmidt, J., Investigations of photochromism of 4-(2',4'-dinitrobenzyl)-pyridine by nanosecond laser absorption spectroscopy, *Chem. Phys. Lett.* **71**, No. 3, 482–484 (1980) (Eng).
433. Kopylova, T. N., Danilova, V. I., Degtyarenko, K. M., Ogryzkova, N. N., Loboda, L. I., and Samsonova, L. G., Generation properties of many-component dye-mixtures at the laser excitation, *Izv. VUZ Fiz.* No. 10, 109–112 (1980) (Russ).
434. Kopylova, T. N., Danilova, V. I., Zhigalova, E. B., and Privalova, N. Yu., Induced radiation of rhodamines in water solutions at the excitation by lasers on Cu vapours, *Izv. VUZ Fiz.* No. 10, 112–114 (1980) (Russ).
435. Korolkova, N. V., Denisov, L. K., Uzhinov, B. M., and Traskin, V. Yu., Enhancement of lasing efficiency of rhodamine 6G water solutions, *Zh. Prikl. Spektrosk.* **33**, No. 2, 286–289 (1980) (Russ).
436. Krasovitsky, B. M., Lysova, I. V., Afanasiadi, L. Sh., Stryukov, M. B., Knyazhansky, M. I., and Vinetskaya, Yu. M., Spectral-luminescent properties of compounds containing simultaneously 2,5-diazyloxazole and oxazole-5-one groups, *Zh. Prikl. Spektrosk.* **33**, No. 3, 434–438 (1980) (Russ).
437. Kruglenko, V. P., Logunov, O. A., Startsev, A. V., Stoilov, Yu. Yu., and Povstyanoy, M. V., Imitrines. I. Novel class of visual-range laser dyes, *Kvantovaya Elektronika* **7**, No. 10, 2136–2138 (1980) (Russ).
438. Kuznetsov, V. A., Kostylev, K. A., and Shamraev, V. N., The spectrum of the induced absorption of the rhodamine 6G water solutions in the UV region, *Zh. Prikl. Spektrosk.* **32**, No. 3, 493–498 (1980) (Russ).
439. Kuznetsova, R. T., Fofonova, R. M., and Danilova, V. I., Fluorescence of different forms of xanthene dyes, *Zh. Prikl. Spektrosk.* **33**, No. 5, 842–846 (1980) (Russ).
440. Levshin, L. V., Saletskii, A. M., and Yuzhakov, V. I., Study of the electronic excitation migration in alcoholic solutions of rhodamine dyes, *Zh. Prikl. Spektrosk.* **32**, No. 1, 41–48 (1980) (Russ) (*P.A.* **84**: 43161).
441. Logunov, O. A., Startsev, A. V., and Stoilov, Yu. Yu., Imitrines. 2. Lasers utilizing solutions of imitrine-1 and imitrine-3 compounds emitting in the range of 475–575 nm, *Kvantovaya Elektronika* **7**, No. 10, 2139–2144 (1980) (Russ).
442. Mesaros, V. and Poliacik, I., Generation of stimulated emission on a dye, *Acta Fac. Rerum Natur. Univ. Comen. Phys.* **21**, 69–78 (1980) (Russ).

443. Mostovnikov, V. A., Ginevich, G. R., and Shalimo, A. L., The oxygen effect on the photodestruction of rhodamine dye ethanol solutions, *Dokl. Akad. Nauk BSSR* **24**, No. 7, 596–599 (1980) (Russ).
444. Nemet, B., Szucs, K., Hilbert, M., and Kozma, L., Measurement of fluorescence decay of rhodamine 6G solutions by TEA UV N₂ laser excitation, *Acta Phys. and Chem.* **25**, No. 3–4, 103–108 (1979) (Eng) (P. A. **84**: 6294).
445. Nemkovich, N. A., Rubinov, A. N., and Tomin, V. I., Directional energy transport in solid one-component dye solutions, *Pis'ma v Zh. Tekh. Fiz.* **6**, No. 5, 270–273 (1980) (Russ) (P. A. **84**: 35095).
446. Nizamov, N. and Atakhodzhaev, A. K., Spectroscopic study of different forms of dye molecules and other related organic compounds, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 674–680 (1980) (Russ).
447. Nizamov, N. and Zakhidov, U., Spectroscopic study of intermolecular interactions in cyanin dye solutions, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 833–837 (1980) (Russ).
448. Pandya, M. L. and Machwe, M. K., Study of association of molecules of rhodamine 6G by fluorescence polarization, *Proc. Indian Natl. Sci. Acad. Part A* **46**, No. 2, 158–166 (1980) (Eng) (P. A. **84**: 29027).
449. Pellat, M. G., Roe, I. H. C., and Constant, J., Photostable anthraquinone pleochroic dyes, *Mol. Cryst. and Liquid Cryst.* **59**, No. 3–4, 299–316 (1980) (Eng).
450. Perchi, Z. I. and Tarnai, A. A., Automatic control and indication of radiation wave length of tunable organic dye laser, *Zh. Prikl. Spektrosk.* **32**, No. 6, 998–1001 (1980) (Russ).
451. Prishchepov, A. S., Nizhnikov, V. V., and Gurinovich, G. P., Spectral properties and birefringence of pheophytin solutions, *Zh. Prikl. Spektrosk.* **33**, No. 4, 693–699 (1980) (Russ).
452. Reva, M. G., Levshin, L. V., and Ryzhikov, B. D., The effect of relative position of dye molecules on their absorption spectra, *Zh. Prikl. Spektrosk.* **33**, No. 4, 668–674 (1980) (Russ).
453. Reva, M. G., Levshin, L. V., and Ryzhikov, B. D., The nature of electron absorption spectra deformations during association of heterogeneous dye molecules, *Zh. Prikl. Spektrosk.* **33**, No. 5, 899–903 (1980) (Russ).
454. Rubinov, A. N., Bushuk, B. A., Stupak, A. P., and Shubert, D., Rotational relaxation of rhodamine 4C in solutions in ground and excited states, *Zh. Prikl. Spektrosk.* **31**, No. 2, 246–249 (1979) (Russ) (P. A. **84**: 3464).
455. Ryzhikov, B. D., Levshin, L. V., Reva, M. G., and Stal'makhovich, S. I., The causes of a decrease in the luminescence yield of rhodamine 6G solutions during its molecules dimerization, *Zh. Prikl. Spektrosk.* **33**, No. 6, 1045–1048 (1980) (Russ).
456. Sah, R. E., Baur, G., and Kelker, H., Influence of the solvent matrix on the overlapping of the absorption and emission bands of solute fluorescent dyes, *Appl. Phys.* **23**, No. 4, 369–372 (1980) (Eng) (P. A. **84**: 26252).
457. Saletskii, A. M., Levshin, L. V., and Yuzhakov, V. I., Peculiarities of the transfer of energy of electronic excitation in multicomponent solutions of dyes, *Zh. Prikl. Spektrosk.* **33**, No. 1, 100–106 (1980) (Russ) (P. A. **84**: 103774).
458. Sato, H., Kusumoto, Y., Nakashima, N., and Yoshihara, K., Picosecond study of energy transfer between rhodamine 6G and 3,3'-diethylthiacarbocyanine iodide in the premicellar region: Förster mechanism with increased local concentration, *Chem. Phys. Lett.* **71**, No. 2, 326–329 (1980) (Eng).
459. Shapiro, S. L. and Winn, K. R., Picosecond time-resolved spectral shifts in emission: dynamics of excited state interactions in coumarin 102, *Chem. Phys. Lett.* **71**, No. 3, 440–444 (1980) (Eng) (P. A. **83**: 78624).
460. Shevandin, V. S. and Aristov, A. V., Effective quenching of luminescence of rhodamines by the radiation with λ -353 nm, *Opt. and Spektrosk.* **48**, No. 1, 62–64 (1980) (Russ).

461. Sivokhin, V. S., Efimov, A. A., and Gorbunov, B. N., Spectroluminescent properties of light stabilizers made up of benzophenone derivatives, *Zh. Prikl. Spektrosk.* **32**, No. 2, 290–293 (1980) (Russ).
462. Smirnov, V. S., Methods of diminution of divergency of emission of lasers on rhodamine 6G solutions with lamp excitation, *Opt. and Spektrosk.* **49**, No. 5, 962–967 (1980) (Russ).
463. Smirnov, V. S., On the divergence of radiation of lasers on rhodamine 6G solutions with lamp excitation, *Opt. and Spektrosk.* **48**, No. 6, 1156–1163 (1980) (Russ).
464. Snegov, M. I., Veselova, T. V., Viktorova, E. N., and Cherkasov, A. S., Concentration quenching peculiarities of rhodamine fluorescence in water-micellar solutions, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 884–890 (1980) (Russ).
465. Snegov, M. I. and Cherkasov, A. S., Effect of the concentration of the components of aqueous-micellar solutions of rhodamine 6G on their spectral luminescent properties, *Opt. and Spektrosk.* **49**, No. 1, 67–71 (1980) (Russ) (P. A. **84**: 43167).
466. Stankov, K. A., A single-frequency tunable CW dye laser, *Bulg. J. Phys.* **7**, No. 3, 323–326 (1980) (Eng).
467. Tanaka, J., Tanaka, M., and Kanamaru, N., The origin of the J band [in dye aggregates]. In: *Relaxation of Elementary Excitations*. Proceedings of the Taniguchi International Symposium, Susono-shi, Japan, 12–16 Oct. 1979. Berlin, Germany: Springer-Verlag, 181–194 (1980) (Eng) (P. A. **84**: 35073).
468. Tomioka, K. and Matsui, A., 9,10-dichloroanthracene as a dye laser material, *Japan. J. Appl. Phys.* **19**, No. 5, 1015–1016 (1980) (Eng).
469. Tredwell, C. J. and Osborne, A. D., Viscosity dependent internal conversion in the rhodamine dye, fast acid violet 2R, *J. Chem. Soc. Faraday Trans. II* **76**, No. 12, 1627–1637 (1980) (Eng) (P. A. **84**: 59684).
470. Zakhidov, U., Nizamov, N., and Atakhodzhaev, A. E., Spectroscopic study of different forms of dye molecules belonging to fluorescein series, *Izv. Akad. Nauk UzSSR. Ser. Fiz.-Mat. Nauk* No. 6, 46–49 (1980) (Russ).
471. Zhestkova, T. P., Ryabchikova, G. G., and Pikaev, A. K., Flash photolysis of ethanol solutions of 4-methyl-7-hydroxycoumarin, *Zh. Prikl. Spektrosk.* **33**, No. 5, 934–937 (1980) (Russ).
472. Zietek, B., Dzwonkowski, M., and Nemet, B., Time evolution of transparency of dye laser solutions after intense nitrogen laser irradiation, *Acta Phys. Et Chem.* **26**, No. 1–2, 11–16 (1980) (Eng) (P. A. **84**: 85466).

3.10. Spectroscopy of photochemical reactions

473. Aloisi, G. G., Bartocci, G., Favaro, G., and Mazzucato, U., Role of charge-transfer interactions in photoreactions. 2. Exciplexes between stilbene-like molecules and amines, *J. Phys. Chem.* **84**, No. 16, 2020–2024 (1980) (Eng).
474. Aristov, A. V. and Shevandin, V. S., Spectroscopic evidence of reversible and irreversible transformations of rhodamine 6G molecules at double-stage excitation, *Opt. and Spektrosk.* **48**, No. 6, 1168–1172 (1980) (Russ) (P. A. **84**: 41421).
475. Baughman, R. H. and Chance, R. R., Theory of single-phase solid-state polymerization reactions, *J. Chem. Phys.* **73**, No. 8, 4113–4125 (1980) (Eng).
476. Benderskii, V. A., Goldanskii, V. I., and Ovchinnikov, A. A., Effect of molecular motion on low-temperature and other anomalously fast chemical reactions in the solid phase, *Chem. Phys. Lett.* **73**, No. 3, 492–495 (1980) (Eng).
477. Bjorklund, G. C., Burland, D. M., and Alvarez, D. C., A holographic technique for investigating photochemical reactions, *J. Chem. Phys.* **73**, No. 9, 4321–4328 (1980) (Eng).
478. Bubeck, C., Sixl, H., and Neumann, W., ESR analysis of the initial reactions products in the solid state photopolymerization of diacetylenes, *Chem. Phys.* **48**, No. 2, 269–275 (1980) (Eng) (P. A. **83**: 81338).

479. Bubeck, C., Hersel, W., Neumann, W., Sixl, H., and Waldmann, J., The thermal intermediates of the low temperature photoinduced polymerization reaction in diacetylene crystals, *Chem. Phys.* **51**, No. 1, 2, 1–8 (1980) (Eng).
480. Chirvonyi, V. S., Dzhagarov, B. M., Timinskii, Yu. V., and Gurinovich, G. P., Pico-second flash-photolysis of Ni(II)- and Ag(II)-porphyrins, *Chem. Phys. Lett.* **70**, No. 1, 79–83 (1980) (Eng) (*P. A.* **83**: 52976).
481. Craig, D. P. and Markey, B. R., Stereochemical constraints and lattice relaxation in crystal photochemistry, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1, 2, 77–94 (1980) (Eng).
482. Doany, F. E., Greene, B. I., and Hochstrasser, R. M., Excitation energy effects in the photophysics of trans-stilbene in solution, *Chem. Phys. Lett.* **75**, No. 2, 206–208 (1980) (Eng).
483. Dunand, A., Ferguson, J., Puza, M., and Robertson, G. B., Conformational effects in the absorption spectra and photochemistry of [2.n] (9,10) anthracenophanes ($n = 2, 3$), *Chem. Phys.* **53**, No. 1, 2, 225–234 (1980) (Eng).
484. Dunand, A., Ferguson, J., and Robertson, G. B., Solid state photochemistry and photophysics of 1,3-di (9-anthryl) propane in its photoisomer single crystal, *Chem. Phys.* **53**, No. 1, 2, 215–223 (1980) (Eng).
485. Fuke, K., Sakamoto, S., Ueda, M., and Itoh, M., Two-photon absorption spectrum of trans-stilbene. Trans-cis photoisomerization via upper A_g state, *Chem. Phys. Lett.* **74**, No. 3, 546–548 (1980) (Eng).
486. Furrer, R., Fujara, F., and Petersen, J., Photoreaction in aromatic crystals: EPR studies of anthracene doped fluorene, *J. Chem. Phys.* **73**, No. 7, 3139–3144 (1980) (Eng).
487. Gennari, G., Cauzzo, G., Galiazzo, G., and Folin, M., Geometrical photoisomerization of β -styrylnaphthalene in the presence of electron acceptors, *J. Photochem.* **14**, No. 1, 11–17 (1980) (Eng).
488. Glowina, J. H., and Riley, S. J., Dynamics of three-body half collisions. Ultraviolet and visible photodissociation of s-tetrazine, *Chem. Phys. Lett.* **71**, No. 3, 429–435 (1980) (Eng).
489. Görner, H., Gruen, H., and Schulte-Frohlinde, D., Laser flash photolysis study of substituted azobenzenes. Evidence for a triplet state in viscous media, *J. Phys. Chem.* **84**, No. 23, 3031–3039 (1980) (Eng).
490. Kawakubo, T., Optical and EPR studies of radiation-induced radicals in phenanthrene single crystals, *Mol. Cryst. and Liquid Cryst.* **62**, No. 1–2, 41–58 (1980) (Eng).
491. Kim, M. S. and Dunbar, R. C., Naphthalene ion photodissociation: Two- and four-photon processes, *J. Chem. Phys.* **72**, No. 8, 4405–4411 (1980) (Eng) (*P. A.* **83**: 74210).
492. Lebedeva, E. P., Matyushin, G. A., Mezentseva, G. A., Tavrizova, M. A., and Fain, V. Ya., Mean quantum yields for photolysis of benzophenones in solution when illuminated with a flash lamp, *Zh. Prikl. Spektrosk.* **31**, No. 1, 104–108 (1979) (Russ) (*P. A.* **84**: 4109).
493. Miller, J. H., Andrews, L., Lund, P. A., and Schatz, P. N., Argon matrix photolysis and photoionization studies of benzene. Absorption spectrum of benzene cation and benzene dimer cation, *J. Chem. Phys.* **73**, No. 10, 4932–4939 (1980) (Eng).
494. Nakashima, N., Inoue, H., Sumitani, M., and Yoshihara, K., Laser flash photolysis of benzene. 2. Laser-induced cluster formation in gas phase, *J. Chem. Phys.* **73**, No. 9, 4693–4694 (1980) (Eng).
495. Nakashima, N., Sumitani, M., Ohmine, I., and Yoshihara, K., Nanosecond laser photolysis of the benzene monomer and excimer, *J. Chem. Phys.* **72**, No. 4, 2226–2230 (1980) (Eng).
496. Nakayama, T. and Sheng, S. J., Identification of the phenylcyclohexadienyl radical in the irradiated benzene crystal, *Mol. Cryst. and Liquid Cryst.* **59**, No. 3–4, 175–180 (1980) (Eng).
497. Nishida, Y., Kikuchi, K., and Kokubun, H., Photolytic reactions of acridine in the triplet state, *J. Photochem.* **13**, No. 1, 75–81 (1980) (Eng).

498. Novak, A., Photophysical and photochemical properties of 2-styrylbenzoxazole derivatives. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 173 (1980) (Russ).
499. Okada, T., Tashita, N., and Mataga, N., Direct observation of intermediate heteroexcimer in the photoinduced hydrogen-atom transfer reaction by picosecond laser spectroscopy, *Chem. Phys. Lett.* **75**, No. 2, 220–223 (1980) (Eng).
500. Paczkowski, M., Pierce, R., Smith, A. B. III, and Hochstrasser, R. M., Consecutive processes in the photolysis of dimethyl-s-tetrazine molecules in the vapor phase, *Chem. Phys. Lett.* **72**, No. 1, 5–9 (1980) (Eng) (P.A. **83**: 81352).
501. Sazhnikov, V. A., Rakhmatov, M., and Alfimov, M. V., Photoinduced isomerization of anion radicals of stilbene at 77 K, *Chem. Phys. Lett.* **71**, No. 1, 33–37 (1980) (Eng) (P.A. **83**: 66818).
502. Schulman, S. G., Vogt, B. S., and Lovell, M. W., Kinetics and equilibria of proton-transfer reactions of weak bases in the lowest excited singlet state, *Chem. Phys. Lett.* **75**, No. 2, 224–229 (1980) (Eng).
503. Shapovalov, V. L., Demyashkevich, A. B., and Kuzmin, M. G., Static and dynamic mechanisms of the proton transfer reaction in the system 1-azaphenanthrene-acetic acid in aliphatic alcohols, *Zh. Prikl. Spektrosk.* **33**, No. 6, 1111–1116 (1980) (Russ).
504. Sheck, Yu. B., Kovalenko, N. P., and Alfimov, M. V., Effects on conformational isomerism in non-rigid aromatic molecules on their luminescent and photochemical properties. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 371 (1977) (Eng).
505. Siomos, K. and Christophorou, L. G., Laser two-photon ionization spectroscopy of molecules in liquids, *Chem. Phys. Lett.* **72**, No. 1, 43–48 (1980) (Eng) (P.A. **83**: 78668).
506. Tagawa, S. and Schnabel, W., Laser flash photolysis studies on excited singlet states of benzene, toluene, *p*-xylene, polystyrene, and poly- α -methylstyrene, *Chem. Phys. Lett.* **75**, No. 1, 120–122 (1980) (Eng) (P.A. **84**: 8583).
507. Umarov, K. U., Dzhumadinov, R. Kh., and Yunusova, M. O., Spectroscopic study of intermolecular interactions and photochemical reactions in acridin dye solutions, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 838–842 (1980) (Russ).
508. Waluk, J., Grabowska, A., and Pakuła, B., Proton addition to excited diazaphenanthrenes topology determined molecular properties, *J. Lumin.* **21**, No. 3, 277–291 (1980) (Eng).
509. Yamamoto, S.-a., Grellmann, K.-H., and Weller, A., Mechanism of the photodissociation of the 9-methylanthracene photodimer, *Chem. Phys. Lett.* **70**, No. 2, 241–245 (1980) (Eng).

4. ABSORPTION AND LUMINESCENCE SPECTRA OF INTERMOLECULAR COMPLEXES

4.1 Charge-transfer complexes

510. Aloisi, G. G., Bartocci, G., Favaro, G., and Mazzucato, U., Role of charge-transfer interactions in photoreactions. 2. Exciplexes between stilbene-like molecules and amines, *J. Phys. Chem.* **84**, No. 16, 2020–2024 (1980) (Eng).
511. Asano, M., Koningstein, J. A., and Nicollin, D., Raman probing of excited states of the tris (2,2'-bipyridine) Cr (III) complex having lifetimes in the micro- and picosecond regions, *J. Chem. Phys.* **73**, No. 2, 688–696 (1980) (Eng) (P.A. **83**: 97263).

512. Auch, W. and Von Schütz, J. U., Optical nuclear polarization in the 1:1 CT-crystal anthracene/tetracyanobenzene. Consequences of the phase transition at 206 K, *Phys. Status Solidi* (b) **101**, No. 1, 287–295 (1980) (Eng) (P. A. **84**: 7975).
513. Bandyopadhyay, A. K., Chatterjee, S., Subramanyam, S. V., and Bulka, B. R., Electrical resistivity study of some organic charge transfer complexes under pressure, *J. Phys. C: Solid State Phys.* **13**, No. 29, L803–L807 (1980) (Eng).
514. Bounds, P. J. and Siebrand, W., Charge-transfer excitons in anthracene crystals and their role in optical charge carrier generation, *Chem. Phys. Lett.* **75**, No. 3, 414–418 (1980) (Eng).
515. Brillante, A. and Philpott, M. R., Reflection and absorption spectra of singlet charge transfer excitons in anthracene-PMDA crystals, *J. Chem Phys.* **72**, No. 7, 4019–4030 (1980) (Eng) (P. A. **83**: 71442).
516. Dobkowska, M., Siegoczynski, R. M., and Szczepaniak, K., Solvent effects on charge-transfer absorption bands of acenaphthene: tetrachlorophthalic anhydride. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 194 (1977) (Eng).
517. Erdle, E. and Mohwald, H., Mini-excitons and lattice dynamics in mixed CT-crystals: an ESR, optical and Raman spectroscopical study, *Z. Naturforsch.* **35A**, No. 2, 236–243 (1980) (Eng) (P. A. **83**: 60406).
518. Grabowski, Z. R., Double fluorescence and the twisted internal charge transfer excited states. In: XIII European congress on molecular spectroscopy. Wrocław, Poland, September 12–16, 1977. *Abstracts*. Wrocław, 375 (1977) (Eng).
519. Kramarenko, N. L., Exciton band shift in spectra of weak donor-acceptor complexes with charge transfer, *Ukr. Fiz. Zh.* **25**, No. 10, 1654–1658 (1980) (Russ).
520. Kuznetsowa, R. T. and Fofonova, R. M., Spectroscopic study of the charge-transfer complexes of *p*-benzoquinone with organic bases. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 193 (1977) (Eng).
521. Maes, G., Vibrational spectra of charge transfer complexes of pyridines with halogens. 2. Far infrared spectra of some pyridine complexes with iodine and bromine. The vibronic contribution and the relation between the infrared and Raman intensity enhancement of the halogen vibration, *Adv. Mol. Relaxation and Interaction Processes* **16**, No. 3, 209–226 (1980) (Eng) (P. A. **83**: 53048).
522. Merlevede, C. F. and Maes, G., Vibrational spectra of charge transfer complexes of pyridines and halogens. 1. A laser Raman study of the iodine stretching vibration in complexes pyridine-iodine. Comparison with pyridine-bromine, *Adv. Mol. Relaxation and Interaction Processes* **16**, No. 2, 111–130 (1980) (Eng) (P. A. **83**: 52990).
523. Nakagaki, R., Frost, D. C., and McDowell, C. A., The intramolecular charge-transfer interaction in X-ray photoelectron spectroscopy: the charge-transfer satellites observed in *p*-nitroaniline and related compounds, *J. Electron Spectrosc. and Relat. Phenom.* **19**, No. 4, 855–870 (1980) (Eng) (P. A. **83**: 78650).
524. Petelenz, P., Mixing of Frenkel excitons and ionic excited states in a linear crystal of donor-acceptor complex. 2. ADA-type complexes, *Phys. Status Solidi* (b) **99**, No. 2, 487–491 (1980) (Eng) (P. A. **83**: 92824).
525. Von Schütz, J. U., Steudle, W., Wolf, H. C., and Yakhot, V., Time correlated delayed fluorescence — ODMR. Dynamics of triplet exciton annihilation in anthracene-tetracyanobenzene crystals, *Chem. Phys.* **46**, No. 1, 2, 53–65 (1980) (Eng).

4.2 Excimers, dimers and other homomolecular complexes

526. Abu-Zeid, M. E. and Lopez, J. R., Trimer exciplex emission in benzopyrene, *J. Chem. Phys.* **73**, No. 8, 4141–4142 (1980) (Eng).

527. Biteman, V. B., Gunder, O. A., Petrova, I. B., and Senchishin, V. G., Excimers formation and energy migration in polymers, *Zh. Prikl. Spektrosk.* **33**, No. 4, 723–726 (1980) (Russ).
528. Brumbaugh, D. V., Haynam, C. A., and Levy, D. H., Mild excimers: The spectrum of the dimethyl-tetrazine dimer, *J. Chem. Phys.* **73**, No. 10, 5380–5381 (1980) (Eng).
529. Chang, C., Shabestary, N., and El-Bayoumi, M. A., Excited-state double proton transfer in 1-azacarbazole hydrogen-bonded dimers, *Chem. Phys. Lett.* **75**, No. 1, 107–109 (1980) (Eng).
530. Dähne, S., Bornowski, B., Freyer, W., Klagge, M., Moldenhauer, F., and Teuchner, K., Evidence of inter and intramolecular excimer formation of highly polar aromatic molecules. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 378 (1977) (Eng).
531. Davidovich, M. A., Exciton states in 1,2,4,5-tetrachloro-benzene crystal and dimers, *Phys. Status Solidi (b)* **98**, No. 2, 735–745 (1980) (Eng) (P. A. **83**: 70620).
532. Itoh, M., Fuke, K., and Kobayashi, S., Direct observation of intramolecular anthracene excimer in 1,3-dianthrylpropane, *J. Chem. Phys.* **72**, No. 2, 1417–1418 (1980) (Eng).
533. Kruglikov, V. V., Samsonov, B. F., Terpugova, A. F., and Cheglov, E. I., Electronic structure and normal vibrational frequencies of the nitrogen dimer, *Zh. Struct. Khim.* **20**, No. 6, 1007–1012 (1979) (Russ) (P. A. **84**: 24052).
534. Kuzmin, M. G., Sadovskii, N. A., and Soboleva, I. V., The donor-acceptor properties of exciplexes. Comparison of fluorescence quenching of excited aromatic molecules and their exciplexes, *Chem. Phys. Lett.* **71**, No. 2, 232–237 (1980) (Eng).
535. Lysak, N. A., Nemkovich, N. A., Tolstoshev, G. B., and Tomin, V. I., Dynamics of exciplex formation and dissociation in organic molecule vapors, *Spectrosc. Lett.* **13**, No. 10, 749–756 (1980) (Eng).
536. McHale, J. and Simons, J., Analysis of the “charge resonance” transition in anthracene dimer anion, *J. Chem. Phys.* **72**, No. 1, 424–428 (1980) (Eng).
537. Migita, M., Okada, T., Mataga, N., Nakashima, N., Yoshihara, K., Sakata, Y., and Misumi, S., Picosecond time-resolved fluorescence studies of intramolecular heteroexcimers, *Chem. Phys. Lett.* **72**, No. 2, 229–232 (1980) (Eng) (P. A. **83**: 83401).
538. Nakashima, N., Inoue, H., Sumitani, M., and Yoshihara, K., Laser flash photolysis of benzene. 2. Laser-induced cluster formation in gas phase, *J. Chem. Phys.* **73**, No. 9, 4693–4694 (1980) (Eng).
539. Nakashima, N., Sumitani, M., Ohmine, I., and Yoshihara, K., Nanosecond laser photolysis of the benzene monomer and excimer, *J. Chem. Phys.* **72**, No. 4, 2226–2230 (1980) (Eng).
540. Okada, T., Tashita, N., and Mataga, N., Direct observation of intermediate heteroexcimer in the photoinduced hydrogen-atom transfer reaction by picosecond laser spectroscopy, *Chem. Phys. Lett.* **75**, No. 2, 220–223 (1980) (Eng).
541. Padma Malar, E. J. and Chandra, A. K., Singlet and triplet molecular interaction in excimers, *Theor. Chim. Acta* **55**, No. 2, 153–164 (1980) (Eng) (P. A. **83**: 95535).
542. Silverman, B. D., Nonbonding intermolecular forces: The tetrathiafulvalene (TTF) dimer, *J. Chem. Phys.* **72**, No. 10, 5501–5504 (1980) (Eng).
543. Takahashi, Y., Kitamura, T., and Uchida, K., Excimer emission from evaporated pyrene films, *J. Lumin.* **21**, No. 4, 425–433 (1980) (Eng) (P. A. **84**: 26261).
544. Veselova, T. V. and Cherkasov, A. S., Effect of temperature on fluorescence yields of exciplexes of phthalimides with aromatic amines, *Opt. and Spektrosk.* **49**, No. 3, 517–522 (1980) (Russ) (P. A. **84**: 64102).
545. Winter, G. and Steiner, U., Heavy atom substituents as molecular probes for solvent effects on the dynamics of short-lived triplet exciplexes, *Ber. Bunsenges. Phys. Chem.* **84**, No. 12, 1203–1214 (1980) (Eng) (P. A. **84**: 61902).
546. Yamamoto, S.-a., Grellmann, K.-H., and Weller, A., Mechanism of the photodissociation of the 9-methylanthracene photodimer, *Chem. Phys. Lett.* **70**, No. 2, 241–245 (1980) (Eng).

5. SPECTRA OF PURE MOLECULAR CRYSTALS

5.1. Phonon spectra

547. Adams, D. M., Shaw, A. C., Mackenzie, G. A., and Pawley, G. S., Raman and mid-infrared spectroscopic study of the phase transitions in octafluoronaphthalene at elevated pressures, *J. Phys. and Chem. Solids* **41**, No. 2, 149–153 (1980) (Eng).
548. Adams, D. M. and Williams, A. D., Spectroscopy at very high pressures. XXV. The IR spectrum of ferrocene at high pressures, *J. Phys. and Chem. Solids* **41**, No. 10, 1073–1078 (1980) (Eng).
549. Basun, S. A. and Kaplyanskii, A. A., Free path length and lifetime of $0.87 \cdot 10^{12}$ Hz acoustic phonons in ruby crystals, *Fiz. Tverd. Tela* **22**, No. 11, 3500–3503 (1980) (Russ).
550. Belousov, M. V., Pogarev, D. E., and Pogarev, S. V., Resonance and anharmonic interactions of vibrations in pure and isotope-mixed crystals. In: *Vibrations of Oxide Lattices*. Leningrad, 249–301 (1980) (Russ).
551. Brodyanskii, A. P., Slyusarev, V. A., and Freiman, Yu. A., Librational motion thermodynamics in β -O₂. In: 21 All-union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 162–163 (1980) (Russ).
552. Bron, W. E., Spectroscopy of high-frequency phonons, *Repts Progr. Phys.* **43**, No. 3, 301–352 (1980) (Eng).
553. Broude, V. L., Heat pulse propagation in anthracene crystals, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 9–22 (1980) (Eng) (*P. A.* **83**: 84771).
554. Broude, V. L. and Sheka, E. F., Neutron scattering from equilibrium and non-equilibrium phonons, excitons and polaritons, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 145–162 (1980) (Eng) (*P. A.* **83**: 84032).
555. Brunel, L.-C., Brillouin scattering in molecular crystals: benzene. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 202 (1977) (Eng).
556. Carius, W. and Schröter, O., Total reflection Raman spectroscopy (TRRS) of polystyrene, *Phys. status solidi* (a) **59**, No. 1, K115–K118 (1980) (Eng) (*P. A.* **83**: 80784).
557. Colombo, L., Dynamics of organic molecular crystals. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 200 (1977) (Eng).
558. Colombo, L. and Kirin, D., Temperature dependence of the low-frequency vibrational spectrum of the furane crystal, *Mol. Cryst. and Liquid Cryst.* **59**, No. 1–2, 85–96 (1980) (Eng) (*P. A.* **83**: 84743).
559. Decola, P. L., Hochstrasser, R. M., and Trommsdorff, H. P., Vibrational relaxation in molecular crystals by four-wave mixing: naphthalene, *Chem. Phys. Lett.* **72**, No. 1, 1–4 (1980) (Eng) (*P. A.* **83**: 80762).
560. DiLella, D. P. and Stidham, H. D., Vibrational spectra of C₂, deuterium substituted pyridines. 2. Pyridine, pyridine-4-d, pyridine-2,6-d, and pyridine-2,4,6-d₃, *J. Raman Spectrosc.* **9**, No. 2, 90–106 (1980) (Eng) (*P. A.* **83**: 84739).
561. Dumas, G., Chedin, M.-P., and Vovelle, F., Dynamical matrix eigenvectors in crystals: Experimental determination for naphthalene and anthracene, *J. phys.* **41**, No. 8, 905–920 (1980) (Eng) (*P. A.* **83**: 100315).
562. Ecolivet, T. and Sanquer, M., Brillouin scattering in polyphenyls. 1. Room temperature study of *p*-terphenyl (H14, D14) and biphenyl (D10), *J. Chem. Phys.* **72**, No. 7, 4145–4152 (1980) (Eng).
563. Excoffon, P. and Marechal, Y., H-bonds of imidazole crystals. 2. Determination of the magnitudes of the various anharmonic couplings of ν , modes, *Chem. Phys.* **52**, No. 3, 245–252 (1980) (Eng) (*P. A.* **84**: 26182).
564. Faniran, J. A. and Shurvell, H. F., Raman and infrared spectra of 2,4,6-trichlorophenol and 2,4,6-tribromophenol, *J. Raman Spectrosc.* **9**, No. 2, 73–75 (1980) (Eng) (*P. A.* **83**: 84735).

565. Gavrilko, T. A., Kuchеров, A. P., Lisitsa, M. P., Puchkovskaya, G. A., and Yaremko, A. M., Resonance interactions in vibration spectrum of a maleic-anhydride crystal, *Opt. and Spektrosk.* **48**, No. 3, 524–530 (1980) (Russ).
566. Goncalves, A. M. P., Spectroscopic investigations of intermolecular interactions in organic molecular crystals, *Prog. Solid State Chem.* **13**, No. 1, 1–88 (1980) (Eng) (P. A. **83**: 103958).
567. Gramaccioli, C. M., Filippini, G., Simonetta, M., Ramdas, S., Parkinson, G. M., and Thomas, J. M., Structure and dynamics of a new phase of anthracene, *J. Chem. Soc. Faraday Trans. II* **76**, No. 10, 1336–1346 (1980) (Eng) (P. A. **84**: 47072).
568. Grest, G. S., Nagel, S. R., and Rahman, A., Quench echoes in molecular dynamics—a new phonon spectroscopy, *Solid State Communs* **36**, No. 10, 875–879 (1980) (Eng) (P. A. **84**: 38478).
569. Grishina, E. N., Aleksandrov, I. V., Slobodin, Ya. M., and Kostikov, R. R., Vibrational spectra of adamantane derivatives with substituents in the 2 position, *Zh. Prikl. Spektrosk.* **32**, No. 4, 664–668 (1980) (Russ) (P. A. **84**: 61342).
570. Henry, B. R. and Thomson, J. A., Conformational information from the high energy overtone spectra of cis-decalin, trans-decalin, and adamantane, *Chem. Phys. Lett.* **69**, No. 2, 275–279 (1980) (Eng).
571. Hess, L. A. and Prasad, P. N., Vibrational dephasing in organic solids: Temperature dependence of a Raman active localized internal mode of naphthalene, *J. Chem. Phys.* **72**, No. 1, 573–579 (1980) (Eng).
572. Kato, E., Brillouin scattering in polymethyl methacrylate from 4 to 300K: temperature dependence of the Grüneisen constant and thermal properties, *J. Chem. Phys.* **73**, No. 3, 1020–1025 (1980) (Eng) (P. A. **83**: 100662).
573. Katon, J. E., Hanai, K., and Tripathi, G. N. R., Intermolecular vibrational coupling in crystalline *m*-dinitrobenzene—Polarized infrared spectra of oriented polycrystalline films, *J. Chem. Phys.* **73**, No. 2, 697–704 (1980) (Eng) (P. A. **83**: 97264).
574. Khamdamov, V. G., Vettegren, V. I., and Novak, I. I., Raman scattering determination of bulk and surface phonon anharmonism in cubic Zn Se, *Fiz. Tverd. Tela* **22**, No. 11, 3242–3246 (1980) (Russ).
575. Kieft, H., Clouter, M. J., Rich, N. H., and Ahmad, S. F., Pure vibrational Raman spectra of some simple molecular crystals: γ -O₂, O₂ in HCP Ar, β -N₂, *Chem. Phys. Lett.* **70**, No. 3, 425–429 (1980) (Eng) (P. A. **83**: 60558).
576. Klimowski, J., NMR study of the molecular dynamics of polycrystalline thiourea under hydrostatic pressure, *Phys. Status Solidi* (a) **59**, No. 1, K39-K41 (1980) (Eng) (P. A. **83**: 80619).
577. Kobashi, K., Fabre, D., Fondere, F., Marteau, Ph., Obriot, J., and Thierry, M. M., Far-infrared and Raman study of solid CH₄ under high pressure. In: High pressure science and technology. Proceedings of the VIIth International AIRAPT conference. Pt. II. Le Creusot, France, 30 July–3 Aug. 1979. Oxford, England: Pergamon, 752–754 (1980) (Eng) (P. A. **84**: 39106).
578. Kondilenko, I. I., Tsyashchenko, Yu. P., and Krasnyansky, G. E., Intermolecular interactions and Davydov splittings in vibrational spectra of crystals. In: XIII European congress on molecular spectroscopy. Wrocław, Poland, September 12–16, 1977. Abstracts. Wrocław, 211–212 (1977) (Eng).
579. Kovalenko, S. I. and Krainyukova, N. V., Atom dynamics of small inert gas crystals. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. Kharkov, 192–193 (1980) (Russ).
580. Krasnyanskii, G. E. and Tsyashchenko, Yu. P., Contributions of different intermolecular potentials to the Davydov splitting of vibrational levels in crystals and site symmetry, *Phys. Status Solidi* (b) **101**, No. 2, L151-K154 (1980) (Eng) (P. A. **84**: 15966).
581. Kshnyakina, S. I. and Puchkovskaya, G. A., Davydov splitting in IR spectra of crystalline dicarboxylic acids, *Ukr. Fiz. Zh.* **25**, No. 6, 948–952 (1980) (Russ) (P. A. **83**: 89008).

582. Lyons, K. B., Fleury, P. A., and Charter, H. L., Two-phonon difference scattering in solid xenon, *Phys. Rev. B* **21**, No. 4, 1653–1657 (1980) (Eng) (P. A. **83**: 60588).
583. Maksimov, A. A. and Tartakovskii, I. I., Nonequilibrium phonon detection using resonance Raman light scattering, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **32**, No. 5, 374–376 (1980) (Russ) (P. A. **84**: 3402).
584. Marteau, P., Fondere, F., and Obriot, J., Far infrared spectroscopy of molecular interactions under pressure. In: High pressure science and technology. Proceedings of the VIIth International AIRAPT conference. Pt. II. Le Creusot, France, 30 July–3 Aug. 1979. Oxford, England: Pergamon, 744–751 (1980) (Eng) (P. A. **84**: 39105).
585. Medina, F. D., Temperature dependence of the far IR spectrum of α -N₂, *J. Chem. Phys.* **72**, No. 10, 5760–5762 (1980) (Eng).
586. Mills, D. L., Dithler, C. J., and Sparks, M., The absorption of infrared radiation by multiphonon processes in solids. In: Dynamical properties of solids. Vol. 4. *Disordered Solids, Optical Properties*. Amsterdam, Netherlands: North-Holland, 377–424 (1980) (Eng) (P. A. **84**: 39102).
587. Mitsui, T. and Iio, K., Brillouin scattering in organic molecular crystal: meta-dinitrobenzene, *Japan. J. Appl. Phys.* **19**, No. 12, 2511–2512 (1980) (Eng) (P. A. **84**: 48099).
588. Natkaniec, I., Bokhenkov, E. L., Dörner, B., Kalus, J., Mackenzie, G. A., Pawley, G. S., Schmelzer, U., and Sheka, E. F., Phonon dispersion in d₈-naphthalene crystal at 6 K, *J. Phys. C: Solid State Phys.* **13**, No. 23, 4265–4283 (1980) (Eng) (P. A. **84**: 2575).
589. Nelson, K. A. and Fayer, M. D., Laser induced phonons: a probe of intermolecular interactions in molecular solids, *J. Chem. Phys.* **72**, No. 9, 5202–5218 (1980) (Eng) (P. A. **83**: 79891).
590. Pandey, V. N. and Thakur, S. N., Photoacoustic spectra of naphthalenes: 2-fluoro, 2-chloro, 2-bromo and 2-hydroxynaphthalenes, *J. Mol. Struct.* **68**, 67–72 (1980) (Eng) (P. A. **84**: 14912).
591. Pigenet, C., Le Calve, N., and Pasquier, B., Raman scattering of *m*-chloronitrobenzene, piezo-electric crystal, *J. Raman Spectrosc.* **9**, No. 6, 393–400 (1980) (Fr) (P. A. **84**: 35032).
592. Powell, B. M., Dolling, G., Pawley, G. S., and Leech, J. W., Lattice dynamics of ammonia, *Can. J. Phys.* **58**, No. 12, 1703–1711 (1980) (Eng) (P. A. **84**: 34430).
593. Prasad, P. N., Vibrational relaxation and dephasing in organic solids, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 39–54 (1980) (Eng) (P. A. **83**: 88987).
594. Puchkovskaya, G. A., Strizhevsky, V. L., Frolov, Yu. A., and Chepilko, N. M., Method frustrated total reflection in spectroscopy of surface polaritons, *Ukr. Fiz. Zh.* **25**, No. 2, 271–276 (1980) (Russ).
595. Sanyal, N. K., Goel, R. K., and Sharma, S. N., Infrared absorption spectra of 2,4,6-triaminopyrimidine, *Indian J. Phys.* **53B**, No. 6, 282–287 (1979) (Eng).
596. Sauvajol, J. L., Raman spectra of triethylenediamine at T = 298 K, *J. Phys. C: Solid State Phys.* **13**, No. 7, 1321–1329 (1980) (Eng) (P. A. **83**: 80768).
597. Schmidt, J. W. and Daniels, W. B., The Raman spectrum of solid carbon dioxide at high pressure, *J. Chem. Phys.* **73**, No. 10, 4848–4854 (1980) (Eng) (P. A. **84**: 39074).
598. Sechkarev, A. V., Ovcharenko, V. V., and Semenov, A. E., Effect of orientational disordering of the molecules of molecular crystals on polarized Ir and Raman spectra, *Opt. and Spektrosk.* **47**, No. 6, 1078–1081 (1979) (Russ) (P. A. **83**: 88989).
599. Sorai, M., Murakawa, S., Ogasahara, K., and Suga, H., Laser Raman spectra of the stable low-temperature phase of ferrocene, *Chem. Phys. Lett.* **76**, No. 3, 510–514 (1980) (Eng) (P. A. **84**: 31135).
600. Srivastava, S. P., and Singh, I. D., Temperature dependence of infrared active fundamental modes of adamantane, *Acta phys. Acad. sci. hung.* **47**, No. 4, 275–280 (1979) (Eng) (P. A. **84**: 3376).
601. Takeuchi, H. and Tasumi, M., Lattice vibrations of polymethylene crystal, *Chem. Phys.* **47**, No. 3, 395–399 (1980) (Eng) (P. A. **83**: 59607).

602. Tripathi, G. N. R., The vibrational exciton spectrum of *p*-nitrotoluene crystal film, *J. Phys. and Chem. Solids* **41**, No. 6, 551–560 (1980) (Eng) (*P. A.* **83**: 80771).
603. Van Der Velden, G. P. M. and Noordik, J. H., Crystallographic and spectroscopic study of 4,4'-diaminobenzophenone, *J. Cryst. and Mol. Struct.* **10**, No. 3/4, 83–92 (1980) (Eng).
604. Von Der Linde, D., Kuhl, J., and Klingenberg, H., Raman scattering from non-equilibrium LO phonons with picosecond resolution, *Phys. Rev. Lett.* **44**, No. 23, 1505–1508 (1980) (Eng) (*P. A.* **83**: 80779).
605. Vovelle, F. and Chedin, M. P., One-density states for external modes and low frequency Raman scattering spectra: naphthalene, *C. r. Acad. Sci. B* **290**, No. 15, 373–375 (1980) (Fr) (*P. A.* **83**: 76012).
606. Winterfeldt, V. and Schaack, G., Lattice vibrations in ordered and disordered thiourea. 1. Raman scattering and infrared reflection spectra, *Z. Phys. B* **36**, No. 4, 303–310 (1980) (Eng).
607. Winterfeldt, V. and Schaack, G., Lattice vibrations in ordered and disordered thiourea. 2. Temperature dependent hardcore phonon modes due to nonlinear pseudospin-phonon coupling, *Z. Phys. B* **36**, No. 4, 311–317 (1980) (Eng).
608. Wong, P. T. T. and Ripmeester, J. A., The phase transition and reorientational fluctuations in pyridinium iodide crystal investigated by Raman scattering, *Chem. Phys. Lett.* **72**, No. 1, 122–126 (1980) (Eng) (*P. A.* **83**: 80764).
609. Wynke, B., Brehat, F., and Hadni, A., Far infrared absorption spectra of *p*-terphenyl at liquid helium temperature. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 216 (1977) (Eng).

5.2. Electronic and vibronic states and absorption spectra

610. Avdeenko, A. A., Karachevtsev, V. A., and Naboikin, Yu. V., Triplet excitons in crystals of quasi-one-dimensional complex with charge transfer naphthalene-tetrachlorophthalic anhydrid at low temperatures. In: 21 All-union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 184–185 (1980) (Russ).
611. Beck, S. M., Powers, D. E., Hopkins, J. B., and Smalley, R. E., Jet-cooled naphthalene. 1. Absorption spectra and line profiles, *J. Chem. Phys.* **73**, No. 5, 2019–2028 (1980) (Eng) (*P. A.* **84**: 1278).
612. Brillante, A. and Philpott, M. R., Reflection and absorption spectra of singlet charge transfer excitons in anthracene-PMDA crystals, *J. Chem. Phys.* **72**, No. 7, 4019–4030 (1980) (Eng) (*P. A.* **83**: 71442).
613. Brodin, M. S., Doodinsk, II, M. A., and Marisova, S. V., Polariton effects in anthracene crystal luminescence. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 414 (1977) (Eng).
614. Campos, M. and Mergulhao, S., One-carrier thermally stimulated currents and space-charge-limited currents in naphthalene crystals: Doped and irradiated samples, *J. Appl. Phys.* **51**, No. 9, 4870–4874 (1980) (Eng) (*P. A.* **84**: 7633).
615. Chemla, D. S., Non-linear optical properties of condensed matter, *Repts Progr. Phys.* **43**, No. 10, 1191–1262 (1980) (Eng).
616. Ferguson, J., Optical properties in anthracene films. A comparison between free and optical contact mounting, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 55–70 (1980) (Eng) (*P. A.* **83**: 89079).
617. Freiberg, A., Raidaru, A., Anijalg, A., Timpmann, K., Kuk, P., and Saari, P., Streak camera operating in synchronism with a picosecond laser for real-time optical process measurement, *Eesti NSV Tead. Akad. Toim. Füüs., Mat.* **29**, No. 2, 187–193 (1980) (Russ).
618. Fugol', I. Ya. and Khashchina, L. V., Low-temperature absorption spectra of α -N₂ crystals. In: 21 All-union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 182–183 (1980) (Russ).

619. Girlando, A., Philpott, M. R., Heitmann, D., Swalen, J. D., and Santo, R., Raman spectra of thin organic films enhanced by plasmon surface polaritons on holographic metals gratings, *J. Chem. Phys.* **72**, No. 9, 5187–5191 (1980) (Eng) (*P. A.* **83**: 80885).
620. Goworek, T., Rybka, C., Wasiewicz, R., and Wawryszczuk, J., Temperature dependence of three-quantum annihilation in organic crystals, *Chem. Phys. Lett.* **75**, No. 3, 569–570 (1980) (Eng).
621. Grekhov, V. V., Thin tetracene layers depress photoelectron flow, *Latv. PSR Zinat. Akad. Vestis Fiz. Teh. Zinat. Ser.* No. 6, 29–35 (1980) (Russ).
622. Hochstrasser, R. M., Meredith, G. R., and Trommsdorff, H. P., Resonant four wave mixing in molecular crystals, *J. Chem. Phys.* **73**, No. 3, 1009–1019 (1980) (Eng) (*P. A.* **83**: 100654).
623. Hochstrasser, R. M., Johnson, L. W., and Klimcak, C. M., Stark effects on quasilinear chain excitons in dibromonaphthalene, *J. Chem. Phys.* **73**, No. 1, 156–162 (1980) (Eng) (*P. A.* **83**: 97239).
624. Iturbe, E. B. and Sharnoff, M., Migration of triplet excitons in benzophenone: A persistent coherence, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 227–242 (1980) (Eng) (*P. A.* **83**: 84641).
625. Karpov, S. V. and Shultan, A. A., Thermoactivated processes and vibrational spectra of crystals with complex ions. In: Vibrations of oxide lattices. *Leningrad*, 228–248 (1980) (Russ).
626. Martin-Bouyer, M., Cadoux, A., and Combet, E., 4.2 K study of the absorption spectrum of 1-hydronaphthyl radical obtained by gamma irradiation of naphthalene single crystals, *C. r. Acad. Sci. B* **290**, No. 14, 361–364 (1980) (Fr) (*P. A.* **83**: 80809).
627. Nakagawa, K., Kotani, M., and Tanaka, H., Detrapping of charge carriers by singlet excitons in naphthalene single crystals, *Phys. Status Solidi* (b), **102**, No. 1, 403–411 (1980) (Eng) (*P. A.* **84**: 25756).
628. Painter, L. R., Riedinger, T. S., Birkhoff, R. D., and Heller, J. M., Jr., Optical properties of polycrystalline anthracene in the 3.2–9.3-eV spectral region, *J. Appl. Phys.* **51**, No. 3, 1747–1750 (1980) (Eng).
629. Palit, N. B., Chakravorty, S. C., and Choudhury, M. K., Polarized absorption spectra of fluoranthene in pure and mixed crystals, *Indian J. Pure and Appl. Phys.* **18**, No. 3, 191–194 (1980) (Eng) (*P. A.* **83**: 55122).
630. Peretti, P. and Ranson, P., Analysis of singlet-triplet absorption profiles in carbonyl molecular crystals. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 401 (1977) (Eng).
631. Prikhod'ko, A. F., Pikus, Yu. G., and Shanskii, L. I., Absorption line polarization of α -oxygen, *Ukr. Fiz. Zh.* **25**, No. 5, 848–850 (1980) (Russ) (*P. A.* **83**: 89028).
632. Prikhod'ko, A. F., Ostrovskii, V. S., Pikus, Yu. G., and Shanskii, L. I., Effect of spin regulation on light absorption by crystal oxygen in 13000–15000 cm^{-1} band, *Ukr. Fiz. Zh.* **25**, No. 6, 1003–1006 (1980) (Russ) (*P. A.* **83**: 89029).
633. Prikhod'ko, A. F., Excitons in α -oxygen crystals, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 189–202 (1980) (Eng) (*P. A.* **83**: 84750).
634. Prikhod'ko, A. F., Gaididei, Yu. B., Loktev, V. M., Pavloshchuk, V. A., and Shanskii, L. I., Light absorption by oxygen in the middle ultraviolet spectral region, *Ukr. Fiz. Zh.* **25**, No. 12, 1982–1991 (1980) (Russ) (*P. A.* **84**: 39123).
635. Rinne, M. and Depireux, J., Molecular interactions in deuterated toluenes. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 203 (1977) (Eng).
636. Saile, V. and Koch, E. E., Comment on bulk excitons in solid neon: experiment, *Phys. Rev. B* **21**, No. 10, 4892–4894 (1980) (Eng) (*P. A.* **83**: 92827).
637. Seki, H. and Itoh, U., Ultra thin films of anthracene on fused quartz and sapphire, *J. Chem. Phys.* **72**, No. 3, 2166–2178 (1980) (Eng).
638. Sethuraman, V., Edelson, M. C., Johnson, C. K., Sethuraman, C., and Small, G. J., Two photon excitation spectra of the phenanthrene crystal. Manifestations of the exciton-phonon and intramolecular vibronic coupling, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 89–118 (1980) (Eng) (*P. A.* **83**: 84774).

639. Suemoto, T. and Kanzaki, H., Formation process of self-trapped exciton bubbles in solid neon, *J. Phys. Soc. Japan* **49**, No. 3, 1039–1045 (1980) (Eng) (*P.A.* **84**: 7529).
640. Tajiri, A., Hirayama, H., and Hatano, M., Induced circular dichroism of azulene, *Chem. Phys. Lett.* **70**, No. 1, 22–26 (1980) (Eng).
641. Tokura, Y. and Koda, T., Exciton spectroscopy of anthracene crystal, *Solid State Phys.* **15**, No. 5, 267–278 (1980) (Jap) (*P.A.* **84**: 16236).
642. Vetrov, S. Ya. and Korets, A. Ya., Temperature behaviour of exciton and optical-phonon frequencies in the anthrone molecular crystal, *Opt. and Spektrosk.* **49**, No. 3, 551–556 (1980) (Russ) (*P.A.* **84**: 69697).
643. Vincett, P. S. and Barlow, W. A., Highly organized aromatic molecular systems using Langmuir-Blodgett films: structure, optical properties and probable epitaxy of anthracene-derivative multilayers, *Thin Solid Films* **71**, No. 2, 305–326 (1980) (Eng) (*P.A.* **84**: 6270).
644. Wakayama, N. I., Matsuzaki, S., and Mizuno, M., The low lying singlet states of *p*-terphenyl crystal, *Chem. Phys. Lett.* **74**, No. 1, 37–39 (1980) (Eng) (*P.A.* **83**: 97320).
645. Wakayama, N. I., Matsuzaki, S., and Mizuno, M., UV absorption study of the phase transition in *p*-terphenyl crystal, *Chem. Phys. Lett.* **75**, No. 3, 587–589 (1980) (Eng).
646. Wieting, R. D. and Fayer, M. D., Exciton scattering and the dephasing of ESR and optical absorption lines: The 1,2,4,5-tetrachlorobenzene triplet exciton problem, *J. Chem Phys.* **73**, No. 2, 744–748 (1980) (Eng) (*P.A.* **83**: 96791).
647. Yao, Y. D., Chiang, C., and Young, C. Y., An experimental study on anthracene, *Annu. Rep. Inst. Phys. Acad. Sin.* **9**, 91–93 (1979) (Eng) (*P.A.* **84**: 7671).

5.3 Fluorescence and phosphorescence

648. Aaviksoo, Ya. Yu., Saari, P. M., and Tamm, T. B., Study of resonance secondary emission peculiarities of anthracene crystal, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 848–853 (1980) (Russ).
649. Agranovich, V. M., Darmanian, S. A., and Rupasov, V. I., Polariton mechanism of luminescence of crystals: reabsorption, spatial dispersion effects and role of the boundary, *Zh. Eksp. and Teor. Fiz.* **78**, No. 2, 656–671 (1980) (Russ) (*P.A.* **83**: 55186).
650. Al-Chalabi, A. O., Fluorescence decay times and quantum yields for benzene in the solid and vapour phases, *Chem. Phys. Lett.* **70**, No. 2, 371–373 (1980) (*P.A.* **83**: 55154).
651. Avdeenko, A. A., Dobrovolskaya, T. L., Kultchitskii, V. A., and Naboikin, Yu. V., Mutual annihilation of triplet excitons in 4,4'-dichlorobenzophenone single crystals at low temperatures, *Phys. Status Solidi (b)* **99**, No. 1, 409–415 (1980) (Eng) (*P.A.* **83**: 80850).
652. Avdeenko, A. A., Karachevtsev, V. A., Naboikin, Yu. V., and Pakulov, S. N., Temperature dependence of spin-lattice relaxation probabilities in excited triplet state of crystalline benzil, *Fiz. Nizk. Temp.* **6**, No. 5, 656–660 (1980) (Russ).
653. Avdeenko, A. A., Kulchitskii, V. A., and Naboikin, Yu. V., Time-resolved Zeeman spectroscopy of phosphorescent triplet states of organic crystals, *Pis'ma v Zh. Tekh. Fiz.* **6**, No. 17, 1069–1073 (1980) (Russ) (*P.A.* **84**: 101167).
654. Bobrovich, V. P., Kembrovskii, G. S., Nekadamov, Sh., and Senyuk, M. A., Characteristics of the polarization fluorescence of stilbene, *Zh. Prikl. Spektrosk.* **32**, No. 3, 464–467 (1980) (Russ).
655. Bondar, V. V. and Kurik, M. V., Exciton luminescence at the anthracene-gold interface, *Zh. Eksp. and Teor. Fiz.* **78**, No. 1, 94–99 (1980) (Russ).
656. Bondar, V. V. and Kurik, M. V., Peculiarities of exciton luminescence on anthracene-metal boundary, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 863–867 (1980) (Russ).
657. Bonno, B., Laporte, J.-L., and Rousset, Y., Fluorescence retardee des cristaux de naphthalene, *Mol. Cryst. and Liquid Cryst.* **58**, No. 3–4, 211–222 (1980) (Fr) (*P.A.* **83**: 80846).

658. Broude, V. L., Maksimov, A. A., and Tartakovskii, I. I., Pre-resonant Raman scattering in anthracene crystals, *J. Lumin.* **21**, No. 2, 183–186 (1980) (Eng) (P.A. **83**: 60571).
659. Burshtein, Z., Double injection and electroluminescence in *p*-terphenyl single crystals, *Mol. Cryst. and Liquid Cryst.* **60**, No. 3, 207–214 (1980) (Eng).
660. Chandra, B. P. and Zink, J. I., Mechanical characteristics and mechanism of the triboluminescence of fluorescent molecular crystals, *J. Chem. Phys.* **73**, No. 12, 5933–5941 (1980) (Eng).
661. Dobrokhotova, V. K., Goloyadov, V. A., Lopina, S. V., Rom-Krichevskaya, I. A., and Chukanova, I. N., Study of the emission spectra of stilbene single crystals when excited by ultra-short laser pulses, *Zh. Prikl. Spektrosk.* **32**, No. 1, 147–149 (1980) (Russ).
662. Fort, A. and Ern, V., Triplet transport in *p*-terphenyl crystals, *Chem. Phys. Lett.* **74**, No. 3, 519–522 (1980) (Eng) (P.A. **84**: 7527).
663. Fugol', I. Ya., Belov, A. G., Svishchev, V. N., Yurtaeva, E. M., Detection of quasi-atom emission between high-excited states in light inert cryocrystals. In: 21 All-union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 178–179 (1980) (Russ).
664. Galanin, M. D., Myasnikov, E. N., and Khan-Magometova, Sh. D., Polariton luminescence of anthracene crystal, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 730–737 (1980) (Russ).
665. Galanin, M. D., Khan-Magometova, Sh. D., and Myasnikov, E. N., Polariton luminescence of anthracene crystals, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 119–130 (1980) (Eng) (P.A. **83**: 84775).
666. Griesser, H. J. and Wild, U. P., The energy gap dependence of the radiationless transition rates in azulene and its derivatives, *Chem. Phys.* **52**, No. 1, 2, 117–132 (1980) (Eng) (P.A. **84**: 19127).
667. Grigorashchenko, O. N., Savchenko, E. V., Fugol', I. Ya., Polariton effects in luminescence of solid xenon, *Fiz. Nizk. Temp.* **6**, No. 9, 1206–1209 (1980) (Russ).
668. Grigorashchenko, O. N., Savchenko, E. V., Fugol', I. Ya., Polariton luminescence of xenon cryocrystals. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 180–181 (1980) (Russ).
669. Hanamura, E. and Takagahara, T., Theory of resonant Raman scattering and luminescence, *J. Fac. Eng. Univ. Tokyo Ser. A* No. 17, 36–37 (1979) (Jap) (P.A. **83**: 80770).
670. Hesp, B. H. and Wiersma, D. A., Vibrational relaxation in neat crystals of naphthalene by picosecond CARS, *Chem. Phys. Lett.* **75**, No. 3, 423–426 (1980) (Eng).
671. Hochstrasser, R. M. and Nyi, C. A., Dynamical effects from resonance Raman and fluorescence studies of the molecular exciton system perylene, *J. Chem. Phys.* **72**, No. 4, 2591–2600 (1980) (Eng) (P.A. **83**: 66169).
672. Inan, D., Variation in the spin-lattice relaxation rate of the photoexcited triplet state of pyrene-*d*₁₀, *Chem. Phys. Lett.* **76**, No. 3, 437–441 (1980) (Eng).
673. Kaarli, R., Aaviksoo, J., Freiberg, A., and Saari, P., Time-resolved coherent anti-stokes Raman scattering by a single synchronously pumped mode-locked CW dye laser, *Eesti NSV Tead. Akad. Toim. Füüs., Mat.* **29**, No. 2, 181–186 (1980) (Eng).
674. Kanehisa, M. A. and Balkanski, M., Resonant secondary emission spectroscopy, *Phys. Status Solidi* (b) **102**, No. 1, 67–77 (1980) (Eng) (P.A. **84**: 26263).
675. Khizhnyakov, V. V. and Sherman, A. V., Hot luminescence of self-localized excitons, *Fiz. Tverd. Tela* **22**, No. 11, 3254–3262 (1980) (Russ) (P.A. **84**: 86497).
676. Kink, R. A., Lykhmus, A. E., and Seig, M. V., Autolocalization and hot luminescence of excitons in rare gas solids. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 174–175 (1980) (Russ).
677. Kolendritskii, D. D., Kurik, M. V., Pirjatinskii, Yu. P., and Slobodjanik, V. V., Effect of electric field on fluorescence of tetracene crystals. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 412 (1977) (Eng).

678. Kolendritskii, D. D., Kurik, M. V., Piryatinskii, Yu. P., and Slobodyanik, V. V., Influence of low electric field on tetracene fluorescence. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 368 (1977) (Eng).
679. Kondratenko, P. A., Khutornaya, L. A., and Shpak, M. T., The effect of crystal lattice defects on luminescence spectra of anthracene crystals, *Zh. Prikl. Spektrosk.* **33**, No. 5, 856–859 (1980) (Russ).
680. Kondratenko, P. A., Khutornaya, L. A., and Shpak, M. T., The influence of anthracene single crystal annealing on low-temperature fluorescence spectra. 1. Generation and annealing of dislocations. Theory, *Ukr. Fiz. Zh.* **25**, No. 10, 1666–1670 (1980) (Russ) (*P. A.* **84**: 20207).
681. Kondratenko, P. A., Lisovenko, V. A., Khutornaya, L. A., and Shpak, M. T., The influence of annealing of anthracene single crystals on low-temperature fluorescence spectra. 2. Generation and annealing of dislocations. Experiment, *Ukr. Fiz. Zh.* **25**, No. 11, 1775–1780 (1980) (Russ) (*P. A.* **84**: 31196).
682. Kushida, T., Luminescence and light scattering under resonant optical excitation, *Solid State Phys.* **15**, No. 1, 57–64 (Jap) (*P. A.* **83**: 84781).
683. Lisovenko, V. and Shpak, M., Dislocation effect on the energy structure of anthracene crystals. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 403 (1977) (Eng).
684. Lisovenko, V. A., Khutornaya, L. A., Shpak, M. T., and Yankovskaya, L. B., The γ -irradiation effect on defects in anthracene crystals, *Ukr. Fiz. Zh.* **25**, No. 2, 325–327 (1980) (Russ) (*P. A.* **83**: 55185).
685. Maksimov, A. A. and Tartakovskii, I. I., Luminescence and scattering of light in anthracene crystals under resonant excitation, *Zh. Prikl. Spektrosk.* **32**, No. 5, 886–890 (1980) (Russ) (*P. A.* **84**: 65741).
686. Matsui, A. and Nishimura, H., Luminescence of free and self trapped excitons in pyrene, *J. Phys. Soc. Japan* **49**, No. 2, 657–663 (1980) (Eng).
687. Meletov, K. P., Sheka, E. F., and Rashba, E. I., Exciton-phonon luminescence of perfect and doped naphthalene crystals, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 65–88 (1980) (Eng) (*P. A.* **83**: 84773).
688. Meletov, K. P., Rashba, E. I., and Sheka, E. F., Exciton-phonon luminescence of pure and impurity naphthalene crystals, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 702–708 (1980) (Russ).
689. Mel'nik, V. I., Nelipovich, K. I., and Shpak, M. T., Peculiarities of phosphorescence of different benzophenon modifications, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 827–832 (1980) (Russ).
690. Mistelberger, K. and Port, H., The triplet state in pyrene. Optical manifestation of excitonic energy transfer in the dimeric high and low temperature crystalline phases, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 203–226 (1980) (Eng) (*P. A.* **83**: 84776).
691. Munro, I. H. and Sabersky, A. P., Synchrotron radiation as a modulated source for fluorescence lifetime measurements and for time-resolved spectroscopy. In: *Synchrotron Radiation Research*. Winick H., Ed. New York, USA: Plenum, 323–352 (1980) (Eng) (*P. A.* **84**: 59388).
692. Nakashima, N., Yoshihara, K., and Willig, F., Time-resolved measurements of electron and energy transfer of rhodamine B monolayer on the surface of organic crystals, *J. Chem. Phys.* **73**, No. 8, 3553–3559 (1980) (Eng).
693. Ovsyankin, V. V. and Fedorov, A. A., Avalanche quenching of luminescence, *Opt. and Spektrosk.* **49**, No. 1, 195–198 (1980) (Russ) (*P. A.* **84**: 48154).
694. Ponte Goncalves, A. M., Triplet-state EPR study of the effect of deuteration on the phase transition in anthracene-TCNB crystals, *Mol. Cryst. and Liquid Cryst.* **56**, No. 5, 163–169 (1980) (Eng).
695. Port, H., High resolution excitation spectroscopy on triplet excitons in organic molecular crystals. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 400 (1977) (Eng).

696. Port, H. and Rund, D., Triplet-exciton fine structure of anthracene: high-resolution optical measurements, *Chem. Phys. Lett.* **69**, No. 2, 406–411 (1980) (Eng).
697. Rippen, G., Kaufmann, G., and Klöpffer, W., Luminescence of poly (N-vinylcarbazole) films at 77 K. 1. Fluorescence, phosphorescence and delayed fluorescence, *Chem. Phys.* **52**, No. 1, 2, 165–177 (1980) (Eng) (P. A. **84**: 21253).
698. Rousset, Y. and Laporte, J.-L., Triplet excitons diffusion in diphenyl crystals. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 363 (1977) (Eng).
699. Saile, V., One- and two-photon spectroscopy with rare gas solids, *Appl. Opt.* **19**, No. 23, 4115–4122 (1980) (Eng) (P. A. **84**: 31164).
700. Shimizu, M., Igarashi, R., Adachi, Y., and Maeda, S., Two-photon resonance effect as observed in the CARS and CSRS of anthracene single crystal, *J. Chem. Phys.* **73**, No. 2, 612–616 (1980) (Eng) (P. A. **83**: 95946).
701. Takahashi, Y., Kitamura, T., Uchida, K., and Tomura, M., An anomalous emission excited near the absorption edge of pyrene crystals, *J. Lumin.* **21**, No. 3, 269–275 (1980) (Eng).
702. Van Duyne, R. P. and Parks, K. D., Stimulated Raman laser excitation of spontaneous resonance Raman scattering, *Chem. Phys. Lett.* **76**, No. 2, 196–200 (1980) (Eng).
703. Van Strien, A. J. and Schmidt, J., An EPR study of the triplet state of pentacene by electron spin-echo techniques and laser flash excitation, *Chem. Phys. Lett.* **70**, No. 3, 513–517 (1980) (Eng).
704. Von Schütz, J. U., Gückel, F., Steudle, W., and Wolf, H. C., Phosphorescence- and delayed-fluorescence-detected magnetic resonance at zero-field on mobile and localized triplet states in anthracene, *Chem. Phys.* **53**, No. 3, 365–372 (1980) (Eng) (P. A. **84**: 31063).
705. Wright, J. C., Double resonance excitation of fluorescence in the condensed phase—an alternative to infrared, Raman, and fluorescence spectroscopy, *Appl. Spectrosc.* **34**, No. 2, 151–157 (1980) (Eng) (P. A. **83**: 86438).
706. Yamashita, S. and Shibuya, M., Excitation spectrum of fluorescence in thick crystals of anthracene, *J. Phys. Soc. Japan* **48**, No. 5, 1789–1790 (1980) (Eng) (P. A. **83**: 76068).
707. Yokoi, K. and Ohba, Y., Temperature dependence of the delayed fluorescence lifetime in anthracene crystals with triplet exciton traps, *Japan. J. Appl. Phys.* **19**, No. 9, 1655–1662 (1980) (Eng) (P. A. **84**: 26254).
708. Zaletaev, S. P., Kinetics of optical record in polycrystalline layers of tetracene, *Lav. PSR Zinat. Akad. Vestis Fiz. Teh. Zinat. Ser.* No. 6, 80–84 (1980) (Russ).

6. SPECTRA OF IMPURITY AND DISORDERED MOLECULAR CRYSTALS

709. Abram, I. I., Hochstrasser, R. M., Kohl, J. E., Semack, M. G., and White, D., Decay of vibrational coherence in ortho-para mixtures of solid hydrogen, *Chem. Phys. Lett.* **71**, No. 3, 405–408 (1980) (Eng) (P. A. **83**: 78903).
710. Ahlgren, D. C. and Kopelman, R., Isotopic mixed crystal exciton spectra in the far infrared: naphthalene, *Chem. Phys.* **48**, No. 1, 47–52 (1980) (Eng).
711. Akimov, A. V., Kaplyanskii, A. A., and Syrkin, A. L., Observation of relaxed resonance acoustic phonons in vibronic anti-Stokes luminescence in impure crystals, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **32**, No. 2, 136–139 (1980) (Russ) (P. A. **83**: 93404).
712. Aleksandrovskaia, N. G., Dobrokhotova, V. K., Malkes, L. Ya., Naboikin, Yu. V., Ogurtsova, L. A., and Chukanova, I. N., Electron-vibrational spectra of diaryl-ethylenes and diaryldivinylbenzenes in naphthalene crystals at 4.2K, *Zh. Prikl. Spektrosk.* **32**, No. 5, 799–807 (1980) (Russ) (P. A. **84**: 64094).

713. Argyrakis, P. and Kopelman, R., Correlated hopping model for singlet exciton transport in lightly doped naphthalene crystals, *Chem. Phys.* **51**, No. 1, 2, 9–16 (1980) (Eng) (*P. A.* **84**: 3450).
714. Averyushkin, A. S., Vitukhnovskii, A. G., Zhevandrov, N. D., and Il'inykh, T. V., Phosphorescence damping kinetics of impurity molecular crystals, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 774–779 (1980) (Russ).
715. Azarov, V. Yu. and Nurmukhametov, R. N., Investigation of polarization spectra of aromatic molecules in oriented films, *Zh. Prikl. Spektrosk.* **32**, No. 5, 846–851 (1980) (Russ) (*P. A.* **84**: 64095).
716. Bodunov, E. N., Malyshev, V. A., and Yakovlev, S. V., Luminescence quenching during inhomogeneous broadening of spectra of impurity centers, *Opt. and Spektrosk.* **48**, No. 5, 903–911 (1980) (Russ) (*P. A.* **84**: 31183).
717. Bolotnikova, T. N., Naumova, T. M., Savchenkov, V. I., and Chigirev, A. R., Effect of non-adiabatic interaction on radiation and absorption spectra of impurity centers, *Zh. Prikl. Spektrosk.* **32**, No. 5, 860–864 (1980) (Russ) (*P. A.* **84**: 65724).
718. Bolotnikova, T., Savchenkov, V., and Naumova, T. T_1 – S_0 excitation spectra of aromatic hydrocarbons in Shpolskii's matrices. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 408 (1977) (Eng).
719. Brillante, A. and Philpott, M. R., Reflection and absorption spectra of singlet charge transfer excitons in anthracene-PMDA crystals, *J. Chem. Phys.* **72**, No. 7, 4019–4030 (1980) (Eng) (*P. A.* **83**: 71442).
720. Chen, F. P. and Prasad, P. N., Triplet exciton emission of octafluoronaphthalene crystalline complexes with naphthalene and durene, *Chem. Phys. Lett.* **72**, No. 2, 285–290 (1980) (Eng) (*P. A.* **83**: 84760).
721. Chen, M.-C., Cullick, A. S., Gerkin, R. E., and Lundstedt, A. P., Electron paramagnetic resonance studies of the lowest triplet states of 1,2-benzanthracene- d_{12} , chrysene- d_{12} , and 1,2; 5,6-dibenzanthracene- d_{14} in single-crystal *p*-terphenyl in the range from 4 to 240 K, and their implications concerning phase transitions in *p*-terphenyl below 240 K, *Chem. Phys.* **46**, No. 3, 423–436 (1980) (Eng).
722. Chukanova, I. N., Aleksandrovskaya, N. G., Dobrokhotova, V. K., Naboikin, Yu. V., and Pokrovskaya, F. S., Investigation of absorption and fluorescence spectra of pyrene in diphenyl and duro monocrystals at 4.2 K, *Zh. Prikl. Spektrosk.* **33**, No. 6, 1054–1059 (1980) (Russ).
723. Cooper, D. E., Olson, R. W., and Fayer, M. D., Intermolecular interaction dynamics and optical dephasing: Picosecond photon echo measurements in mixed molecular crystals, *J. Chem. Phys.* **72**, No. 4, 2332–2339 (1980) (Eng).
724. Crisp, G. M. and Walmsley, S. H., Exciton trap depths in orientationally disordered anthracene crystals, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 71–76 (1980) (Eng) (*P. A.* **83**: 88481).
725. Deimling, M. and Dinse, K. P., Optical detection of chlorine NQR of *p*-dichlorobenzene in a mixed single crystal in a magnetic field, *Chem. Phys. Lett.* **69**, No. 3, 587–591 (1980) (Eng).
726. Dekkers, J. J., Some characteristic features of Shpolskii spectra. The key and hole rule and the concentration dependence of the Shpolskii effect. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 366 (1977) (Eng).
727. Despres, A. and Migiridicyan, E., Guest and host deuterium effects on the large ZFS parameters D of dimethylbenzaldehydes in durene single crystals, *Chem. Phys.* **50**, No. 3, 381–392 (1980) (Eng).
728. Dobrokhotova, V. K., Naboikin, Yu. V., Ogurtsova, L. A., Pokrovskaya, F. S., and Tiunov, Yu. A., Stimulated emission on forbidden triplet-singlet transitions of impurity molecular crystals, *Pis'ma v Zh. Tekh. Fiz.* **6**, No. 9, 538–540 (1980) (Russ).
729. Fedorov, V. P., Kind, V. V., and Korshunov, A. V., Concentration effects in the exciton absorption region of the binary system naphthalene- β -naphthol, *Phys. status solidi* (b) **100**, No. 2, K173–K176 (1980) (Eng).

730. Friedrich, J., Swalen, J. D., and Haarer, D., Electron-phonon coupling in amorphous organic host materials as investigated by photochemical hole burning, *J. Chem. Phys.* **73**, No. 2, 705–711 (1980) (Eng) (*P. A.* **83**: 97265).
731. Fröhling, W., Winscom, C. J., Dinse, K. P., and Möbius, K., High-resolution ODMR spectroscopy of phenazine in single crystal and polycrystalline host matrices, *Chem. Phys.* **51**, No. 3, 369–380 (1980) (Eng).
732. Furrer, R., Fujara, F., and Petersen, J., Photoreaction in aromatic crystals: EPR studies of anthracene doped fluorene, *J. Chem. Phys.* **73**, No. 7, 3139–3144 (1980) (Eng).
733. Gaevsky, A. S., Faidysh, A. N., and Yankovskaya, L. B., Excitation energy transfer in doped anthracene crystals containing various lattice imperfection, *Dopv. Akad. Nauk UkrSR. Ser. A* No. 2, 61–64 (1980) (Russ).
734. Goncharov, A. I., Volkov, V. V., Petrov, I. P., Grechushnikov, B. N., Kalinkina, I. N., and Nemtsev, V. A., Application of component concentration variation method for analysis of complex mixtures of organic compounds. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 176–177 (1980) (Russ).
735. Goncharov, A. I., Application of component concentration variation method for analysis of complex mixtures of organic compounds. Differential method. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 178–179 (1980) (Russ).
736. Gorbachev, S. M., Zalesskii, I. E., and Nizhnikov, V. V., Polarization of the components of multiplets in the luminescence spectrum of coronene in a *n*-heptane single crystal at 77 K, *Opt. and Spektrosk.* **49**, No. 1, 72–78 (1980) (Russ) (*P. A.* **84**: 41423).
737. Gorbachev, S. M., Zalesskii, I. E., and Nizhnikov, V. V., Polarization of coronene luminescence in *n*-heptane single crystal at 4.2 K, *Dokl. Akad. Nauk SSSR.* **254**, No. 4, 851–854 (1980) (Russ).
738. Gorobtchenko, V. S., Naboikin, Yu. V., Ogurtsova, L. A., and Podgornii, A. P., Determination of relaxation times of ground state vibrational levels of mixed molecular crystals in emission spectra at 4.2 °K. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts.* Wrocław, 516 (1977) (Eng).
739. Gorokhovskii, A. A. and Rebane, L. A., Determination of uniform characteristics of impurity molecule spectra by burning-out gap method, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 859–862 (1980) (Russ).
740. Griesser, H. J. and Wild, U. P., Energy selection experiments in glassy matrices: The linewidths of the emissions $S_2 \rightarrow S_0$ and $S_2 \rightarrow S_1$ of azulene, *J. Chem. Phys.* **73**, No. 10, 4715–4719 (1980) (Eng) (*P. A.* **84**: 37174).
741. Grunewald, G., Phonons in disordered shell models, *J. Phys. C: Solid State Phys.* **13**, No. 11, 2103–2115 (1980) (Eng) (*P. A.* **83**: 70347).
742. Hesselink, W. H. and Wiersma, D. A., Optical dephasing and vibronic relaxation in molecular mixed crystals: A picosecond photon echo and optical study of pentacene in naphthalene and *p*-terphenyl, *J. Chem. Phys.* **73**, No. 2, 648–663 (1980) (Eng) (*P. A.* **83**: 95957).
743. Hochstrasser, R. M. and Klimcak, C. M., Second-order Stark shifts in the optical spectrum of anthracene in a naphthalene crystal, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 109–120 (1980) (Eng).
744. Itoh, N., Nakayama, T., and Nakagawa, K., Theoretical studies of hydronaphthyl radicals embedded in naphthalene single crystal, *Mol. Cryst. and Liquid Cryst.* **58**, No. 3–4, 193–204 (1980) (Eng) (*P. A.* **83**: 78595).
745. Kalinkina, I. N. and Grechushnikov, B. N., Analysis of absorption spectra of multi-component mixtures. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 191 (1980) (Russ).
746. Kind, V. V., Depolarization of naphthalene excitonic absorption in binary mixture of naphthalene- β -naphthol, *Fiz. Tverd. Tela* **22**, No. 2, 633–635 (1980) (Russ) (*P. A.* **83**: 103972).
747. Koehler, T. R., Monte Carlo studies of porphyrin in the Shpolskii matrix *n*-octane,

- J. Chem. Phys.* **72**, No. 5, 3389–3395 (1980) (Eng) (*P.A.* **83**: 63533).
748. Koehler, T. R. and Schmidt, J., Reorientation of impurity molecules in host crystals upon excitation of a local phonon; the system naphthalene in durene, *Chem. Phys. Lett.* **75**, No. 1, 38–42 (1980) (Eng) (*P.A.* **84**: 7092).
 749. Kondratenko, P. A., Khutornaya, L. A. and Shpak, M. T., The influence of annealing of anthracene crystals on the low-temperature fluorescence spectra. 3. Exciton and impurity spectra, *Ukr. Fiz. Zh.* **25**, No. 12, 1950–1955 (1980) (Russ) (*P.A.* **84**: 35096).
 750. Kopelman, R. and Argyrakis, P., Diffusive and percolative lattice migration: Excitons, *J. Chem. Phys.* **72**, No. 5, 3053–3060 (1980) (Eng) (*P.A.* **83**: 59879).
 751. Korshunov, M. A., On some peculiarities of spectra of Raman scattering of low-frequency light in disordered molecular crystals, *Opt. and Spektrosk.* **48**, No. 3, 531–535 (1980) (Russ) (*P.A.* **84**: 8066).
 752. Koyava, V. T., Popechits, V. I., and Sarzhevsky, A. M., Fluorescence concentration depolarization in systems with inhomogeneously broadened electron levels, *Zh. Prikl. Spektrosk.* **32**, No. 6, 1023–1029 (1980) (Russ).
 753. Kulagin, S. A. and Osadko, I. S., Multi-well adiabatic potentials and anomalies in luminescence and absorption spectra of impurity centres, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 817–821 (1980) (Russ).
 754. Lambert, Wm. R. and Zewail, A. H., Intersystem crossing rates of pentacene in naphthalene at 1.9 K following single-mode laser excitation, *Chem. Phys. Lett.* **69**, No. 2, 270–274 (1980) (Eng).
 755. Langhoff, C. A. and Mahajan, S., Deperturbation and assignment of the vibronically tangled spectrum of pyrene in a biphenyl matrix, *J. Mol. Spectrosc.* **84**, No. 1, 94–101 (1980) (Eng) (*P.A.* **84**: 37196).
 756. Lemire, A., Mar, A., Maharaj, U., Dong, D. C., Cheung, S.-T., and Winnik, M. A., Impurity fluorescence in the irradiation of benzophenone and its derivatives, *J. Photochem.* **14**, No. 4, 265–268 (1980) (Eng).
 757. Levanyuk, A. P. and Sigov, A. S., Soft-mode interaction with the acoustic phonon branch in crystals containing defects, *Fiz. Tverd. Tela* **22**, No. 6, 1744–1747 (1980) (Russ) (*P.A.* **84**: 25390).
 758. Lyubchanskii, I. L., Ovander, L. N., and Sukstanskii, A. L., Rayleigh and hyper-Rayleigh light scattering in crystals with defects. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 208 (1977) (Eng).
 759. Makshantsev, B. I., Rate of radiationless electronic transitions for molecules in the condensed phase, *Chem. Phys.* **49**, No. 3, 397–415 (1980) (Eng) (*P.A.* **83**: 93373).
 760. Meletov, K. P., Sheka, E. F., and Rashba, E. I., Exciton-phonon luminescence of perfect and doped naphthalene crystals, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 65–88 (1980) (Eng) (*P.A.* **83**: 84773).
 761. Meletov, K. P., Rashba, E. I., and Sheka, E. F., Exciton-phonon luminescence of pure and impurity naphthalene crystals, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 702–708 (1980) (Russ).
 762. Mel'nik, V. I., Nelipovich, K. I., Faidysh, A. N., and Yankovskaya, L. B., Luminescence of the benzpenacone-benzophenone system under UV irradiation, *Zh. Prikl. Spektrosk.* **33**, No. 4, 647–652 (1980) (Russ).
 763. Mikhailenko, V. I., Structure of multiplets in coronene fluorescence spectrum in *n*-heptane at 4.2 K, *Zh. Prikl. Spektrosk.* **32**, No. 6, 1124 (1980) (Russ).
 764. Mikhailenko, V. I., Kucherenko, B. I., Kurmei, N. D., and Lisovenko, V. A., Temperature dependence of the half-width and shift of the multiplet 0–995 cm^{-1} components in the fluorescence spectrum of coronene in *n*-heptane, *Zh. Prikl. Spektrosk.* **33**, No. 1, 180 (1980) (Russ).
 765. Mikhailenko, V. I., Kucherenko, B. I., Kurmei, N. D., and Lisovenko, V. A., Temperature redistribution of intensities of the multiplet 0–995 cm^{-1} components in the fluorescence spectrum of coronene in *n*-heptane, *Zh. Prikl. Spektrosk.* **33**, No. 1, 180 (1980) (Russ).

766. Monberg, E. M. and Kopelman, R., Exciton percolation, tunneling and thermalization. Naphthalene first singlet and triplet, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1-4, 271-312 (1980) (Eng) (P.A. **83**: 84432).
767. Naboikin, Yu. V., Ogurtsova, L. A., and Podgornii, A. P., Non-equilibrium phonon effect on development of induced radiation of impurity molecular crystals, *Fiz. Tverd. Tela* **22**, No. 2, 447-452 (1980) (Russ) (P.A. **83**: 103971).
768. Najbar, J. and Turek, A. M., Luminescence of naphthalene in an argon matrix. Geometry changes and multiplet structures, *Chem. Phys. Lett.* **73**, No. 3, 536-540 (1980) (Eng).
769. Nickel, B. and Roden, G., Delayed fluorescence of N-methylcarbazole in heptane and in toluene; energy transfer from upper excited singlet states of N-methylcarbazole to toluene, *Chem. Phys.* **53**, No. 1,2, 243-250 (1980) (Eng) (P.A. **84**: 33489).
770. Olson, R. W. and Fayer, M. D., Site-dependent vibronic line widths and relaxation in the mixed molecular crystal pentacene in *p*-terphenyl, *J. Phys. Chem.* **84**, No. 16, 2001-2004 (1980) (Eng) (P.A. **84**: 15965).
771. Palit, N. B., Chakravorty, S. C., and Choudhury, M. K., Polarized absorption spectra of fluoranthene in pure and mixed crystals, *Indian J. Pure and Appl. Phys.* **18**, No. 3, 191-194 (1980) (Eng) (P.A. **83**:55122).
772. Peter, G. and Bässler, H., Fluorescence and energy transfer in disordered solid tetracene, *Chem. Phys.* **49**, No. 1, 9-16 (1980) (Eng) (P.A. **83**: 84761).
773. Platenkamp, R. J., Den Blanken, H. J., and Hoff, A. J., Single-site absorption spectroscopy of pheophytin-*a* and chlorophyll-*a* in a *n*-octane matrix, *Chem. Phys. Lett.* **76**, No. 1, 35-41 (1980) (Eng).
774. Rebane, I. and Khizhnyakov, V., The interference of resonant and non-resonant scattering in impurity centres, *Eesti NSV Tead. Akad. Toim., Füüs., Mat.* **29**, No. 2, 165-171 (1980) (Russ).
775. Rebane, I. and Hizhnyakov, V., Transient spectra of luminescence centre during vibrational relaxation. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12-16, 1977. *Abstracts*. Wrocław, 406 (1977) (Eng).
776. Rebane, I. K. and Khizhnyakov, V. V., The theory of transient quasi-linear spectra of resonance secondary emission, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 854-858 (1980) (Russ).
777. Saari, P. and Tamm, T., Hot luminescence of doped organic crystals. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12-16, 1977. *Abstracts*. Wrocław, 369 (1977) (Eng).
778. Schwentner, N., Dynamics of localized excitations from energy and time resolved spectroscopy, *Appl. Opt.* **19**, No. 23, 4104-4114 (1980) (Eng) (P.A. **84**: 31163).
779. Tokura, Y., Koda, T., and Nakada, I., Anderson transition in vibronic exciton bands of isotopically mixed naphthalene crystals, *J. Phys. Soc. Japan* **49**, suppl. A, 417-420 (1980) (Eng) (P.A. **84**: 48108).
780. Trlifaj, M., Indirect optical cooperative excitation of two-particle electronic excitations in doped organic molecular crystals, *Czech. J. Phys.* **B30**, No. 8, 915-924 (1980) (Eng) (P.A. **83**: 93368).
781. Vitukhnovskii, A. G. and Zhevandrov, N. D., Quantitative estimates of anisotropy of exciton diffusion in stilbene monocrystals, *Opt. and Spektrosk.* **48**, No. 5, 912-916 (1980) (Russ) (P.A. **84**: 30640).
782. Von Schütz, J. U., Steudle, W., Wolf, H. C., and Yakhot, V., Time correlated delayed fluorescence—ODMR. Dynamics of triplet exciton annihilation in anthracene-tetracyanobenzene crystals, *Chem. Phys.* **46**, No. 1,2, 53-65 (1980) (Eng).
783. Vylegzhanin, O. N., Pugovkin, M. M., and Turov, Yu. P., Application of main component method for analysis of quasi-linear spectra of complex mixtures. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 180 (1980) (Russ).
784. Warren, J. A., Smith, G. R., and Guillory, W. A., The infrared spectrum of matrix isolated hydrogen and deuterium, *J. Chem. Phys.* **72**, No. 9, 4901-4908 (1980) (Eng) (P.A. **83**: 78617).

785. Webber, S. E. and Avots-Avotins, P. E., Quenching of triplet excitons in poly (N-vinylcarbazole) by diacetyl, *J. Chem. Phys.* **72**, No. 6, 3773–3780 (1980) (Eng) (P. A. **83**: 66267).
786. Zagainova, L. I., Klimusheva, G. V., and Kurmei, N. D., Concentration and temperature dependence of electronic spectra of naphthalene derivatives in naphthalene crystals. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 413 (1977) (Eng).
787. Zagainova, L. I., Klimusheva, G. V., Kurmei, N. D., and Soroka, G. M., Energy spectrum of molecular clusters, *Chem. Phys.* **54**, No. 1, 65–70 (1980) (Eng).
788. Zhevandrov, N. D., Il'inykh, T. V., and Vitukhnovskii, A. G., The method to measure impurity luminescence polarization on the surface of molecular crystals, *Zh. Prikl. Spektrosk.* **32**, No. 3, 449–452 (1980) (Russ).
789. Zinoviev, P. V., Nabokin, Yu. V., and Silaeva, N. B., Influence of coherent effects on spectrum and radiation kinetics of biphenyl with pyrene impurity crystal at 4,2–1,2 K, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 780–782 (1980) (Russ).

7. EXCITON PROBLEM OF MOLECULAR CRYSTALS

7.1 Lattice dynamics and phonon spectra

790. Agranovich, V. M. and Dubovsky, O. A., Biphonon spectra in disordered crystals, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 175–188 (1980) (Eng) (P. A. **83**: 84271).
791. Alekseev, D. V., On the temperature dependence of shape and polarization of absorption lines in IR spectra of molecular crystals, *Opt. and Spektrosk.* **48**, No. 1, 75–79 (1980) (Russ) (P. A. **83**: 88991).
792. Al'shits, V. I. and Mitlyanskii, M. D., Interaction between a moving dislocation and soft phonon mode in phase transitions of the displacement type, *Zh. Eksp. and Teor. Fiz.* **78**, No. 5, 2073–2077 (1980) (Russ) (P. A. **83**: 84172).
793. Belousov, M. V., Pogarev, D. E., and Pogarev, S. V., Resonance and anharmonic interactions of vibrations in pure and isotope-mixed crystals. In: Vibrations of oxide lattices. *Leningrad*, 249–301 (1980) (Russ).
794. Belousov, M. V., Ivanova, E. A., Pogarev, D. E., and Pogarev, S. V., Restoration of density of states from one-phonon spectrum of mixed crystal, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **31**, No. 12, 717–719 (1980) (Russ) (P. A. **83**: 93313).
795. Briels, W. J., An expansion of the intermolecular energy in a complete set of symmetry-adapted functions; convergence of the series for methane-methane and adamantane-adamantane interactions, *J. Chem. Phys.* **73**, No. 4, 1850–1861 (1980) (Eng).
796. Bron, W. E., Spectroscopy of high-frequency phonons, *Repts Progr. Phys.* **43**, No. 3, 301–352 (1980) (Eng).
797. Broude, V. L. and Sheka, E. F., Neutron scattering from equilibrium and non-equilibrium phonons, excitons and polaritons, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 145–162 (1980) (Eng) (P. A. **83**: 84032).
798. Buckingham, A. D., Basic theory of intermolecular forces: Applications to small molecules. In: Intermolecular interactions: From diatomics to biopolymers. *Chichester etc.*, 1–67 (1978) (Eng).
799. Cantrell, J. H., Jr., Generalized Grüneisen tensor from solid nonlinearity parameters, *Phys. Rev. B* **21**, No. 10, 4191–4195 (1980) (Eng) (P. A. **83**: 84275).
800. Chakrabarti, B. K., Roy, G. K., and Sinha, S. K., Phonon modes in a disordered lattice, *Phys. Status Solidi (b)* **99**, No. 1, 297–303 (1980) (Eng) (P. A. **83**: 79900).
801. Chandrasekharan, V., Zero point motion and Raman intensities in molecular crystals. In: Proceedings of the VIIIth International Conference on Raman Spectroscopy. *Linear*

- and *Non Linear Processes*, Ottawa, Canada, 1980. Amsterdam, Netherlands: North-Holland, 280–281 (1980) (Eng) (P. A. 85: 2289).
802. Charbonneau, G. P. and Rivet, P., Diamagnetism and thermal motion in rigid-body molecules. Application to biphenyl, *Acta Crystallogr.* **A36**, No. 1, 51–53 (1980) (Eng).
 803. Claverie, P., Elaboration of approximate formulas for the interactions between large molecules: Applications in organic chemistry. In: *Intermolecular interactions: From diatomics to biopolymers. Chichester etc.*, 69–305 (1978) (Eng).
 804. Dinershtein, V. B., Additive and non-additive dispersion molecular interactions, *Izv. VUZ Fiz.* No. 4, 123 (1980) (Russ).
 805. Dolgov, A. S., Dynamic problem of nonlocal distorted harmonic crystal lattice, *Fiz. Tverd. Tela* **22**, No. 8, 2414–2419 (1980) (Russ).
 806. Dorman, V. L., Zarochentsev, E. V., and Troitskaya, E. P., Interatomic potential of rare gas solids. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 186–187 (1980) (Russ).
 807. Erdle, E. and Mohwald, H., Mini-excitons and lattice dynamics in mixed CT-crystals; an ESR, Optical and Raman spectroscopical study, *Z. Naturforsch.* **35A**, No. 2, 236–243 (1980) (Eng) (P. A. 83: 60406).
 808. Galatry, L., Theories of intermolecular forces. In: *High Pressure Science and Technology. Proceedings of the VIIth International AIRAPT Conference*, Pt. I, Le Creusot, France, 30 July–3 Aug. 1979. Oxford, England: *Pergamon*, 104–107 (1980) (Eng) (P. A. 84: 29079).
 809. Glyde, H. R. and Smoes, M. G., Phonons in solid argon, *Phys. Rev. B* **22**, No. 12, 6391–6402 (1980) (Eng) (P. A. 84: 34440).
 810. Goncalves, A. M. P., Spectroscopic investigations of intermolecular interactions in organic molecular crystals, *Prog. Solid State Chem.* **13**, No. 1, 1–88 (1980) (Eng) (P. A. 83: 103958).
 811. Gramaccioli, C. M., Filippini, G., Simonetta, M., Ramdas, S., Parkinson, G. M., and Thomas, J. M., Structure and dynamics of a new phase of anthracene, *J. Chem. Soc. Faraday Trans. II* **76**, No. 10, 1336–1346 (1980) (Eng) (P. A. 84: 47072).
 812. Gritsan, V. N., Kachur, V. G., and Zhibankov, R. G., Application of computers for study of hydrogen bonds in organic compound crystals. In: *Use of computers in spectroscopy of molecules and chemical studies. Novosibirsk*, 143–144 (1980) (Russ).
 813. Grunewald, G., Phonons in disordered shell models, *J. Phys. C: Solid State Phys.* **13**, No. 11, 2103–2115 (1980) (Eng) (P. A. 83: 70347).
 814. Hsu, L.-Y. and Williams, D. E., Intermolecular potential-function models for crystalline perchlorohydrocarbons, *Acta Crystallogr.* **A36**, No. 2, 277–281 (1980) (Eng).
 815. Jain, P. C., Transport properties of neon, krypton and xenon according to L-J (12–6) potential, *Indian J. Pure and Appl. Phys.* **18**, No. 6, 459–461 (1980) (Eng).
 816. Kaila, R., Dixit, L., and Gupta, P. L., The molecular polarizability and intermolecular interaction potential function of adamantane, *Indian J. Phys.* **53B**, No. 3, 109–116 (1979) (Eng) (P. A. 84: 59602).
 817. Kleinert, P. and Leihkauf, R., Dispersion and damping of phonon-like excitations in disordered systems, *Phys. Status Solidi (b)* **97**, No. 2, 491–499 (1980) (Eng).
 818. Kobashi, K. and Chandrasekharan, V., Anharmonic lattice vibrations in solid α and γ -N₂. In: *High Pressure Science and Technology. Proceedings of the VIIth International AIRAPT Conference*. Pt. II. Le Creusot, France, 30 July–3 Aug. 1979. Oxford, England: *Pergamon*, 739–741 (1980) (Eng) (P. A. 84: 38483).
 819. Krasnyanskii, G. E. and Tsyashchenko, Yu. P., Contributions of different intermolecular potentials to the Davydov splitting of vibrational levels in crystals and site symmetry, *Phys. Status Solidi (b)* **101**, No. 2, K151–K154 (1980) (Eng) (P. A. 84: 15966).
 820. Lalov, I. J., Contribution of overtones and compound tones in the natural optical activity of molecular crystals. In: *XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. Abstracts*. Wrocław, 207 (1977) (Eng).

821. Levinson, Y. B., Nonlocal phonon heat conductivity, *Zh. Eksp. and Teor. Fiz.* **79**, No. 4, 1394–1407 (1980) (Russ).
822. Levinson, Y. B., Propagation of nonequilibrium phonons with frequency down-conversion, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 23–38 (1980) (Eng).
823. Luty, T., Van Der Avoird, A., and Berns, R. M., Lattice dynamics of solid N_2 with an ab initio intermolecular potential, *J. Chem. Phys.* **73**, No. 10, 5305–5309 (1980) (Eng) (*P. A.* **84**: 38476).
824. MacDonald, R. A. and Mountain, R. D., High temperature crystals: limitations on the phonon description. In: *Phonon Scattering in Condensed Matter*. New York and London, 137–140 (1980) (Eng).
825. McMurry, H. L. and Hansen, F. Y., The use of symmetrized valence and relative motion coordinates for crystal potentials, *J. Chem. Phys.* **72**, No. 10, 5540–5549 (1980) (Eng).
826. Maksimov, A. F., Kaplan, I. G., Privalov, O. M., Pyatakhin, O. F., Efimovich, S. N., and Sumin, V. V., Computer determination of force constants for complicated crystal lattice by using neutron spectroscopy data. In: *Use of computers in spectroscopy of molecules and chemical studies*. Novosibirsk, 103 (1980) (Russ).
827. Mavrin, B. N., Classification of translational and orientational vibrations in crystals, *Opt. and Spektrosk.* **49**, No. 1, 79–85 (1980) (Russ).
828. Mills, D. L., Dithler, C. J., and Sparks, M., The absorption of infrared radiation by multiphonon processes in solids. In: *Dynamical properties of solids*. Vol. 4. Disordered solids, *Optical Properties*. Amsterdam, Netherlands: North-Holland, 377–424 (1980) (Eng) (*P. A.* **84**: 39102).
829. Moskalenko, S. A., Miglei, M. F., Khadshi, P. I., Pokatilov, E. P., and Kiselyova, E. S., Coherent phonons and excitons in biological systems, *Phys. Lett.* **76A**, No. 2, 197–200 (1980) (Eng) (*P. A.* **83**: 67042).
830. Moskalenko, S. A., Khadshi, P. I., and Rotaru, A. Kh., Solitons and nutation in exciton spectrum region. Kishinev, *Shtiintsa*, 196 (1980) (Russ).
831. Mozrzymas, J., Sur la structure des representations de vibrations d'un reseau cristallin, *C. r. Acad. Sci. B* **291**, No. 2, 71–76 (1980) (Fr) (*P. A.* **84**: 42478).
832. Murthy, C. S., Singer, K., Klein, M. L., and McDonald, I. R., Effect of changes in pair potential on the dynamical structure factor of molecular crystals, *Mol. Phys.* **40**, No. 6, 1517–1521 (1980) (Eng) (*P. A.* **84**: 2576).
833. Murthy, C. S., Singer, K., Klein, M. L., and McDonald, I. R., Pairwise additive effective potentials for nitrogen, *Mol. Phys.* **41**, No. 6, 1387–1399 (1980) (Eng) (*P. A.* **84**: 37294).
834. Nelson, K. A. and Fayer, M. D., Laser induced phonons: A probe of intermolecular interactions in molecular solids, *J. Chem. Phys.* **72**, No. 9, 5202–5218 (1980) (Eng) (*P. A.* **83**: 79891).
835. Ovander, L. N. and Petrenko, A. D., Theory of nonlinear optical rotation in molecular crystals. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 205 (1977) (Eng).
836. Podoprigora, V. G., Remizov, I. A., Botvich, A. N., and Shabanov, V. F., Use of computers for calculation of properties of molecules in condensed state taking into account of three-particle forces and effective multipoles. In: *Use of computers in spectroscopy of molecules and chemical studies*. Novosibirsk, 79 (1980) (Russ).
837. Powell, B. M., Dolling, G., Pawley, G. S., and Leech, J. W., Lattice dynamics of ammonia, *Can. J. Phys.* **58**, No. 12, 1703–1711 (1980) (Eng) (*P. A.* **84**: 34430).
838. Prasad, P. N., Vibrational relaxation and dephasing in organic solids, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 39–54 (1980) (Eng) (*P. A.* **83**: 88987).
839. Pratt, J. C., Watton, A., and Petch, H. E., Deuteron spin-lattice relaxation from hindered rotations in molecular crystals, *J. Chem. Phys.* **73**, No. 6, 2542–2546 (1980) (Eng).
840. Privalov, O. M., Pyatakhin, O. F., Maksimov, A. F., and Kaplan, I. G., Application of regularization method for computer solution of inverse problem of coherent inelastic

- neutron scattering from complex crystal. In: Use of computers in spectroscopy of molecules and chemical studies. *Novosibirsk*, 116 (1980) (Russ).
841. Ramdas, S. and Thomas, J. M., The use of atom-atom potentials in interpreting the behaviour of organic molecular crystals. In: Chemical physics of solids and their surfaces. Vol. 7. London, England: *Chem. Soc.* 31-58 (1978) (Eng) (P. A. **83**: 84136).
 842. Ratcliffe, C. I., Sherman, W. F., and Wilkinson, G. R., Raman studies of torsional vibrations in crystals as a function of temperature and pressure. In: Proceedings of the VIIth International Conference on Raman Spectroscopy. *Linear and Non Linear Processes*. Ottawa, Canada, 1980. Amsterdam, Netherlands: North-Holland, 116-117 (1980) (Eng) (P. A. **85**: 2268).
 843. Righini, R., Califano, S., and Walmsley, S. H., Calculated phonon dispersion curves for fully deuterated naphthalene crystals at low temperature, *Chem. Phys.* **50**, No. 1, 113-117 (1980) (Eng) (P. A. **83**: 96599).
 844. Sherman, W. F., Bond anharmonicities, Grüneisen parameters and pressure-induced frequency shifts, *J. Phys. C: Solid State Phys.* **13**, No. 25, 4601-4613 (1980) (Eng).
 845. Takeuchi, H. and Tasumi, M., Lattice vibrations of polymethylene crystal, *Chem. Phys.* **47**, No. 3, 395-399 (1980) (Eng) (P. A. **83**: 59607).
 846. Tyu, N. S., The applicability of the Russe-Custler theory in Raman scattering of light by external vibrations of molecular crystals, *Zh. Prikl. Spektrosk.* **32**, No. 4, 718-724 (1980) (Russ) (P. A. **84**: 61344).
 847. Vetrov, S. Ya., First-order Raman scattering in incommensurate structures, *Opt. and Spektrosk.* **48**, No. 1, 58-62 (1980) (Russ) (P. A. **83**: 88990).
 848. Warren, J. A., Smith, G. R., and Guillory, W. A., The infrared spectrum of matrix isolated hydrogen and deuterium, *J. Chem. Phys.* **72**, No. 9, 4901-4908 (1980) (Eng) (P. A. **83**: 78617).
 849. Williams, D. E., Calculated energy and conformation of clusters of benzene molecules and their relationship to crystalline benzene, *Acta Crystallogr.* **A36**, No. 4, 715-723 (1980) (Eng).
 850. Wu Guo-zhen, The dipolar coupling and the symmetry of phonons in molecular crystals, *Acta Phys. Sin.* **29**, No. 6, 803-806 (1980) (Chin) (P. A. **83**: 103437).
 851. Wu Jian, Long-wavelength optical phonon spectra of mixed crystals, *Chin. J. Semicond.* **1**, No. 4, 267-273 (1980) (Chin) (P. A. **84**: 61315).
 852. Wu, S.-Y., Bowen, S. P., and Dy, K. S., Lattice vibrations of one-dimensional disordered systems, *CRC Crit. Rev. Solid State and Mater. Sci.* **10**, No. 1, 43-117 (1980) (Eng) (P. A. 105313).
 853. Yakub, L. N., Interparticle correlations in rare gas solids. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 188-189 (1980) (Russ).

7.2. Singlet exciton and cooperative effects

854. Agranovich, V. M., Babichenko, V. S., and Chernyak, B. Ya., Nonlinear surface polaritons, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **32**, No. 8, 532-535 (1980) (Russ) (P. A. **84**: 25647).
855. Agranovich, V. M., Darmanian, S. A., and Rupasov, V. I., Polariton mechanism of luminescence of crystals: reabsorption, spatial dispersion effects and role of the boundary, *Zh. Eksp. and Teor. Fiz.* **78**, No. 2, 656-671 (1980) (Russ) (83: 55186).
856. Akhmediev, N. N., Role of spatial dispersion in the absorption of light by excitons, *Zh. Eksp. and Teor. Fiz.* **79**, No. 4, 1534-1543 (1980) (Russ).
857. Baroni, S., Grosso, G., and Pastori Parravicini, G., Energy bands and excitons in solid neon, *Phys. Rev. B* **22**, No. 12, 6440-6446 (1980) (Eng) (P. A. **84**: 38716).
858. Boichuk, V. I., Nitsovich, V. M., and Tkach, N. V., Coefficient of exciton light absorption by film, *Ukr. Fiz. Zh.* **25**, No. 4, 557-563 (1980) (Russ).

859. Boichuk, V. I., Nitsovich, V. M., and Tkach, N. V., Excitonic light absorption by thin films, *Fiz. Tverd. Tela* **22**, No. 3, 699–703 (1980) (Russ).
860. Bounds, P. J. and Siebrand, W., Charge-transfer excitons in anthracene crystals and their role in optical charge carrier generation, *Chem. Phys. Lett.* **75**, No. 3, 414–418 (1980) (Eng).
861. Brillante, A. and Philpott, M. R., Reflection and absorption spectra of singlet charge transfer excitons in anthracene-PMDA crystals, *J. Chem. Phys.* **72**, No. 7, 4019–4030 (1980) (Eng) (P. A. **83**: 71442).
862. Broude, V. L. and Sheka, E. F., Neutron scattering from equilibrium and non-equilibrium phonons, excitons and polaritons, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 145–162 (1980) (Eng) (P. A. **83**: 84032).
863. Burland, D. M. and Zewail, A. H., Coherent processes in molecular crystals. In: *Advances in Chemical Physics*. Ed. by Prigogine I., Rice S. A. Vol. 40. New York etc., John Wiley and Sons, 369–484 (1979) (Eng).
864. Davidovich, M. A., Exciton states in 1,2,4,5-tetrachlorobenzene crystals and dimers, *Phys. status solidi* (b) **98**, No. 2, 735–745 (1980) (Eng) (P. A. **83**: 70620).
865. Davydov, A. S., Theory of excitons and solitons in molecular systems (review), *Zh. Prikl. Spektrosk.* **33**, No. 4, 589–611 (1980) (Russ).
866. Erdle, E. and Mohwald, H., Mini-excitons and lattice dynamics in mixed CT-crystals: an ESR, optical and Raman spectroscopical study, *Z. Naturforsch.* **35A**, No. 2, 236–243 (1980) (Eng) (P. A. **83**: 60406).
867. Eremko, A. A. and Sergienko, A. I., Soliton excitations of α -helical protein molecules, *Ukr. Fiz. Zh.* **25**, No. 12, 2013–2020 (1980) (Russ).
868. Fox, D., Frenkel biexcitons. States and transition spectra, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 39–45 (1980) (Eng) (P. A. **83**: 88480).
869. Gunn, J. M. F., Collective excitations in rare gas solids, *J. Phys. C: Solid State Phys.* **13**, No. 20, 3841–3853 (1980) (Eng).
870. Hoffman, B. M., Phillips, T. E., and Soos, Z. G., Atomic limit and polarons in conducting molecular crystals, *Solid State Communs* **33**, No. 1, 51–54 (1980) (Eng).
871. Katalnikov, V. V. and Tolpygo, K. B., Anisotropic crystal exciton luminescence at large oscillator strength, *Fiz. Tverd. Tela* **22**, No. 10, 2928–2933 (1980) (Russ).
872. Khizhnyakov, V. V. and Sherman, A. V., Hot luminescence of self-trapping excitons, *Fiz. Tverd. Tela* **22**, No. 11, 3254–3262 (1980) (Russ) (P. A. **84**: 86497).
873. Klochikhin, A. A. and Plekhanov, V. G., Isotopic effect on Wannier-Mott exciton levels, *Fiz. Tverd. Tela* **22**, No. 2, 585–588 (1980) (Russ) (P. A. **83**: 103633).
874. Klyuchnik, A. V. and Lozovik, Yu. E., Phase transition to the incommensurate excitonic phase, *Phys. Status Solidi* (b) **98**, No. 2, K89–K94 (1980) (Eng) (P. A. **83**: 75510).
875. Ku Shih-Wei, The temperature dependence of the Frenkel exciton effective mass, *Acta Phys. Sin.* **29**, No. 4, 517–523 (1980) (Chin) (P. A. **83**: 84429).
876. Lee, M. H. and Bagchi, A., Two-dimensional lattice sums and the dispersion relation of Frenkel excitons, *Phys. Rev. B* **22**, No. 6, 2645–2648 (1980) (Eng) (P. A. **84**: 7530).
877. Luty, T. and Uszynski, I., Polaritons in molecular crystals, *J. Chem. Phys.* **72**, No. 2, 1369–1376 (1980) (Eng).
878. Moskalenko, S. A., Miglei, M. F., Khadshi, P. I., Pokatilov, E. P., and Kiselyova, E. S., Coherent phonons and excitons in biological systems, *Phys. Lett.* **76A**, No. 2, 197–200 (1980) (Eng) (P. A. **83**: 67042).
879. Nkoma, J. S., Theory of absorption by exciton polaritons in a spatially dispersive medium, *Phys. Status Solidi* (b) **97**, No. 2, 657–662 (1980) (Eng).
880. Petelenz, P., Mixing of Frenkel excitons and ionic excited states in a linear crystal of donor-acceptor complex. 2. ADA-type complexes, *Phys. Status Solidi* (b), **99**, No. 2, 487–491 (1980) (Eng) (P. A. **83**: 92824).
881. Plekhanov, V. G., Resonance secondary luminescence of crystals with autolocalizing excitons of molecular type, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 765–768 (1980) (Russ).

882. Resca, L. and Resta, R., Bulk excitons in solid neon: theory, *Phys. Rev. B* **21**, No. 10, 4889–4891 (1980) (Eng) (*P. A.* **83**: 92826).
883. Saile, V. and Koch, E. E., Comment on bulk excitons in solid neon: experiment, *Phys. Rev. B* **21**, No. 10, 4892–4894 (1980) (Eng) (*P. A.* **83**: 92827).
884. Schlosser, D. W. and Philpott, M. R., Singlet excitons in crystalline naphthalene, anthracene, tetracene and pentacene, *Chem. Phys.* **49**, No. 2, 181–199 (1980) (Eng) (*P. A.* **83**: 92820).
885. Serikov, A. A., Influence of relaxation processes and exciton dispersion on optical characteristics of crystals, *Phys. Status Solidi* (b) **100**, No. 2, 407–421 (1980) (Eng).
886. Sergienko, A. I., Solitons in two parallel molecular chains, *Ukr. Fiz. Zh.* **25**, No. 12, 1992–1998 (1980) (Russ) (*P. A.* **84**: 33407).
887. Sribnaya, V. K. and Tolpygo, K. B., Exciton bands in crystalline Ne, *Ukr. Fiz. Zh.* **25**, No. 5, 267–278 (1980) (Russ) (*P. A.* **84**: 2889).
888. Sugakov, V. I. and Khotyaintsev, V. N., Dislocation excitons and their manifestations in optic spectra, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 769–773 (1980) (Russ).
889. Sugakov, V. I. and Shiyonovsky, S. V., Effect of long-range action in intermolecular interaction on optical spectra of liquid crystals, *Opt. and Spektrosk.* **48**, No. 3, 542–547 (1980) (Russ) (*P. A.* **84**: 8067).
890. Tokura, Y. and Koda, T., Exciton spectroscopy of anthracene crystal, *Solid State Phys.* **15**, No. 5, 267–278 (1980) (Jap) (*P. A.* **84**: 16236).
891. Toms, D. J. and Tanttila, W. H., Nonlinear excitations in a Lennard-Jones solid, *Phys. Status Solidi* (b) **102**, No. 2, K101–K106 (1980) (Eng).
892. Von Der Weid, J. P., Molecular excitons in alkali cyanides, *Solid State Commun.* **34**, No. 3, 147–149 (1980) (Eng) (*P. A.* **83**: 66287).

7.3. Triplet excitons

893. Andreev, V. A. and Shtepa, Yu. D., The effect of structural defects on triplet exciton EPR spectra in highly anisotropic crystals, *Ukr. Fiz. Zh.* **25**, No. 12, 2050–2053 (1980) (Russ) (*P. A.* **84**: 38981).
894. Andreev, V. A., Sugakov, V. I., and Shtepa, Yu. D., Spin-lattice relaxation of triplet excitons on acoustical phonons, *Fiz. Tverd. Tela* **22**, No. 5, 1328–1331 (1980) (Russ).
895. Breiland, W. G. and Saylor, M. C., Exchange formalism applied to one-dimensional triplet excitons: observation of restricted and temperature-dependent k to k' scattering in the zero-field optically detected magnetic resonance spectrum of 1, 2, 4, 5-tetrachlorobenzene, *J. Chem. Phys.* **72**, No. 12, 6485–6497 (1980) (Eng) (*P. A.* **83**: 88891).
896. Burns, A. R. and Harris, C. B., Heat pulses in molecular solids. Phonon-induced delocalizations of trapped excited triplet states, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 1–18 (1980) (Eng) (*P. A.* **83**: 89053).
897. Erdle, E. and Mohwald, H., Mini-excitons and lattice dynamics in mixed CT-crystals: and ESR, optical and Raman spectroscopical study, *Z. Naturforsch.* **35A**, No. 2, 236–243 (1980) (Eng) (*P. A.* **83**: 60406).
898. Iturbe, E. B. and Sharnoff, M., Migration of triplet excitons in benzophenone: A persistent coherence, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 227–242 (1980) (Eng) (*P. A.* **83**: 84641).
899. Kostin, A. K. and Vannikov, A. V., Spectral and electrical investigations of triplet excitons on pulsed electron excitation of molecular crystals, *Radiat. Phys. and Chem.* **15**, No. 5, 613–616 (1980) (Eng) (*P. A.* **83**: 92828).
900. Lesin, V. I. and Sakun, V. P., Effect of spin-lattice relaxation on the dependence of the triplet exciton annihilation rate on the strength of magnetic field, *Phys. Status Solidi* (b) **98**, No. 2, 411–417 (1980) (Eng) (*P. A.* **83**: 65459).
901. Samoc, M., Siebrand, W., Webb, J. B., and Williams, D. F., On the involvement of triplet excitons in a two photon generation of charge carriers in anthracene, *Mol. Cryst. and Liquid Cryst.* **64**, No. 3, 89–92 (1980) (Eng) (*P. A.* **84**: 25755).

902. Van Strien, A. J., Van Kooten, J. F. C., and Schmidt, J., Exciton dynamics: direct observation of k - k scattering in a one-dimensional triplet exciton system by electron spin echo spectroscopy, *Chem. Phys. Lett.* **76**, No. 1, 7–12 (1980) (Eng).
903. Von Burg, K., Altwegg, L., and Zschokke-Gränacher, I., Influence of surface effects and temperature on the interaction of triplet excitons in molecular crystals, *Phys. Rev. B*, No. 4, 2037–2049 (1980) (Eng) (*P.A.* **84**: 8125).
904. Wieting, R. D. and Fayer, M. D., Exciton scattering and the dephasing of ESR and optical absorption lines: The 1, 2, 4, 5-tetrachlorobenzene triplet exciton problem, *J. Chem. Phys.* **73**, No. 2, 744–748 (1980) (Eng) (*P.A.* **83**: 96791).

7.4. Exciton-phonon interaction (shape of bands, energy dissipation, vibronic spectra)

905. Burns, A. R., and Harris, C. B., Heat pulses in molecular solids. Phonon-induced delocalization of trapped excited triplet states, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 1–18 (1980) (Eng) (*P.A.* **83**: 89053).
906. Craig, D. P., Dissado, L. A., and Walmsley, S. H., Exciton-phonon coupling in molecular crystal trapping processes, *Chem. Phys.* **46**, No. 1, 2, 87–105 (1980) (Eng).
907. Craig, D. P. and Singh, J., Masking of trap effects on exciton bands by exciton-phonon coupling, *Chem. Phys. Lett.* **71**, No. 3, 409–414 (1980) (Eng) (*P.A.* **83**: 80186).
908. Davydov, A. S., Soliton motion in a one-dimensional molecular lattice with allowance for thermal vibrations, *Zh. Eksp. and Teor. Fiz.* **78**, No. 2, 789–796 (1980) (Russ).
909. Grigorichuk, R. A. and Stasyuk, I. V., Electron-deformation interaction and lattice contraction in crystals described by a Hubbard model, *Ukr. Fiz. Zh.* **25**, No. 3, 404–410 (1980) (Russ) (*P.A.* **83**: 59592).
910. Hoffman, B. M., Phillips, T. E., and Soos, Z. G., Atomic limit and polarons in conducting molecular crystals, *Solid State Commun.* **33**, No. 1, 51–54 (1980) (Eng).
911. Karelskikh, I. L. and Nitsovich, V. M., Effect of anharmonism on exciton peak broadening in absorption spectrum, *Ukr. Fiz. Zh.* **25**, No. 6, 1027–1029 (1980) (Russ) (*P.A.* **83**: 97317).
912. Klafter, J. and Jortner, J., Some features of two-particle exciton-phonon excitations in molecular crystals, *Chem. Phys.* **47**, No. 1, 25–48 (1980) (Eng) (*P.A.* **83**: 55120).
913. Kotani, A. and Suzuki, M., Resonant light scattering and luminescence in weakly coupled localized electron-phonon system. II, *J. Phys. Soc. Japan* **48**, No. 1, 219–227 (1980) (Eng).
914. Kurita, H., Sakai, O., and Kotani, A., Resonant light scattering and luminescence in exciton-phonon system. I, *J. Phys. Soc. Japan* **49**, No. 5 1920–1928 (1980) (Eng) (*P.A.* **84**: 26189).
915. Meletov, K. P., Sheka, E. F., and Rashba, E. I., Exciton-phonon luminescence of perfect and doped naphthalene crystals, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 65–88 (1980) (Eng) (*P.A.* **83**: 84773).
916. Memos, T. and Loudon, R., Theory of relaxation rates of coupled-mode solid-state excitations, *J. Phys. C: Solid State Phys.* **13**, No. 9, 1657–1668 (1980) (Eng) (*P.A.* **83**: 59881).
917. Mirjanic, D., Skrinjar, M., and Kapor, D., Exciton-phonon interaction and superfluid properties of optical excitations, *Fizika* **12**, suppl. 1, 302–307 (1980) (Eng) (*P.A.* **84**: 69695).
918. Miyazaki, H. and Hanamura, E., First and second order optical responses in exciton-phonon system. In: *Relaxation of Elementary Excitations*. Proceedings of the Taniguchi International Symposium, Susono-shi, Japan, 12–16 Oct. 1979. Berlin, Germany: Springer-Verlag, 71–87 (1980) (Eng) (*P.A.* **84**: 35062).
919. Munn, R. W. and Silbey, R., Remarks on exciton-phonon coupling and exciton transport, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 131–144 (1980) (Eng) (*P.A.* **83**: 84430).

920. Rashba, E. I., Vibronic spectra of molecular crystals: dynamic theory and comparison with experiment. In: *Relaxation of Elementary Excitations*. Proceedings of the Taniguchi International Symposium, Susono-shi, Japan, 12–16 Oct. 1979. Berlin, Germany: Springer-Verlag, 88–100 (1980) (Eng) (*P. A.* **84**: 35072).
921. Rips, I. B. and Capek, V., On stochastic models of the excitation transfer in molecular crystals. The lineshape of the phononless exciton band, *Phys. Status Solidi* (b) **100**, No. 2, 451–461 (1980) (Eng).
922. Sakai, O., Kurita, H., and Kotani, A., Resonant light scattering and luminescence in exciton-phonon system. 2. Extended analysis by a simplified balance equation, *J. Phys. Soc. Japan* **49**, No. 5, 1929–1936 (1980) (Eng) (*P. A.* **84**: 26190).
923. Serikov, A. A., Influence of relaxation processes and exciton dispersion on optical characteristics of crystals, *Phys. Status Solidi* (b) **100**, No. 2, 407–421 (1980) (Eng).
924. Silbey, R. and Munn, R. W., General theory of electronic transport in molecular crystals. 1. Local linear electron-phonon coupling, *J. Chem. Phys.* **72**, No. 4, 2763–2773 (1980) (Eng).

7.5. Excitons in mixed crystals

925. Abram, I. I. and Hochstrasser, R. M., Theory of the time evolution of exciton coherence in weakly disordered crystals, *J. Chem. Phys.* **72**, No. 6, 3617–3625 (1980) (Eng) (*P. A.* **83**: 65455).
926. Agranovich, V. M. and Dubovsky, O. A., Biphonon spectra in disordered crystals, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 175–188 (1980) (Eng) (*P. A.* **83**: 84271).
927. Ahlgren, D. C. and Kopelman, R., Isotopic mixed crystal exciton spectra in the far infrared: naphthalene, *Chem. Phys.* **48**, No. 1, 47–52 (1980) (Eng).
928. Ahlgren, D. C. and Kopelman, R., Reply to comment on "Experimental test of the Anderson-Mott transition model for excitation transport," *J. Chem. Phys.* **73**, No. 2, 1005–1006 (1980) (Eng).
929. Argyrakis, P. and Kopelman, R., Correlated hopping model for singlet exciton transport in lightly doped naphthalene crystals, *Chem. Phys.* **51**, No. 1, 2, 9–16 (1980) (Eng) (*P. A.* **84**: 3450).
930. Belousov, M. V., Pogarev, D. E., and Pogarev, S. V., Resonance and anharmonic interactions of vibrations in pure and isotope-mixed crystals. In: *Vibrations of Oxide Lattices*. Leningrad, 249–301 (1980) (Russ).
931. Belousov, M. V., Ivanova, E. A., Pogarev, D. E., and Pogarev, S. V., Restoration of density of states from one-phonon spectrum of mixed crystal, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **31**, No. 12, 717–719 (1980) (Russ) (*P. A.* **83**: 93313).
932. Blumen, A. and Zumofen, G., On the random walk of energy to traps in disordered systems, *Chem. Phys. Lett.* **70**, No. 2, 387–391 (1980) (Eng) (*P. A.* **83**: 55155).
933. Blumen, A., Klafter, J., and Silbey, R., Theoretical studies of energy transfer in disordered condensed media, *J. Chem. Phys.* **72**, No. 10, 5320–5332 (1980) (Eng).
934. Botvinko, M. N. and Ivanov, M. A., Light absorption near the optical band edge in crystal with impurity state of large radius, *Fiz. Tverd. Tela* **22**, No. 8, 2374–2382 (1980) (Russ).
935. Chakrabarti, B. K., Roy, G. K., and Sinha, S. K., Phonon modes in a disordered lattice *Phys. Status Solidi* (b) **99**, No. 1, 297–303 (1980) (Eng) (*P. A.* **83**: 79900).
936. Cohen, M. H., Singh, J., and Yonezawa, F., Elementary excitations of topologically disordered systems, *Solid State Commun.* **36**, No. 11, 923–926 (1980) (Eng).
937. Colson, S. D. and Okumura, M., Time resolved energy migration in an energetically disordered molecular crystal, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 255–270 (1980) (Eng) (*P. A.* **83**: 89052).
938. Crisp, G. M. and Walmsley, S. H., Exciton trap depths in orientationally disordered anthracene crystals, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 71–76 (1980) (Eng) (*P. A.* **83**: 88481).

939. Elyutin, P. V., On impurity excitonic band, *Fiz. Tverd. Tela* **22**, N 12, 3533–3538 (1980) (Russ).
940. Furukawa, T. and White, W. B., Vibrational spectra and glass structure, *J. Non-Cryst. Solids* **38-39**, pt. 1, 87–92 (1980) (Eng) (P. A. **83**: 84732).
941. Godzik, K. and Jortner, J., Electronic energy transport in substitutionally disordered molecular crystals, *J. Chem. Phys.* **72**, No. 8, 4471–4486 (1980) (Eng) (P. A. **83**: 75525).
942. Kaplan, T., Leath, P. L., Gray, L. J., and Diehl, H. W., Selfconsistent cluster theory for systems with off-diagonal disorder, *Phys. Rev. B* **21**, No. 10, 4230–4246 (1980) (Eng) (P. A. **83**: 84272).
943. Klafter, J. and Jortner, J., Energy trapping from localized states in mixed organic solids, *J. Chem. Phys.* **73**, No. 2, 1004 (1980) (Eng).
944. Kleinert, P. and Leihkauf, R., Dispersion and damping of phonon-like excitations in disordered systems, *Phys. Status Solidi (b)* **97**, No. 2, 491–499 (1980) (Eng).
945. Kopelman, R. and Argyrakos, P., Diffusive and percolative lattice migration: Excitons, *J. Chem. Phys.* **72**, No. 5, 3053–3060 (1980) (Eng) (P. A. **83**: 59879).
946. Marks, S., Cornelius, P. A., and Harris, C. B., A critical test of vibrational dephasing theories in solids using spontaneous Raman scattering in isotopically mixed crystals, *J. Chem. Phys.* **73**, No. 7, 3069–3081 (1980) (Eng) (P. A. **84**: 8056).
947. Monberg, E. M. and Kopelman, R., Exciton percolation, tunneling and thermalization. Naphthalene first singlet and triplet, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 271–312 (1980) (Eng) (P. A. **83**: 84432).
948. Morsink, J. B. W., Kruizinga, B., and Wiersma, D. A., Optical dephasing and energy migration in disordered molecular mixed crystals, *Chem. Phys. Lett.* **76**, No. 2, 218–220 (1980) (Eng).
949. Movaghar, B. and Sauer, G. W., Diffusion and trapping of excitations in disordered systems, *J. Phys. C: Solid State Phys.* **13**, No. 26, 4933–4940 (1980) (Eng).
950. Osadko, I. S. and Kulagin, S. A., Manifestation of large conformational changes in the optical spectra of molecules and impurity centers, *Opt. and Spektrosk.* **49**, No. 2, 290–295 (1980) (Russ) (P. A. **84**: 59574).
951. Paerschke, H., Süsse, K. -E., and Welsch, D. -G., Theory of absorption profiles of molecular transitions in dense media, *Phys. Status Solidi (b)* **98**, No. 1, 253–264 (1980) (Eng) (P. A. **83**: 59589).
952. Pekcan, Ö., Magnetic field effect on host-guest triplet pairs in a mixed organic crystal system, *Chem. Phys. Lett.* **70**, No. 1, 74–78 (1980) (Eng) (P. A. **83**: 60649).
953. Ratanapun, S. and Tang, I.-M., Dimer resonances in mixed molecular crystals of arbitrary concentrations, *Chem. Phys. Lett.* **74**, No. 1, 166–172 (1980) (Eng) (P. A. **83**: 99459).
954. Schönherr, G., Eiermann, R., Bässler, H., and Silver, M., Dispersive exciton transport in a hopping system with Gaussian energy distribution, *Chem. Phys.* **52**, No. 3, 287–298 (1980) (Eng) (P. A. **84**: 25637).
955. Talapatra, G. B. and Misra, T. N., Guest excitation energy in dilute organic mixed crystals with chemically distinct guests, *Chem. Phys. Lett.* **76**, No. 1, 42–46 (1980) (Eng) (P. A. **84**: 16586).
956. Tokura, Y., Koda, T., and Nakada, I., Anderson transition in vibronic exciton bands of isotopically mixed naphthalene crystals, *J. Phys. Soc. Japan* **49**, suppl. A, 417–420 (1980) (Eng) (P. A. **84**: 48108).
957. Ulehla, M., On a new systematic approach to the problem of disordered systems, *J. Phys. C: Solid State Phys.* **13**, No. 7, 1247–1256 (1980) (Eng) (P. A. **83**: 80150).
958. Visscher, W. M. and Gubernatis, J. E., Computer experiments and disordered solids. In: *Dynamical Properties of Solids*. Vol. 4. Disordered solids, optical properties. Amsterdam, Netherlands: North-Holland, 63–155 (1980) (Eng) (P. A. **84**: 38488).
959. Wu Jian, Long-wavelength optical phonon spectra of mixed crystals, *Chin. J. Semi-cond.* **1**, No. 4, 267–273 (1980) (Chin) (P. A. **84**: 61315).
960. Zaitsev, R. O., On phonon gap in disordered solid solution spectrum, *Fiz. Tverd. Tela* **22**, No. 10, 2996–2999 (1980) (Russ).

7.6. Excitonic mechanism of energy migration

961. Ahlgren, D. C. and Kopelman, R., Reply to comment on "Experimental test of the Anderson-Mott transition model for excitation transport," *J. Chem. Phys.* **73**, No. 2, 1005–1006 (1980) (Eng).
962. Blumen, A., Klafter, J., and Silbey, R., Theoretical studies of energy transfer in disordered condensed media, *J. Chem. Phys.* **72**, No. 10, 5320–5332 (1980) (Eng).
963. Bodunov, E. N., Malyshev, V. A., and Yakovlev, S. V., Theoretical study of migration and non-radiative excitation energy transfer processes in media with inhomogeneous broadening of spectral lines, *Zh. Prikl. Spektrosk.* **32**, No. 5, 839–845 (1980) (Russ) (P. A. **84**: 70209).
964. Chow, H. C. and Powell, R. C., Models for energy transfer in solids, *Phys. Rev. B*, **21**, No. 9, 3785–3792 (1980) (Eng) (P. A. **83**: 76074).
965. Colson, S. D. and Okumura, M., Time resolved energy migration in an energetically disordered molecular crystal, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 255–270 (1980) (Eng) (P. A. **83**: 89052).
966. Erdle, E. and Möhwald, H., Statistical model and experiments on low-dimensional exciton transport, *Phys. Status Solidi (b)* **98**, No. 2, 617–621 (1980) (Eng).
967. Fort, A. and Ern, V., Triplet transport in *p*-terphenyl crystals, *Chem. Phys. Lett.* **74**, No. 3, 519–522 (1980) (Eng) (P. A. **84**: 7527).
968. Funabashi, K., Effects of a finite coherence on impurity trapping of quasifree excitons and electrons, *J. Chem. Phys.* **72**, No. 5, 3123–3126 (1980) (Eng) (P. A. **83**: 59880).
969. Gaididei, Yu. B. and Onipko, A. I., A kinetic theory of incoherent exciton annihilation, *Mol. Cryst. and Liquid Cryst.* **62**, No. 3–4, 213–236 (1980) (Eng) (P. A. **84**: 69696).
970. Godzik, K. and Jortner, J., Electronic energy transport in substitutionally disordered molecular crystals, *J. Chem. Phys.* **72**, No. 8, 4471–4486 (1980) (Eng) (P. A. **83**: 75525).
971. Hadziselimovic, E. A., Marinkovic, M. M., and Tosic, B. S., On the nonstationary processes in exciton systems, *Phys. Status Solidi (b)* **100**, No. 2, 423–434 (1980) (Eng).
972. Hanson, D. M., Effect of an external electric field on electronic excitation energy transfer in molecular crystals. A new probe of the microscopic dynamics, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 243–254 (1980) (Eng) (P. A. **83**: 84431).
973. Iturbe, E. B. and Sharnoff, M., Migration of triplet excitons in benzophenone: A persistent coherence, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 227–242 (1980) (Eng) (P. A. **83**: 84641).
974. Klafter, J. and Silbey, R., Coherent and incoherent exciton motion in the framework of the continuous time random walk, *Phys. Lett.* **76A**, No. 2, 143–146 (1980) (Eng) (P. A. **83**: 59882).
975. Klafter, J. and Jortner, J., Energy trapping from localized states in mixed organic solids, *J. Chem. Phys.* **73**, No. 2, 1004 (1980) (Eng).
976. Morsink, J. B. W., Kruizinga, B., and Wiersma, D. A., Optical dephasing and energy migration in disordered molecular mixed crystals, *Chem. Phys. Lett.* **76**, No. 2, 218–220 (1980) (Eng).
977. Reineker, P. and Kuhne, R., Exact derivation and solution of the Nakajima-Zwanzig generalized master equation and discussion of approximate treatments for the coupled coherent and incoherent exciton motion, *Phys. Rev. B* **21**, No. 6, 2448–2461 (1980) (Eng) (P. A. **83**: 65462).
978. Vitukhnovskii, A. G. and Zhevandrov, N. D., Calculation of diffusion tensor of singlet excitons in monoclinic molecular crystals, *Kratkie Soobshcheniya po Fizike* No. 6, 36–41 (1980) (Russ).
979. Voltz, R., High energy excitations and intermolecular energy transfer in the condensed phase, *J. Chem. Phys. Et Phys.-Chem. Biol.* **77**, No. 1, 45–49 (1980) (Eng) (P. A. **83**: 66269).
980. Wertheimer, R. and Silbey, R., On excitation transfer and relaxation models in low-

- temperature systems, *Chem. Phys. Lett.* **75**, No. 2, 243–248 (1980) (Eng).
981. Wong, Y. M. and Kenkre, V. M., Extension of exciton-transport theory for transient grating experiments into the intermediate coherence domain, *Phys. Rev. B* **22**, No. 6, 3072–3077 (1980) (Eng).

8. PHOTOCONDUCTIVITY OF MOLECULAR CRYSTALS PHOTOELECTRONIC EMISSION

982. Belkind, A. I., Brodskii, A. M., Aleksandrov, V. V., Grekhov, V. V., and Murashov, A. A., Behavior of photoemission from some organic solids, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **43**, No. 3, 459–463 (1979) (Russ) (*P. A.* **83**: 100744).
983. Bieri, G. and Asbrink, J., 30.4-nm He(II) photoelectron spectra of organic molecules. I. Hydrocarbons, *J. Electron Spectrosc. and Relat. Phenom.* **20**, No. 1–2, 149–167 (1980) (Eng) (*P. A.* **83**: 82589).
984. Bounds, P. J. and Siebrand, W., Charge-transfer excitons in anthracene crystals and their role in optical charge carrier generation, *Chem. Phys. Lett.* **75**, No. 3, 414–418 (1980) (Eng).
985. Bozio, R. and Pecile, C., Experimental study of the role of intramolecular vibrations in the Peierls transition of organic conductors, *J. Phys. C: Solid State Phys.* **13**, No. 33, 6205–6218 (1980) (Eng).
986. Campos, M. and Mergulhao, S., One-carrier thermally stimulated currents and space-charge-limited currents in naphthalene crystals: Doped and irradiated samples, *J. Appl. Phys.* **51**, No. 9, 4870–4874 (1980) (Eng) (*P. A.* **84**: 7633).
987. Datt, S. C., An assembly for measuring the dc conductivity of organic solids, *Indian J. Pure and Appl. Phys.* **18**, No. 12, 1026–1029 (1980) (Eng).
988. Gopal, R. and Mishra, P. C., Green's function calculations on the photoelectron spectra of some small heteroatomic π -electron systems, *Indian J. Pure and Appl. Phys.* **18**, No. 11, 917–921 (1980) (Eng).
989. Gorbatshevich, A. A. and Tugushev, V. V., Inhomogeneous current state in an exciton dielectric, *Zh. Eksp. and Teor. Fiz.* **78**, No. 5, 1945–1954 (1980) (Russ).
990. Grigorukh, N. I., Exciton light absorption with free charge carriers present in molecular crystals, *Ukr. Fiz. Zh.* **25**, No. 9, 1442–1447 (1980) (Russ) (*P. A.* **84**: 2888).
991. Hesse, R. and Bässler, H., Short-time carrier transport in amorphous pentacene, *Phys. Status Solidi (b)* **101**, No. 2, 481–487 (1980) (Eng).
992. Hoffman, B. M., Phillips, T. E., and Soos, Z. G., Atomic limit and polarons in conducting molecular crystals, *Solid State Commun.* **33**, No. 1, 51–54 (1980) (Eng).
993. Kato, K. and Braun, C. L., The photoconduction threshold in anthracene single crystals, *J. Chem. Phys.* **72**, No. 1, 172–176 (1980) (Eng).
994. Kubota, H., Munakata, T., Hirooka, T., Kuchitsu, K., and Harada, Y., Observation of molecular reorientation on evaporated biphenyl film surface by Penning ionization electron spectroscopy, *Chem. Phys. Lett.* **74**, No. 3, 409–412 (1980) (Eng).
995. Martin-Bouyer, J., Vial, M., and Combet, E., Courants limites par la charge d'espace et injection dans les monocristaux de durene et de certains isologues de l'anthracene, *C. r. Acad. Sci. B* **290**, No. 24, 525–528 (1980) (Fr).
996. Mataga, N., Okada, T., Migita, M., and Ikeda, N., Picosecond spectroscopy of excited-state charge transfer and related phenomena, *Kvantovaya Elektron.* **7**, No. 10, 2183–2191 (1980) (Russ) (*P. A.* **84**: 59650).
997. Mohraz, M., Maier, J. P., Heilbronner, E., Bieri, G., and Shiley, R. H., He(I α) and He(II α) photoelectron spectra of fluorinated chloro- and bromobenzenes, *J. Electron. Spectrosc. and Relat. Phenom.* **19**, No. 4, 429–446 (1980) (Eng) (*P. A.* **83**: 78651).
998. Munn, R. W. and Siebrand, W., Charge-carrier drift mobility analysis for naphthalene, *J. Chem. Phys.* **72**, No. 5, 3428–3430 (1980) (Eng).

999. Nakagawa, K., Kotani, M., and Tanaka, H., Detrapping of charge carriers by singlet excitons in naphthalene single crystals, *Phys. Status Solidi* (b) **102**, No. 1, 403–411 (1980) (Eng) (P. A. **84**: 25756).
1000. Nakano, S. and Maruyama, Y., Electric-field dependent electron mobility in anthracene single crystals, *Solid State Commun.* **35**, No. 9, 671–673 (1980) (Eng) (P. A. **84**: 7630).
1001. Petelenz, P., Mixing of Frenkel excitons and ionic excited states in a linear crystal of donor-acceptor complex. 2. ADA-type complexes, *Phys. Status Solidi* (b) **99**, No. 2, 487–491 (1980) (Eng) (P. A. **83**: 92824).
1002. Samoc, M., Siebrand, W., Webb, J. B., and Williams, D. F., On the involvement of triplet excitons in a two photon generation of charge carriers in anthracene, *Mol. Cryst. and Liquid Cryst.* **64**, No. 3, 89–92 (1980) (Eng) (P. A. **84**: 25755).
1003. Samoc, M., Webb, J. B., and Williams, D. F., Photoconduction in phenazine single crystals in the regions of singlet and triplet absorption, *Mol. Cryst. and Liquid Cryst.* **62**, No. 3–4, 201–212 (1980) (Eng).
1004. Sanche, L., Interaction of 0–15 eV electrons with molecular solids: formation of charged excitonic complexes, *J. Phys. C: Solid State Phys.* **13**, No. 25, L677–L681 (1980) (Eng).
1005. Schein, L. B., Warta, W., McGhie, A. R., and Karl, N., Deuteration effects on the electron mobility in the α -direction of naphthalene, *Chem. Phys. Lett.* **75**, No. 2, 267–270 (1980) (Eng).
1006. Singh, J., On the generation of charge carriers by exciton-exciton collisions in organic molecular crystals, *J. Phys. C: Solid State Phys.* **13**, No. 19, 3639–3648 (1980) (Eng) (P. A. **83**: 88568).
1007. Walker, E. I. P., Marchetti, A. P., and Young, R. H., Off-diagonal mobility components for electrons and holes in naphthalene, *J. Chem. Phys.* **72**, No. 5, 3426–3428 (1980) (Eng).
1008. Yokoi, K., Two carrier mobilities in anthracene crystals, *Japan. J. Appl. Phys.* **19**, No. 11, 2297–2298 (1980) (Eng).

9. EFFECTS OF HIGH EXCITON CONCENTRATION IN NON-METALLIC CRYSTALS

1009. Agranovich, V. M., Efremov, N. A., and Zakhidov, A. A., Exciton luminescence of molecular crystals by high excitation levels, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **44**, No. 4, 759–764 (1980) (Russ).
1010. Agranovich, V. M. and Efremov, N. A., Luminescence spectra of non-coherent Frenkel excitons at high excitation, *Fiz. Tverd. Tela* **22**, No. 4, 998–1008 (1980) (Russ).
1011. Agranovich, V. M., Efremov, N. A., and Kirsanov, V. V., Monte-Carlo modelling of the bimolecular exciton quenching kinetics, *Fiz. Tverd. Tela* **22**, No. 7, 2118–2127 (1980) (Russ).
1012. Avdeenko, A. A., Dobrovolskaya, T. L., Kultchitskii, V. A., and Naboikin, Yu. V., Mutual annihilation of triplet excitons in 4,4'-dichlorobenzophenone single crystals at low temperatures, *Phys. Status Solidi* (b) **99**, No. 1, 409–415 (1980) (Eng) (P. A. **83**: 80850).
1013. Benderskii, V. A., Brikenstein, V. Kh., Misochko, Ye. Ya., Vidmont, N. A., and Korshunov, V. V., Search for exciton aggregates in anthracene crystals, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 47–64 (1980) (Eng) (P. A. **83**: 84772).
1014. Chemla, D. S. and Maruani, A., Active nonlinear spectroscopy of solids. An example: the detailed structure of biexcitons, *Opt. and Laser Technol.* **11**, No. 6, 297–303 (1979) (Eng) (P. A. **83**: 84433).

1015. Fox, D., Frenkel biexcitons. States and transition spectra, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 39–45 (1980) (Eng) (P. A. **83**: 88480).
1016. Gaididei, Yu. B. and Onipko, A. I., A kinetic theory of incoherent exciton annihilation, *Mol. Cryst. and Liquid Cryst.* **62**, No. 3–4, 213–235 (1980) (Eng) (P. A. **84**: 69696).
1017. Gaididei, Yu. B., Onipko, A. I., and Galchuk, L. I., A microscopic theory of non-linear luminescence quenching at high levels of pumping, *Chem. Phys. Lett.* **71**, No. 3, 534–538 (1980) (Eng) (P. A. **83**: 89040).
1018. Ivanov, G. K. and Kozhushner, M. A., The scattering and recombination of coherent excitons in molecular crystals, *Phys. Status Solidi (b)* **97**, No. 1, 329–336 (1980) (Eng).
1019. Ivanova, E. P., Kinetics of exciton-exciton annihilation in molecular crystals, *J. Lumin.* **21**, No. 4, 373–386 (1980) (Eng) (P. A. **84**: 26260).
1020. Kenkre, V. M., Theory of exciton annihilation in molecular crystals, *Phys. Rev. B* **22**, No. 4, 2089–2098 (1980) (Eng) (P. A. **84**: 2882).
1021. Singh, J., On the generation of charge carriers by exciton-exciton collisions in organic molecular crystals, *J. Phys. C: Solid State Phys.* **13**, No. 19, 3639–3648 (1980) (Eng) (P. A. **83**: 88568).

10. MOLECULAR CRYSTAL STRUCTURE THERMODYNAMIC DATA

1022. Amoureux, J. P. and Bee, M., Crystal structure of 2-adamantanone $C_{10}H_{14}O$ in its plastic phase, *J. Phys. C: Solid State Phys.* **13**, No. 19, 3577–3583 (1980) (Eng).
1023. Amoureux, J. P. and Bee, M., A cubic harmonic analysis of the plastic crystal structures of adamantane, $C_{10}H_{16}$, and adamantanone, $C_{10}H_{14}O$, at room temperature, *Acta Crystallogr.* **B36**, No. 11, 2636–2642 (1980) (Eng).
1024. Amoureux, J. P., Bee, M., and Damien, J. C., Structure of adamantane, $C_{10}H_{16}$, in the disordered phase, *Acta Crystallogr.* **B36**, No. 11, 2633–2636 (1980) (Eng).
1025. Atake, T. and Chihara, H., Heat capacity anomalies due to successive phase transitions in 1,1'-biphenyl, *Solid State Commun.* **35**, No. 2, 131–134 (1980) (Eng).
1026. Bacon, G. E. and Lisher, E. J., A neutron powder diffraction study of deuterated α - and β -resorcinol, *Acta Crystallogr.* **B36**, No. 8, 1908–1916 (1980) (Eng).
1027. Barron, T. H. K., Collins, J. G., and White, G. K., Thermal expansion of solids at low temperatures, *Adv. Phys.* **29**, No. 4, 609–730 (1980) (Eng).
1028. Beckmann, P. and Leffler, A. J., Solid state phase transitions and molecular re-orientation in ortho- and para-carborane: an isomer effect, *J. Chem. Phys.* **72**, No. 8, 4600–4607 (1980) (Eng) (P. A. **83**: 80628).
1029. Bernstein, E. R. and Lal, B. B., On the phase transition in sym-trioxane, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 95–108 (1980) (Eng).
1030. Bernstein, J. and Regev, H., Pyrene: fluoranil, $C_{16}H_{10}$: $C_6F_4O_2$, *Cryst. Structure Commun.* **9**, No. 2, 581–586 (1980) (Eng).
1031. Boerio-Goates, J. and Westrum, E. F., Jr., Thermodynamic studies of orientational disorder in π -molecular compounds. 2. Heat capacity of naphthalene-tetracyanoethylene, *Mol. Cryst. and Liquid Cryst.* **60**, No. 4, 237–248 (1980) (Eng).
1032. Boerio-Goates, J. and Westrum, E. F., Jr., Thermodynamic studies of orientational disorder in π -molecular compounds. 3. Heat capacities of naphthalene-pyromellitic dianhydride and pyrene-pyromellitic dianhydride, *Mol. Cryst. and Liquid Cryst.* **60**, No. 4, 249–266 (1980) (Eng).
1033. Bounds, D. G., Klein, M. L., and Patey, G. N., Molecular dynamics simulation of the plastic phase of solid methane, *J. Chem. Phys.* **72**, No. 10, 5348–5356 (1980) (Eng).
1034. Brock, C. P., 4-bromobiphenyl; an ordered crystal with a structure similar to that of biphenyl, *Acta Crystallogr.* **B36**, No. 4, 968–971 (1980) (Eng).

1035. Brodyanskii, A. P., Slyusarev, V. A., and Freiman, Yu. A., Librational motion thermodynamics in β -O₂. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 162–163 (1980) (Russ).
1036. Bryan, R. F. and Forcier, P. G., Crystal structure basis for the absence of thermal mesomorphism in *p*-hydroxy-trans-cinnamic acid, *Mol. Cryst. and Liquid Cryst.* **60**, No. 3, 157–166 (1980) (Eng).
1037. Burdett, J. K., On the structures of van der Waals molecules and solids, *J. Chem. Phys.* **73**, No. 6, 2825–2832 (1980) (Eng).
1038. Calvarin, G., Berar, J. F., Chhor, K., and Pommier, J. F., Etude de la transition de phase ordre-desordre du vanadocene V(C₅H₅)₂, *Mol. Cryst. and Liquid Cryst.* **59**, No. 1–2, 149–158 (1980) (Eng).
1039. Chen, M.-C., Cullick, A. S., Gerkin, R. E., and Lundstedt, A. P., Electron paramagnetic resonance studies of the lowest triplet states of 1,2-benzanthracene-d₁₂, chrysene-d₁₂, and 1,2; 5,6-dibenzanthracene-d₁₄ in single-crystal *p*-terphenyl in the range from 4 to 240 K, and their implications concerning phase transitions in *p*-terphenyl below 240K, *Chem. Phys.* **46**, No. 3, 423–436 (1980) (Eng).
1040. Craig, D. P. and Markey, B. R., Stereochemical constraints and lattice relaxation in crystal photochemistry, *Mol. Cryst. and Liquid Cryst.* **58**, No. 1–2, 77–94 (1980) (Eng).
1041. Dalal, N. S., Haley, L. V., Northcott, D. J., Park, J. M., Reddoch, A. H., Ripmeester, J. A., Williams, D. F., and Charlton, J. L., Influence of deuteration on the order-disorder phase transition of anthracene-tetracyanobenzene, *J. Chem. Phys.* **73**, No. 5, 2515–2517 (1980) (Eng) (*P. A.* **84**: 2615).
1042. Datsenko, E. I. and Pakhomov, L. G., True and interblock solid solutions of some organic substances, *Zh. Fiz. Khim.* **54**, No. 8, 2037–2039 (1980) (Russ).
1043. Devos, L., Baert, F., Fouret, R., and Thomas, M., A neutron diffraction study of pyridinium-1-dicyanomethylide, C₈D₅N₃, at 294 K and 118 K, *Acta Crystallogr.* **B36**, No. 8, 1807–1811 (1980) (Eng).
1044. Di Rienzo, F. and Domenicano, A., Structural studies of benzene derivatives. VIII. Refinement of the crystal structure of *p*-dinitrobenzene, *Acta Crystallogr.* **B36**, No. 3, 586–591 (1980) (Eng).
1045. Duesler, E. N., Wiegers, K. E., Curtin, D. Y., and Paul, I. C., Experimental studies on the single crystal to single crystal transformation of 5-methyl-1-thia-5-azacyclooctane-1-oxide (TACO) perchlorate. Evidence for an intermediate state, *Mol. Cryst. and Liquid Cryst.* **59**, No. 3–4, 289–298 (1980) (Eng).
1046. Dworkin, A. and Cailleau, H., Heat capacity of biphenyl around its phase transitions at low temperature, *J. Phys. Lett.* **41**, No. 4, L83–L85 (1980) (Eng).
1047. Franck, S. and Stiller, H., The Gruneisen parameter and equation of state at a pressure-induced phase transition, *Phys. Earth and Planet. Inter.* **22**, No. 3–4, 189–193 (1980) (Eng) (*P. A.* **83**: 90031).
1048. Funchs, A. H., Ghelfenstein, M., and Szwarc, H., Equation of state of orientationally disordered solids and internal phonon radiation pressure. In: *High Pressure Science and Technology*. Proceedings of the VIIth International AIRAPT conference. Pt. II. Le Creusot, France, 30 July–3 Aug. 1979. Oxford, England: Pergamon, 662–668 (1980) (Eng) (*P. A.* **84**:38493).
1049. Goulay, A. M. and Vincent-Geisse, J., Rotational relaxation of OCS in liquid *n*-heptane: Viscosity and free volume dependence, *J. Chem. Phys.* **73**, No. 9, 4203–4206 (1980) (Eng).
1050. Govers, H. A. J. and De Kruif, C. G., Intermolecular energy and structure of tetra-thiafulvalene (TTF) stacks from atom-atom potentials, *Acta Crystallogr.* **A36**, No. 3, 428–432 (1980) (Eng) (*P. A.* **83**: 79738).
1051. Gramaccioli, C. M., Filippini, G., Simonetta, M., Ramdas, S., Parkinson, G. M., and Thomas, J. M., Structure and dynamics of a new phase of anthracene, *J. Chem. Soc. Faraday Trans. II* **76**, No. 10, 1336–1346 (1980) (Eng) (*P. A.* **84**: 47072).
1052. Hall, D., Starr, H., Williams, D. E., and Wood, M. K., Prediction of the pressure-dependent polymorphism of benzene, *Acta Crystallogr.* **A36**, No. 3, 494 (1980) (Eng).

1053. Hartman, P. and Bennema, P., The attachment energy as a habit controlling factor. 1. Theoretical considerations, *J. Cryst. Growth* **49**, No. 1, 145–156 (1980) (Eng).
1054. Hartman, P., The attachment energy as a habit controlling factor. 2. Application to anthracene, tin tetraiodide and orthorhombic sulphur, *J. Cryst. Growth* **49**, No. 1, 157–165 (1980) (Eng).
1055. Iwashima, S., Honda, H., Aoki, J., and Inokuchi, H., Time dependence of the crystallization of tetrabenz[a, cd, j, lm] perylene evaporated film as a function of purity, *Mol. Cryst. and Liquid Cryst.* **59**, No. 3–4, 207–218 (1980) (Eng).
1056. Konczos, G., Crystal growth at the central research institute for physics, *Acta phys. Acad. sci. hung.* **47**, No. 1–3, 23 (1979) (Eng).
1057. Kondratenko, P. A., Khutornaya, L. A., and Shpak, M. T., On phase transitions in anthracene crystals, *Kristallografiya* **25**, No. 6, 1216–1220 (1980) (Russ).
1058. Kovalenko, S. I., Krupskii, I. N., and Solodovnik, A. A., Structure of solidified binary nitrogen-inert gas mixtures. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 194–195 (1980) (Russ).
1059. Krupskii, I. N., Prokhvatilov, A. I., Erenburg, A. I., and Barylnik, A. S., Thermal expansion and thermodynamics properties of solid N₂O and CO₂. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 160–161 (1980) (Russ).
1060. Krupskii, I. N., Thermal expansion of N₂ type crystals. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 158–159 (1980) (Russ).
1061. Lajzerowicz, J., Legrand, J. F., and Joffrin, C., Ferroelastic and ferroelectric phase transition in a molecular crystal: tanane. 1. Neutron and Brillouin scattering studies of the acoustic and pseudo-spin coupled modes, *J. Phys.* **41**, No. 11, 1375–1385 (1980) (Eng) (P. A. **84**: 21145).
1062. Leduc, J. and Kalantar, A. H., Collective theories of supercooled liquids: Supporting polariscopic and kinetic evidence in methylcyclohexane glass above T_g, using a benzene probe, *J. Chem. Phys.* **73**, No. 10, 5330–5336 (1980) (Eng).
1063. Lendvay, E., Crystal growth at the research institute for technical physics, *Acta Phys. Acad. Sci. Hung.* **47**, No. 1–3, 13–21 (1979) (Eng).
1064. Lloyd, R. V., DiGregorio, S., DiMauro, L., and Wood, D. E., Radical formation and radiation damage in adamantane, *J. Phys. Chem.* **84**, No. 22, 2891–2895 (1980) (Eng).
1065. Markey, B. R. and Walmsley, S. H., Lattice relaxation effects in orientationally disordered anthracene crystal, *Chem. Phys. Lett.* **74**, No. 2, 354–357 (1980) (Eng).
1066. Matsui, A. and Tomioka, K. -i., Growth of single crystal film of one-dimensional 9,10-dichloroanthracene, *Japan. J. Appl. Phys.* **19**, No. 10, 1837–1840 (1980) (Eng).
1067. Matveenko, V. N., Pertsov, N. V., and Shchukin, E. D., On creep of naphthalene single crystals, *Phys. Status Solidi* (a) **58**, No. 2, K205–K210 (1980) (Eng).
1068. Manzhelii, V. G., Sumarokov, V. V., Freiman, Yu. A., and Popov, V. A., Low-temperature heat anomaly of solid nitrogen with oxygen impurity. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 190–191 (1980) (Russ).
1069. Miniewicz, A., Samoc, M., Sworakowski, J., Jakubowski, B., Zboinski, Z., and Cihak, A., Elastic and piezoelectric properties of carbazole-trinitrobenzene crystals as studied by thermally induced electrical oscillations, *Chem. Phys. Lett.* **76**, No. 3, 442–444 (1980) (Eng).
1070. Mjojo, C. C., Orientational disordering in crystals. 1. A model for the evaluation of thermodynamic properties of melting transitions in atomic and plastic crystals, *J. Phys. and Chem. Solids* **41**, No. 7, 685–691 (1980) (Eng) (P. A. **83**: 96452).
1071. Mjojo, C. C., Orientational disordering in crystals. 2. A model for the evaluation of thermodynamic properties of orientational disordering in crystals, *J. Phys. and Chem. Solids* **41**, No. 7, 693–707 (1980) (Eng) (P. A. **83**: 96453).
1072. Naumowicz, P. and Szarras, S., Structure perfection of some molecular crystals

- grown from the melt, *Kristall und Technik* **15**, No. 8, 973–976 (1980) (Eng) (*P. A.* **84**: 30116).
1073. Nikolov, O. T., Gatash, S. V., and Serdyuk, A. D., Diffusion kinetics of annealing model for radiation defects in an ideal molecular crystal, *Ukr. Fiz. Zh.* **25**, No. 10, 1604–1610 (1980) (Russ).
 1074. Overell, J. S. W., Pawley, G. S., Mackenzie, G. A., Fitzgerald, W. J., and Kirin, D., Incommensurate phase of the molecular crystal $p\text{-C}_6\text{F}_4\text{Br}_2$, *Chem. Phys. Lett.* **74**, No. 2, 373–375 (1980) (Eng).
 1075. Passer, E. L., White, J. G., Goldman, N. L., and Lerit, A. H., The structure of the octahydrophotodimer of biphenylene, *Acta Crystallogr.* **B36**, No. 8, 1856–1860 (1980) (Eng).
 1076. Pershin, V. K., Pershin, V. K., and Fishbein, L. A., Peculiarities in the dynamics of the structural disordering of a molecular crystal in a mesogeneous region, *Kristallografiya* **25**, No. 5, 930–937 (1980) (Russ).
 1077. Pershin, V. K. and Pershin, V. K., Spontaneous disturbances of symmetry in planar molecular crystals. In: 21 All-Union conference on physics of low temperatures. Theses of papers. Pt. 4. *Kharkov*, 210–211 (1980) (Russ).
 1078. Pick, R. M. and Yvinec, M., Orientational disorder in plastic molecular crystals. 2. Neutron scattering and orientational dynamics, *J. Phys.* **41**, No. 9, 1053–1065 (1980) (Eng).
 1079. Ponte Goncalves, A. M., Triplet-state EPR study of the effect of deuteration on the phase transition in anthracene-TCNB crystals, *Mol. Cryst. and Liquid Cryst. Lett.* **56**, No. 5, 163–169 (1980) (Eng).
 1080. Priest, R. G., Landau phenomenological theory of one and two component phospholipid bilayers, *Mol. Cryst. and Liquid Cryst.* **60**, No. 3, 167–184 (1980) (Eng).
 1081. Raich, J. C. and Bernstein, E. R., On the phase transition in sym-triazine-mean field theory, *J. Chem. Phys.* **73**, No. 4, 1955–1965 (1980) (Eng).
 1082. Ramdas, S., Parkinson, G. M., Thomas, J. M., Gramaccioli, C. M., Filippini, G., Simonetta, M., and Goringe, M. J., Determination of crystal structure of metastable anthracene by a novel method, *Nature* **284**, No. 5752, 153–154 (1980) (Eng) (*P. A.* **83**: 59452).
 1083. Ramdas, S. and Thomas, J. M., The use of atom-atom potentials in interpreting the behaviour of organic molecular crystals. In: Chemical physics of solids and their surfaces. Vol. 7. London, England: *Chem. Soc.* 31–58 (1978) (Eng) (*P. A.* **83**: 84136).
 1084. Rees, W. L., Goringe, M. J., Thomas, J. M., and Jones, W., An electron microscopic study of some 9-substituted anthracenes. In: Electron Microscopy and Analysis. Brighton, England, 3–6 Sept. 1979. Bristol, England: *Inst. Phys.* 303–306 (1980) (Eng) (*P. A.* **83**: 79771).
 1085. Schwalbe, L. A., Schiferl, D., Mills, R. L., Jones, L. H., Ekberg, S., Cromer, D. T., LeSar, R., and Shaner, J., Solid nitrogen at pressures up to 410 kbar. In: *High Pressure Science and Technology*. Proceedings of the VIIth International AIRAPT conference. Pt. II. Le Creusot, France, 30 July–3 Aug. 1979. Oxford, England: Pergamon, 612–614 (1980) (Eng) (*P. A.* **84**: 38454).
 1086. Singh, P., McKinney, J. D., and Levy, L. A., 2,3,6,7-tetrabromonaphthalene, $\text{C}_{10}\text{H}_4\text{Br}_4$, *Cryst. Structure Commun.* **9**, No. 2, 563–566 (1980) (Eng).
 1087. Sinha, D. P. and Prasad, K. N., An x-ray diffraction study of ω -bromo 2-acetonaphthalene, *Indian J. Phys.* **54A**, No. 1 and 2, 145–147 (1980) (Eng).
 1088. Sorai, M., Tsuji, K., Suga, H., and Seki, S., Studies on disc-like molecules. 1. Heat capacity of benzene-hexa-n-hexanoate from 13 to 393 K, *Mol. Cryst. and Liquid Cryst.* **59**, No. 1–2, 33–58 (1980) (Eng) (*P. A.* **83**: 79955).
 1089. Terauchi, H., Maeda, H., and Kamijo, N., Thermal instability in a plastic crystal, *J. Chem. Phys.* **73**, No. 11, 5901–5902 (1980) (Eng).
 1090. Tobisch, F., Czochralski-type crystal growth system developed at the central research institute for physics, *Acta Phys. Acad. Sci. Hung.* **47**, No. 1–3, 227–232 (1979) (Eng).

1091. Van Der Velden, G. P. M. and Noordik, J. H., Crystallographic and spectroscopic study on 4,4'-diiodobenzophenone, *J. Cryst. and Mol. Struct.* **9**, No. 6, 283–294 (1979) (Eng).
1092. Van Wasen, U. and Schneider, G. M., Partial molar volumes of naphthalene and fluorene at infinite dilution in carbon dioxide near its critical point, *J. Phys. Chem.* **84**, No. 2, 229–230 (1980) (Eng).
1093. Voszka, R., Growth of single crystals at the research laboratory for crystal physics, *Acta Phys. Acad. Sci. Hung.* **47**, No. 1–3, 5–11 (1979) (Eng).
1094. Wigren, J. and Anderson, P., Thermal conductivity and heat capacity of adamantane and hexamethylenetetramine under pressure, *Mol. Cryst. and Liquid Cryst.* **59**, No. 1–2, 137–148 (1980) (Eng) (P. A. **83**: 80008).
1095. Williams, D. E., Calculated energy and conformation of clusters of benzene molecules and their relationship to crystalline benzene, *Acta Crystallogr.* **A36**, No. 4, 715–723 (1980) (Eng).
1096. Wong, W.-K. and Westrum, E. F., Jr., Thermodynamics of polynuclear aromatic molecules. 2. Low-temperature thermal properties of perylene, coronene, and naphthalene, *Mol. Cryst. and Liquid Cryst.* **61**, No. 3–4, 207–228 (1980) (Eng).
1097. Yvinec, M. and Pick, R. M., Orientational disorder in plastic molecular crystals. 1. Group theory and ODIC description, *J. Phys.* **41**, No. 9, 1045–1052 (1980) (Eng).

11. NEUTRON SPECTROSCOPY OF CRYSTALS

1098. Broude, V. L., Dolganov, V. K., Kroo, N., and Rosta, L., Inelastic neutron scattering by deuterated para-azoxy-phenetole, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 163–174 (1980) (Eng) (P. A. **83**: 84261).
1099. Broude, V. L. and Sheka, E. F., Neutron scattering from equilibrium and non-equilibrium phonons, excitons and polaritons, *Mol. Cryst. and Liquid Cryst.* **57**, No. 1–4, 145–162 (1980) (Eng) (P. A. **83**: 84032).
1100. Fleurov, V. N. and Goldanskii, V. I., Electronic transitions in molecules due to neutron scattering, *Chem. Phys. Lett.* **71**, No. 1, 17–21 (1980) (Eng) (P. A. **83**: 63844).
1101. Janik, J. A., Neutron scattering by molecular solids, *Phys. Rep. Phys. Lett. Sect. C* **66**, No. 1, 1–20 (1980) (Eng) (P. A. **84**: 25124).
1102. Lajzerowicz, J., Legrand, J. F., and Joffrin, C., Ferroelastic and ferroelectric phase transition in a molecular crystal: tanane. 1. Neutron and Brillouin scattering studies of the acoustic and pseudo-spin coupled modes, *J. Phys.* **41**, No. 11, 1375–1385 (1980) (Eng) (P. A. **84**: 21145).
1103. Lefebvre, J., Currat, R., Fouret, R., and More, M., Neutron diffusion studies of lattice vibrations in sodium nitrate, *J. Phys. C: Solid State Phys.* **13**, No. 24, 4449–4461 (1980) (Fr) (P. A. **83**: 103429).
1104. Loidl, A., Knorr, K., Daubert, J., Dultz, W., and Fitzgerald, W. J., Inelastic neutron scattering by coupled rotational and translational modes in KCN, *Z. Phys. B* **38**, No. 2, 153–163 (1980) (Eng) (P. A. **83**: 79895).
1105. Natkaniec, I., Nartowski, M., Kulczycki, A., Mayer, J., and Sudnik-Hryniewicz, M., Neutron spectroscopy of crystalline biphenyl and a model calculations of vibrational spectra. In: XIII European congress on molecular spectroscopy. Wrocław, Poland. September 12–16, 1977. *Abstracts*. Wrocław, 201 (1977) (Eng).
1106. Richter, D. and Passell, L., Neutron scattering as a probe of small-particle dynamics in hydroxylated amorphous silica, *Phys. Rev. Lett.* **44**, No. 24, 1593–1597 (1980) (Eng) (P. A. **83**: 79899).
1107. Yamada, Y., Wakabayashi, N., and Nicklow, R. M., Neutron diffuse scattering in magnetite due to molecular polarons, *Phys. Rev. B* **21**, No. 10, 4642–4648 (1980) (Fr).

12. AUTHOR INDEX

- Aartsma, T. J., 36
 Aaviksoo, J., 673
 Aaviksoo, Ya. Yu., 648
 Ababi, V., 41
 Abram, I. I., 709, 925
 Abramczyk, H., 249
 Abu-Zeid, M. E., 526
 Adachi, Y., 59, 700
 Adams, D. M., 547, 548
 Afanasiadi, L. Sh., 436
 Agranovich, V. M., 649, 790, 854, 855, 926, 1009, 1010, 1011
 Ahmad, S. F., 575
 Ahlgren, D. C., 710, 927, 928, 961
 Akhmanov, S. A., 328
 Akhmediev, N. N., 856
 Akhrem, A. A., 256
 Akimov, A. V., 711
 Akishin, P. A., 15
 Akiyama, M., 37
 Akulin, V. M., 181
 Al-Chalabi, A. O., 329, 650
 Aleksandrov, I. V., 569
 Aleksandrov, V. V., 982
 Aleksandrovskaya, N. G., 712, 722
 Alekseev, D. V., 791
 Alfirmov, M. V., 132, 140, 501, 504
 Aliev, M. R., 233
 Allen, C. S., 147
 Aloisi, G. G., 271, 473, 510
 Al'shits, V. I., 792
 Altwegg, L., 903
 Alvarez, D. C., 477
 Aminzadeh, A., 182, 183
 Amirav, A., 91, 184, 330, 331
 Amoureux, J. P., 1022, 1023, 1024
 Anderson, R. W., Jr., 117
 Andersson, P., 1094
 Andreev, V. A., 893, 894
 Andrews, J. R., 158, 332
 Andrews, L., 296, 493
 Angeloni, L., 185
 Anijalg, A., 617
 Anisimov, O. A., 38, 127
 Ansari, A. K., 186
 Aoki, J., 1055
 Apanasevich, P. A., 411
 Aravind, P. K., 265
 Argyrakakis, P., 713, 750, 929, 945
 Aristov, A. V., 266, 412, 413, 414, 460, 474
 Aron, K., 333
 Asano, M., 148, 334, 511
 Asbrink, J., 983
 Asmuth, G. G., 92, 415
 Atake, T., 1025
 Atakhodzhaev, A. K., 446, 470
 Atkinson, G. H., 149
 Auch, W., 512
 Auerbach, R. A., 250
 Avdeenko, A. A., 610, 651, 652, 653, 1012
 Averyushkin, A. S., 714
 Avots-Avotins, P. E., 785
 Azarov, V. Yu., 93, 715
 Azumi, T., 322, 390
 Baarschers, W. H., 349
 Baba, H., 267, 324, 363
 Babaev, V. S., 94
 Babichenko, V. S., 854
 Babkov, L., 95, 150, 187
 Bacon, G. E., 1026
 Baeri, P., 77
 Baert, F., 1043
 Baeyens-Volant, D., 99, 275
 Bagchi, A., 876
 Bagratashvili, V. N., 2, 188
 Baldo, M., 77
 Balint, E., 96, 335
 Balkanski, M., 674
 Balzani, V., 137
 Bandyopadhyay, A. K., 513
 Baranov, A. V., 128
 Baranov, S. A., 151
 Baranov, V. I., 152
 Barbara, P. F., 268, 336
 Barigelletti, F., 137, 271
 Barlow, W. A., 643
 Barnes, A. J., 189
 Baroni, S., 857
 Barron, T. H. K., 1027
 Bartocci, G., 271, 473, 510
 Barylnik, A. S., 1059
 Bässler, H., 772, 954, 991
 Basun, S. A., 549
 Batekha, I. G., 138, 368
 Baughman, R. H., 475
 Baur, G., 456
 Bazyl, O. K., 416
 Beck, S. M., 611
 Becker, E. D., 3
 Beckmann, P., 1028
 Bee, M., 1022, 1023, 1024

- Belen'kii, V. Z., 4
 Belkind, A. I., 982
 Belousov, A. V., 153
 Belousov, M. V., 550, 793, 794, 930, 931
 Belov, A. G., 663
 Benderskii, V. A., 476, 1013
 Bendig, I., 269
 Bennema, P., 1053
 Ben-Reuven, A., 308
 Berar, J. F., 1038
 Berns, R. M., 823
 Bernstein, E. R., 1029, 1081
 Bernstein, J., 1030
 Bhattacharyya, K., 270
 Bieri, G., 983, 997
 Birke, R. L., 194, 208
 Birkhoff, R. D., 628
 Birks, J. B., 271
 Birman, J. L., 5
 Biteman, V. B., 527
 Bjorklund, G. C., 477
 Blazevic, J., 197
 Blazhin, V. D., 417
 Blinov, S. I., 319
 Blom, C. E., 190
 Blumen, A., 932, 933, 962
 Bobovich, Ya. S., 128
 Bobrovich, V. P., 654
 Bocherkov, A. I., 138
 Bodunov, E. N., 716, 963
 Boerio-Goates, J., 1031, 1032
 Bogachev, N. V., 191
 Bogdanov, V. L., 337, 338
 Bogdanova, T. F., 97
 Boichuk, V. I., 858, 859
 Bojarski, C., 426
 Bokhenkov, E. L., 588
 Bolotnikova, T. N. (Bolotnikova, T.) 717, 718.
 Bond, W. L., 6
 Bondar, V. V., 655, 656
 Bondybey, V. E., 297
 Bonneau, R., 348
 Bonno, B., 657
 Borisevich, N. A., 272
 Borisov, B. D., 154
 Borisova, N. F., 119
 Borkovskii, N. B., 192
 Bornowski, B., 530
 Botvich, A. N., 39, 836
 Botvinko, M. N., 934
 Bounds, D. G., 1033
 Bounds, P. J., 40, 514, 860, 984
 Bourceanu, G., 41
 Bowen, S. P., 852
 Bozio, R., 985
 Bräuchle, Chr., 129
 Braun, C. L., 993
 Bree, A., 122, 193
 Brehat, F., 609
 Breiland, W. G., 895
 Briels, W. J., 795
 Brikenstein, V. Kh., 1013
 Brillante, A., 71, 515, 612, 719, 861
 Brock, C. P., 1034
 Brodin, M. S., 613
 Brodskii, A. M., 982
 Brodyanskii, A. P., 551, 1035
 Bron, W. E., 552, 796
 Broude, V. L., 553, 554, 658, 797, 862, 1098, 1099
 Brumbaugh, D. V., 528
 Brunel, L.-C., 555
 Brunet, J. E., 86
 Brunvoll, J., 198, 199, 200
 Brus, L. E., 268, 336, 387
 Bryan, R. F., 1036
 Bubeck, C., 478, 479
 Bucelot, T. J., 136
 Buckingham, A. D., 798
 Buduls, I., 372
 Bulka, B. R., 513
 Bunding, K. A., 194
 Burdett, J. K., 1037
 Burenin, A. V., 98
 Burkhart, R. D., 339
 Burland, D. M., 477, 863
 Burns, A. R., 896, 905
 Burshtein, Z., 659
 Bushuk, B. A., 454
 Butenin, A. V., 418
 But'ko, A. I., 155
 Bitrimovich, O. V., 340
 Buyan, G. P., 385
 Byk, A. P., 276
 Bykovskaya, L. A., 273
 Cadoux, A., 626
 Cailleau, H., 1046
 Califano, S., 843
 Callen, W. R., 26
 Calvarin, G., 1038
 Campo, P. A., 87
 Campos, M., 614, 986
 Cantrell, J. H., Jr., 799
 Capek, V., 921
 Cardona, M., 7
 Carius, W., 556
 Carmeli, B., 341, 342

- Carter, H. L., 582
 Case, D. A., 42
 Castellucci, E., 185
 Caudle, G. F., 195
 Cauzzo, G., 487
 Cavanaugh, D. B., 196
 Cehak, A., 1069
 Chablo, A., 43
 Chakrabarti, B. K., 800, 935
 Chakravorty, S. C., 629, 771
 Chance, R. R., 475
 Chandra, A. K., 541
 Chandra, B. P., 660
 Chandrasekharan, V., 801, 818
 Chang, C., 529
 Chang, R., 8
 Charbonneau, G. P., 802
 Charlton, J. L., 1041
 Chatterjee, S., 513
 Chebotaev, V. P., 154
 Chedin, M. -P. (Chedin, M. P.) 561, 605
 Cheglov, E. I., 533
 Chemla, D. S., 615, 1014
 Chen, F. P., 720
 Chen, M. -C., 721, 1039
 Chepilko, N. M., 594
 Cherek, H., 419
 Cherkasov, A. S., 343, 413, 464, 465, 544
 Chernyak, B. Ya., 854
 Cheung, S. -T., 756
 Chhor, K., 1038
 Chiang, C., 647
 Chiang, H. J., 44
 Chigirev, A. R., 717
 Chihara, H., 1025
 Chirvonyi, V. S., 480
 Chodkowska, A., 130
 Choi, K. -J., 344
 Choi, P. -K., 345
 Choudhury, M. K., 629, 771
 Chouteau, J., 234
 Chow, H. C., 964
 Chowdhury, M., 270
 Christmann, K., 202
 Christophorou, L. G., 505
 Chukanova, I. N., 661, 712, 722
 Claverie, P., 803
 Clouter, M. J., 575
 Coe, D. S., 274
 Cohen, M. H., 936
 Coleman, W. F., 352
 Collins, J. G., 1027
 Colombo, L., 197, 557, 558
 Colson, S. D., 937, 965
 Combet, E., 626, 995
 Constant, J., 449
 Cook, M., 42
 Cooney, R. P., 223
 Cooper, D. E., 723
 Cornelius, P. A., 946
 Cossart-Magos, C., 156, 157
 Coveleskie, R. A., 346
 Craig, D. P., 481, 906, 907, 1040
 Cremers, D. A., 347
 Crisp, G. M., 724, 938
 Cromer, D. T., 1085
 Cullick, A. S., 721, 1039
 Currat, R., 1103
 Curtin, D. Y., 1045
 Cyvin, B. N., 198, 199, 200, 238
 Cyvin, S. J., 198, 199, 200, 238
 Dähne, S., 530
 Dalal, N. S., 1041
 Damien, J. C., 1024
 Daniels, W. B., 597
 Danilova, V. I., 416, 420, 427, 428, 429, 433, 434, 439
 Darmanian, S. A., 649, 855
 Datsenko, E. I., 1042
 Datt, S. C., 987
 Daubert, J., 1104
 David, C., 99, 275
 Davidovich, M. A., 531, 864
 Davidson, R. S., 348
 Davydov, A. S., 865, 908
 Davydov, S. N., 48
 Davydov, S. V., 54
 Deaver, B. S., Jr., 136
 Decola, P. L., 158, 559
 De Giambiagi, M. S., 45
 Degtyarenko, K. M., 427, 433
 Deimling, M., 725
 Dekkers, J. J., 726
 De Kruif, C. G., 1050
 Del Bene, J. E., 46
 Dellonte, S., 271
 Demaray, R. E., 333
 Demchuk, M. I., 276
 Demchuk, Yu. S., 298
 Deme, A. K., 100
 Dementiev, V. A., 201
 Demuth, J. E., 202
 Demyashkevich, A. B., 503
 Den Blanken, H. J., 773
 Denisov, L. K., 435
 Depireux, J., 635
 Desando, M. A., 349
 Despres, A., 727

- Devi, M. A., 116
 Devos, L., 1043
 Di Bartolo, B., 11
 Diehl, H. W., 942
 DiGregorio, S., 1064
 DiLella, D. P., 203, 237, 258, 560
 DiMauro, L., 1064
 Dinershtein, V. B., 804
 Ding, K., 101
 Dinse, K. P., 725, 731
 Di Rienzo, F., 1044
 Dissado, L. A., 906
 Dithler, C. J., 586, 828
 Dixit, L., 816
 Doany, F. E., 482
 Dobkowska, M., 516
 Dobrokhotova, V. K., 661, 712, 722, 728
 Dobrovolskaya, T. L., 651, 1012
 Dobrzynski, L., 23
 Dolganov, V. K., 1098
 Dolgikh, B. A., 78
 Dolgov, A. S., 805
 Doljikov, V. S., 188
 Dolling, G., 592, 837
 Dolson, D. A., 346
 Domenicano, A., 1044
 Dong, D. C., 756
 Doodinskii, M. A., 613
 Dorman, V. L., 806
 Dorner, B., 588
 Dosser, L. R., 149
 Dubinina, T. I., 97
 Dubovsky, O. A., 790, 926
 Dubur, G. Ya., 100
 Dudkiewicz, J., 350
 Duesler, E. N., 1045
 Dultz, W., 1104
 Dumas, G., 561
 Dunand, A., 102, 483, 484
 Dunbar, R. C., 491
 Dworkin, A., 1046
 Dy, K. S., 852
 Dygdała, R. St., 103
 Dzhagarov, B. M., 480
 Dzhumadinov, R. Kh., 507
 Dzwonkowski, M., 472
 Dzyubenko, M. I., 421
 Earl, B. L., 204
 Ecolivet, C., 562
 Edelson, M., 122, 193
 Edelson, M. C., 638
 Efimov, A. A., 461
 Efimovich, S. N., 826
 Efremov, N. A., 1009, 1010, 1011
 Ehrenreich, H., 12
 Eiermann, R., 954
 Ekberg, S., 1085
 El-Bayoumi, M. A., 529
 El'kin, M. D., 172, 191, 205, 206, 207, 226, 227
 El-Sayed, M. A., 139
 El'tsov, A. V., 138, 368
 Elyashberg, M. E., 13
 Elyutin, P. V., 939
 Erdheim, G. R., 208
 Erdle, E., 517, 807, 866, 897, 966
 Eremko, A. A., 867
 Erenburg, A. I., 1059
 Ermolaev, V. L., 128, 351
 Ern, V., 662, 967
 Ervens, H., 225
 Evarestov, R. A., 83
 Even, U., 91, 184, 330, 331
 Excoffon, P., 563
 Fabian, W., 47, 422
 Fabre, D., 577
 Fadini, A., 225
 Faessler, A., 85
 Fafurina, E. N., 94
 Faidysh, A. N., 733, 762
 Fain, V. Ya., 492
 Fainberg, B. D., 159, 160, 161, 169
 Faniran, J. A., 564
 Favaro, G., 473, 510
 Fawcett, V., 182, 183
 Fayer, M. D., 589, 646, 723, 770, 834, 904
 Fedorov, A. A., 693
 Fedorov, V. P., 729
 Ferguson, J., 102, 483, 484, 616
 Filippini, G., 567, 811, 1051, 1082
 Finkel', A. G., 292
 Fischer, S. F., 101
 Fishbein, L. A., 1076
 Fitzgerald, W. J., 1074, 1104
 Fleming, G. R., 389
 Fleurov, V. N., 162, 375, 1100
 Fleury, P. A., 582
 Fofonova, R. M., 439, 520
 Folin, M., 487
 Fondere, F., 577, 584
 Forcier, P. G., 1036
 Fort, A., 662, 967
 Fouret, R., 1043, 1103
 Fox, D., 868, 1015
 Franck, S., 1047
 Freed, K. F., 277
 Freiberg, A., 617, 673
 Freiman, Yu. A., 551, 1035, 1068

- Freyer, W., 530
 Friedrich, D. M., 104
 Friedrich, J., 730
 Fröhling, W., 731
 Frolkov, Yu. A., 594
 Frost, D. C., 523
 Fugol', I. Ya., 618, 663, 667, 668
 Fujara, F., 131, 486, 732
 Fujimura, Y., 163, 173
 Fujita, I., 66
 Fujita, M., 267, 324
 Fuke, K., 105, 485, 532
 Fukui, K., 66
 Funabashi, K., 968
 Funchs, A. H., 1048
 Furrer, R., 131, 486, 732
 Furtak, T. E., 228
 Furukawa, T., 940

 Gaevsky, A. S., 733
 Gaididei, Yu. B., 634, 969, 1016, 1017
 Gaisenk, V. A., 155, 278
 Galanin, M. D., 664, 665
 Galatry, L., 808
 Galchuk, L. I., 1017
 Galiazzo, G., 487
 Gambi, A., 212, 240
 Gandelman, I. L., 423
 Garber, P. R., 97
 Gatash, S. V., 1073
 Gattermann, H., 121
 Gavrilko, T. A., 565
 Gavva, S. P., 191, 207
 Genack, A. Z., 209
 Gennari, G., 487
 Gerard, D., 65
 Gerasimov, Ya. I., 15
 Gerkin, R. E., 721, 1039
 Gerko, V. I., 132, 140
 Gersten, J. I., 210, 211
 Ghelfenstein, M., 1048
 Gherseiti, S., 212, 240
 Giachino, G. G., 320
 Giambiagi, M., 45
 Ginevich, G. R., 443
 Giorgianni, S., 212, 240
 Girlando, A., 213, 619
 Glazkov, S. Yu., 97
 Glownia, J. H., 488
 Glyde, H. R., 809
 Godik, V. A., 48, 49, 50
 Godzik, K., 941, 970
 Goel, R. K., 214, 215, 216, 217, 252, 595
 Gogolinskii, V. I., 51
 Goldanskii, V. I., 162, 476, 1100
 Goldman, N. L., 1075
 Goloyadov, V. A., 661
 Goncalves, A. M. P., 566, 810
 Goncharov, A. I., 734, 735
 Goodman, L., 52, 62, 113
 Goodman, M. F., 396
 Gopal, R., 988
 Gorbachev, S. M., 736, 737
 Gorbachevich, A. A., 989
 Gorbunov, B. N., 461
 Gordienko, V. M., 328
 Gordon, D. W., 352
 Gordon, J. G., II, 213
 Gordon, R. D., 53
 Goringe, M. J., 1082, 1084
 Görner, H., 489
 Gorobchenko, V. S., 424
 Gorobtchenko, V. S., 738
 Gorokhovskii, A. A., 739
 Goulay, A. M., 1049
 Govers, H. A. J., 1050
 Govindanunny, T., 425
 Goworek, T., 620
 Grabowska, A., 130, 508
 Grabowska, E., 426
 Grabowski, Z. R., 518
 Gradyushko, A. T., 273
 Gramaccioli, C. M., 567, 811, 1051, 1082
 Gramila, T. J., 209
 Graness, A., 432
 Gransden, S. E., 53
 Granville, M. F., 106
 Gray, L. J., 942
 Grechushnikov, B. N., 734, 745
 Greene, B. I., 279, 482
 Greenlay, W. R. A., 221
 Grein, F., 64
 Grekhov, V. V., 621, 982
 Grellmann, K. -H., 509, 546
 Grest, G. S., 568
 Gribov, L. A., 13, 152, 218, 243
 Griesser, H. J., 280, 666, 740
 Grigorashchenko, O. N., 667, 668
 Grigorchuk, N. I., 990
 Grigorchuk, R. A., 909
 Grigorov, E. I., 281
 Grigoryants, V. M., 127
 Grishina, E. N., 569
 Gritsan, V. N., 812
 Grosso, G., 857
 Grosul, V. P., 168
 Gruen, H., 489
 Grunewald, G., 741, 813
 Grunwald, E., 257
 Grushetskii, K. M., 51, 256

- Gruzinsky, V. V., 54, 416, 427, 428, 429
 Grzywacz, J., 282
 Gubernatis, J. E., 958
 Gückel, F., 704
 Guiliano, M., 234
 Guillory, W. A., 784, 848
 Gulis, I. M., 302, 353
 Gunder, O. A., 527
 Gunn, J. M. F., 869
 Gupta, P. L., 816
 Gupta, S. K., 216
 Guriev, K. I., 354
 Gurinovich, G. P., 355, 409, 410, 451, 480
 Gusev, A. Yu., 154
 Gustav, K., 55, 283
 Güsten, H., 232
 Haarer, D., 730
 Hadni, A., 609
 Hadziselimovic, E. A., 971
 Haken, H., 16
 Halberstadt, N., 356
 Haley, L. V., 1041
 Hall, D., 1052
 Hamanoue, K., 357
 Hammond, P. R., 107, 430
 Hanai, K., 573
 Hanamura, E., 669, 918
 Hansen, F. Y., 825
 Hanson, D. M., 972
 Hara, K., 56
 Harada, Y., 994
 Harris, C. B., 896, 905, 946
 Harsanyi, L., 219
 Hartman, P., 1053, 1054
 Hartstein, A., 220
 Hatano, M., 640
 Hayes, W., 17
 Haynam, C. A., 528
 Heilbronner, E., 997
 Heitmann, D., 213, 619
 Heller, J. M., Jr., 628
 Henry, B. R., 221, 570
 Herbich, J., 130
 Hersel, W., 479
 Hesp, B. H., 670
 Hess, L. A., 571
 Hess, P., 358
 Hesse, R., 991
 Hesselink, W. H., 36, 742
 Hevesi, J., 96, 335
 Higuchi, J., 327
 Hilbert, M., 444
 Hinchliffe, A., 43
 Hiraishi, J., 259, 398
 Hirata, Y., 359, 360
 Hiratsuka, H., 57
 Hirayama, H., 640
 Hirayama, S., 357
 Hirooka, T., 994
 Hirota, N., 144
 Hirotsu, T., 66
 Hochstrasser, R. M., 158, 279, 332, 482, 500, 559, 622, 623, 671, 709, 743, 925
 Hoff, A. J., 773
 Hoffman, B. M., 870, 910, 992
 Hollas, J. M., 222
 Holtom, G. R., 106
 Honda, H., 1055
 Hopkins, J. B., 108, 284, 361, 611
 Howard, M. W., 223
 Hsu, L.-Y., 814
 Huber, J. R., 388
 Hudson, B. S., 126
 Igarashi, R., 59, 700
 Iio, K., 587
 Ikeda, N., 996
 Il'inykh, T. V., 714, 788
 Inan, D., 672
 Innes, K. K., 92, 415
 Inokuchi, H., 1055
 Inoue, A., 133
 Inoue, H., 111, 494, 538
 Inoue, N., 362
 Isachenkova, L. A., 340
 Ito, M., 70, 316
 Itoh, M., 105, 485, 532
 Itoh, N., 744
 Itoh, T., 363
 Itoh, U., 637
 Iturbe, E. B., 624, 898, 973
 Ivanov, G. K., 1018
 Ivanov, M. A., 934
 Ivanova, E. A., 794, 931
 Ivanova, E. P., 1019
 Iwashima, S., 1055
 Izatt, J. R., 195
 Izmailov, A. M., 94
 Jain, K. M., 109
 Jain, P. C., 815
 Jakubowski, B., 1069
 Janic, J. A., 1101
 Job, V. A., 92, 415
 Joffrin, C., 1061, 1102
 Johnson, C. K., 638
 Johnson, G. E., 285
 Johnson, L. W., 623

- Johnson, P., 87, 333
 Johri, G. K., 58
 Jones, L. H., 1085
 Jones, R. K., 68
 Jones, W., 1084
 Jortner, J., 91, 184, 330, 331, 912, 941, 943, 970, 975
 Jousset-Dubien, J., 348
 Kaarli, R., 673
 Kabanov, V. B., 431
 Kabza, H., 129
 Kachinskii, A. V., 411
 Kachur, V. G., 812
 Kaila, R., 816
 Kaiser, W., 101
 Kalantar, A. H., 1062
 Kalasinsky, V. F., 224
 Kalibabchuk, V., 110
 Kalinkina, I. N., 734, 745
 Kaliteevskii, M., 134
 Kalmykova, G., 95, 150, 187
 Kalus, J., 588
 Kamijo, N., 1089
 Kamisuki, T., 59
 Kanamaru, N., 467
 Kanda, Y., 325
 Kanehisa, M. A., 674
 Kano, K., 364
 Kansal, K. P., 214, 215, 217, 252
 Kanzaki, H., 639
 Kaplan, I. G., 826, 840
 Kaplan, T., 942
 Kaplyanskii, A. A., 549, 711
 Kapur, D., 917
 Karachevtsev, V. A., 610, 652
 Karelskikh, I. L., 911
 Karger-Kocsis, J., 115
 Karl, N., 1005
 Karlov, N. V., 181
 Karplus, M., 42
 Karpov, S. V., 625
 Karpov, V., 134
 Karpov, V. V., 81
 Karpukhina, T., 145
 Karstens, T., 286
 Karyakin, A. V., 287
 Katalnikov, V. V., 871
 Katayama, M., 235
 Kato, E., 572
 Kato, K., 993
 Katon, J. E., 573
 Kaufmann, G., 697
 Kawakubo, T., 490
 Kawazumi, H., 364
 Kay, K. G., 365
 Kaya, K., 70
 Kelker, H., 456
 Kembrovskii, G. S., 654
 Kempka, U., 55, 283
 Kenkre, V. M., 981, 1020
 Ketsle, G. A., 366
 Khadshi, P. I. (Khadzhi, P. I.), 829, 830, 878
 Khalil, G. -E., 323
 Khamdamov, V. G., 574
 Khan-Magometova, Sh. D., 664, 665
 Khashchina, L. V., 618
 Khizhnyakov, V. (Hizhnyakov, V.), 774, 775, 776
 Khizhnyakov, V. V., 675, 872
 Khotyaintsev, V. N., 888
 Khutornaya, L. A., 679, 680, 681, 684, 749, 1057
 Kiefer, W., 164
 Kieffe, H., 575
 Kikuchi, K., 497
 Kilar, F., 219
 Kim, M. S., 491
 Kind, V. V., 729, 746
 Kink, R. A., 676
 Kinoshita, M., 321
 Kirin, D., 558, 1074
 Kirsanov, V. V., 1011
 Kiselyova, E. S., 829, 878
 Kister, J., 234
 Kitamura, T., 543, 701
 Klafter, J., 912, 933, 943, 962, 974, 975
 Klagge, M., 530
 Klein, M. L., 832, 833, 1033
 Kleinert, P., 817, 944
 Kleinman, L., 330
 Kleinschmidt, J., 432
 Klemm, D., 432
 Klemm, E., 432
 Klimcak, C. M., 623, 743
 Klimowski, J., 576
 Klimusheva, G. V., 786, 787
 Klingenberg, H., 604
 Klochikhin, A. A., 873
 Klochkov, V. P., 60, 337
 Klöpffer, W., 697
 Klyuchnik, A. V., 874
 Knight, A. E. W., 372
 Knorr, K., 1104
 Knyazhansky, M. I., 436
 Ko, A. -N., 407
 Kobashi, K., 577, 818
 Kobayashi, S., 532
 Kobs, K., 286

- Koch, E. E., 636, 883
 Koda, T., 641, 779, 890, 956
 Koehler, T. R., 236, 747, 748
 Kogan, B. Ya., 418
 Kohl, J. E., 709
 Kohler, B. E., 106
 Kojima, T., 288
 Kokubun, H., 497
 Kolendritskii, D. D., 677, 678
 Koliakov, S. F., 188
 Kompa, K. L., 80
 Komyak, A. I., 353
 Konarski, J., 61
 Konarzewski, A., 61
 Konczos, G., 1056
 Kondilenko, I. I., 385, 578
 Kondratenko, P. A., 125, 679, 680, 681, 749, 1057
 Koningstein, J. A., 148, 334, 511
 Kono, H., 173
 Konoplev, G. G., 48, 49, 50
 Kopelman, R., 710, 713, 750, 766, 927, 928, 929, 945, 947, 961
 Kopylova, T. N., 367, 416, 420, 427, 428, 429, 433, 434
 Korets, A. Ya., 642
 Korolkova, N. V., 435
 Korotaev, O., 134
 Korshunov, A. V., 729
 Korshunov, L. I., 368
 Korshunov, M. A., 751
 Korshunov, V. V., 1013
 Kostikov, R. R., 569
 Kostin, A. K., 899
 Kostylev, K. A., 438
 Kotani, A., 913, 914, 922
 Kotani, M., 627, 999
 Kovalenko, N. P., 504
 Kovalenko, S. I., 579, 1058
 Kovarskii, V. A., 151, 153
 Kovner, M., 95, 150, 187
 Kovrikov, A. B., 192, 247
 Koyanagi, M., 52, 325
 Koyava, V. T., 289, 290, 369, 404, 752
 Kozhushner, M. A., 1018
 Kozlov, V. K., 298
 Kozma, L., 444
 Krainyukova, N. V., 579
 Kramarenko, N. L., 519
 Kranitzky, W., 101
 Krashennnikov, A. A., 351
 Krasnyansky, G. E. (Krasnyanskii, G. E.), 578, 580, 819
 Krasovitsky, B. M., 436
 Krasser, W., 225
 Krauze, A. S., 112
 Kray, H. -J., 291
 Kraynova, I., 95, 150, 187
 Kredentser, A. E., 205, 226
 Kredentser, E. I., 227
 Kreyzig, D., 269
 Kriley, J. R., 220
 Krivenko, T. A., 33
 Krogh-Jespersen, K., 62
 Kroo, N., 1098
 Kruglenko, V. P., 437
 Kruglikov, V. V., 533
 Kruizinga, B., 948, 976
 Krupskii, I. N., 1058, 1059, 1060
 Krutovskaya, I. V., 81
 Kshnyakina, S. I., 581
 Kubota, H., 994
 Kuchernko, B. I., 764, 765
 Kucherov, A. P., 565
 Kuchinsky, V. V., 94
 Kuchitsu, K., 994
 Kuhl, J., 604
 Kuhne, R., 977
 Kukhto, A. V., 54
 Kuk, P., 617
 Kulagin, S. A., 171, 753, 950
 Kulczycki, A., 1105
 Kultchitskii, V. A., 651, 653, 1012
 Kung, A. H., 358
 Kurik, M. V., 125, 655, 656, 677, 678
 Kurita, H., 914, 922
 Kurmei, N. D., 764, 765, 786, 787
 Kushida, T., 682
 Ku Shih-Wei, 875
 Kusumoto, Y., 391, 458
 Kuwata, K., 66
 Kuzmin, M. G., 503, 534
 Kuznetsov, V. A., 438
 Kuznetsov, V. S., 138, 368
 Kuznetsova, R. T. (Kuznetsowa, R. T.), 439, 520
 Ladd, M. F. C., 19
 Lai, T. -i., 63
 Lajzerowicz, J., 1061, 1102
 Lakshminarayanan, V., 244
 Lal, B. B., 1029
 Lalov, I. J., 820
 Lambert, Wm. R., 754
 Lamotte, M., 52
 Lange, C., 131
 Langelaar, J., 386
 Langhoff, C. A., 755
 Laporte, J. -L., 657, 698

- Lau, A., 90, 165
 Laubereau, A., 370
 Lawlor, L., 64
 Lazarev, V. V., 328
 Leach, S., 156, 157
 Leath, P. L., 942
 Lebedeva, E. P., 492
 Le Calve, N., 591
 Leech, J. W., 837
 Leduc, J., 1062
 Lee, M. H., 876
 Leech, J. W., 592
 Lefebvre, J., 1103
 Leffler, A. J., 1028
 Legrand, J. F., 1061, 1102
 Leihkauf, R., 817, 944
 Lemaistre, J. P., 135
 Lemire, A., 756
 Lendvay, E., 1063
 Lenz, K., 90, 165
 Lerit, A. H., 1075
 LeSar, R., 1085
 Lesin, V. I., 900
 Letokhov, V. S., 2
 Levanyuk, A. P., 757
 Levin, M. B., 413
 Levinson, Y. B., 821, 822
 Levshin, L. V., 366, 440, 452, 453, 455, 457
 Levy, D. H., 528
 Levy, L. A., 1086
 Lianos, P., 65
 Lim, E. C., 63, 133, 359, 360, 405, 408
 Lin, S. H., 163, 371
 Lins de Barros, H. G. P., 45
 Lipovskii, I. M., 292
 Lisher, E. I., 1026
 Lisitsa, M. P., 565
 Lisovenko, V. A. (Lisovenko, V.), 681, 683, 684, 764, 765
 Little, T. S., 224
 Liu, M. T. H., 66
 Lizengevich, A. I., 385
 Lloyd, R. V., 1064
 Loboda, L. I., 433
 Logan, L. M., 372
 Logunov, O. A., 437, 441
 Loidl, A., 1104
 Loktev, V. M., 634
 Lombardi, J. R., 194, 208
 Long, D. A., 182, 183
 Loo, B. H., 228
 Lopez, J. R., 526
 Lopina, S. V., 661
 Losev, A. P., 409, 410
 Loudon, R., 17, 916
 Lovell, M. W., 502
 Lovesey, S. W., 20
 Lozovik, Yu. E., 874
 Lubman, D. M., 67
 Lund, P. A., 493
 Lundstedt, A. P., 721, 1039
 Luty, T., 823, 877
 Lux, B., 65
 Lykhmus, A. E., 676
 Lyons, K. B., 582
 Lysak, N. A., 535
 Lysova, I. V., 436
 Lyubchanskii, I. L., 758
 Lyubimtsev, V. A., 351
 Lyudchik, A. M., 192
 McClure, D. S., 180
 McDonald, D. B., 309
 McDonald, F. A., 403
 McDonald, I. R., 832, 833
 MacDonald, R. A., 824
 McDowell, C. A., 523
 McGhie, A. R., 1005
 McHale, J., 536
 McHale, J. L., 229
 Machwe, M. K., 448
 Mackenzie, G. A., 547, 588, 1074
 McKinney, J. D., 1086
 Maclean, C., 74
 McMurry, H. L., 825
 McQuillan, A. J., 223
 Madelung, O., 21
 Maeda, H., 1089
 Maeda, S., 59, 700
 Maes, G., 521, 522
 Mahajan, S., 755
 Maharaj, U., 756
 Maier, G. V., 373, 416, 420, 428
 Maier, J. P., 293, 997
 Makarov, A. A., 2, 188
 Makarova, V. S., 33
 Makkambaev, D., 230
 Makshantsev, B. I., 374, 375, 376, 759
 Maksimov, A. A., 583, 658, 685
 Maksimov, A. F., 826, 840
 Malkes, L. Ya., 712
 Mallik, B., 109
 Maltsev, A. A., 22
 Malyavkin, L. P., 188
 Malykhina, N., 95, 150, 187
 Malyshev, V. A., 716, 963
 Maniv, T., 231
 Manzhelii, V. G., 1068
 Mar, A., 756

- Maradudin, A. A., 23
 Marchetti, A. P., 1007
 Marechal, Y., 563
 Marek, N., 96, 335
 Marinkovic, M. M., 971
 Marion, R., 53
 Maris, H. J., 24
 Marisova, S. V., 613
 Markey, B. R., 481, 1040, 1065
 Marks, S., 946
 Marteau, P., 584
 Marteau, Ph., 577
 Marthaler, O., 293
 Martin-Bouyer, J., 995
 Martin-Bouyer, M., 626
 Maruani, A., 1014
 Maruyama, Y., 1000
 Masarnovskii, L. V., 420
 Maslov, V. G., 266
 Maslov, V. V., 421
 Maslyukov, Yu. S., 412
 Mataga, N., 499, 537, 540, 996
 Matseiko, V. I., 380
 Matsui, A., 468, 686, 1066
 Matsui, K., 321
 Matsuo, N., 124
 Matsuzaki, S., 644, 645
 Matveenko, V. N., 1067
 Matyushin, G. A., 492
 Mavrin, B. N., 827
 Mayer, G., 377
 Mayer, J., 1105
 Mazurenko, Yu. T., 294
 Mazzucato, U., 473, 510
 Medina, F. D., 585
 Meek, J. T., 68
 Meic, Z., 232
 Meletov, K. P., 687, 688, 760, 761, 915
 Mel'nik, V. I., 168, 689, 762
 Memos, T., 916
 Meredith, G. R., 622
 Mergulhao, S., 614, 986
 Merlevede, C. F., 522
 Mesaros, V., 442
 Metiu, H., 231, 265
 Metzger, J., 234
 Mezentseva, G. A., 492
 Michel, C., 378
 Migiridicyan, E., 727
 Migita, M., 537, 996
 Miglei, M. F., 829, 878
 Mikami, N., 295
 Mikami, Y., 165
 Mikhailenko, V. I., 167, 168, 763, 764, 765
 Mikhailov, G. P., 112
 Mikhailov, V. M., 233
 Mikhailov, V. P., 276
 Mikhailov, Yu. A., 368
 Mikhnenko, A. V., 328
 Mille, G., 234
 Miller, J. H., 296, 317, 493
 Miller, T. A., 297
 Mills, D. L., 586, 828
 Mills, R. L., 1085
 Minaev, B. F., 379
 Miniewicz, A., 1069
 Mirjanic, D., 917
 Mirumyants, S. O., 298
 Mishra, P. C., 84, 988
 Misochko, Ye. Ya., 1013
 Misra, T. N., 109, 955
 Mistelberger, K., 690
 Misumi, S., 537
 Mitlyanskii, M. D., 792
 Mitsui, T., 587
 Miyazaki, H., 918
 Mizugai, Y., 235
 Mizuno, M., 644, 645
 Mjojo, C. C., 1070, 1071
 Möbius, K., 731
 Mohraz, M., 293, 997
 Mohwald, H., 517, 807, 866, 897
 Möhwald, H., 966
 Moldenhauer, F., 530
 Molin, Yu. N., 38, 127
 Monberg, E. M., 766, 947
 Monti, S., 137
 Moore, C. B., 358
 Morawitz, H., 236
 More, M., 1103
 Morita, H., 321
 Moriyama, I., 59
 Morozov, Yu. V., 69
 Morris, J. V., 388
 Morsink, J. B. W., 948, 976
 Moskalenko, S. A., 829, 830, 878
 Moskovits, M., 237
 Mostovnikov, V. A., 443
 Mountain, R. D., 824
 Movaghar, B., 949
 Mozrzymas, J., 831
 Mukamel, S., 284, 299
 Munakata, T., 994
 Munn, R. W., 919, 924, 998
 Munro, I. H., 300, 691
 Murakami, J. -i., 70
 Murakawa, S., 599
 Murao, T., 322
 Murashov, A. A., 982

- Murray, C. A., 251
 Murthy, C. S., 832, 833
 Myasnikov, E. N., 664, 665
 Naaman, R., 67
 Naboikin, Yu. V., 424, 610, 651, 652, 653, 712, 722, 728, 738, 767, 789, 1012
 Nagakura, S., 321
 Nagel, S. R., 568
 Nagy, J., 115
 Najbar, J., 301, 326, 768
 Nakada, I., 779, 956
 Nakagaki, R., 523
 Nakagawa, K., 627, 744, 999
 Nakajima, T., 163
 Nakano, S., 1000
 Nakashima, N., 111, 391, 458, 494, 495, 537, 538, 539, 692
 Nakayama, T., 357, 496, 744
 Nartowski, M., 1105
 Narziev, B. N., 230
 Natkaniec, I., 588, 1105
 Naumenko, I. G., 421
 Naumova, T. M. (Naumova, T.), 134, 717, 718
 Naumowicz, P., 1072
 Neerland, G., 198, 199, 200, 238
 Negishi, K., 345
 Nekadamov, Sh., 654
 Nelipovich, K. I., 168, 689, 762
 Nelson, K. A., 589, 834
 Nemet, B., 444, 472
 Nemkovich, N. A., 302, 380, 445, 535
 Nemtsev, V. A., 734
 Neporent, B. S., 159, 160, 169
 Neto, N., 185
 Neumann, W., 478, 479
 Ng, L. -K., 309
 Nickel, B., 291, 303, 304, 305, 306, 769
 Nicklow, R. M., 1107
 Nicollin, D., 511
 Nikitin, E. E., 381
 Nikolov, O. T., 1073
 Nishi, N., 321
 Nishida, Y., 497
 Nishimura, H., 686
 Nitsovich, V. M., 858, 859, 911
 Nitzan, A., 277, 341, 342
 Nizamov, N., 446, 447, 470
 Nizhnikov, V. V., 451, 736, 737
 Nkoma, J. S., 879
 Noordik, J. H., 603, 1091
 Northcott, D. J., 1041
 Novak, A., 498
 Novak, F. A., 382
 Novak, I. I., 574
 Nurmukhametov, R. N., 93, 715
 Nyi, C. A., 671
 Obriot, J., 577, 584
 O'Connor, C. J., 136
 Oehme, K. -L., 142
 Ogasahara, K., 599
 Ogawa, T., 364
 Ogilvie, J. F., 71
 Ogryzkova, N. N., 433
 Ogurtsova, L. A., 424, 712, 728, 738, 767
 Ohba, Y., 707
 Ohmine, I., 72, 495, 539
 Ohno, K., 170
 Okada, T., 499, 537, 540, 996
 Okamura, T., 57
 Okumura, M., 937, 965
 Olson, R. W., 723, 770
 Olszowski, A., 307
 Onipko, A. I., 969, 1016, 1017
 Orlandi, G., 137
 Orville-Thomas, W. J., 189
 Osadko, I. S., 171, 753, 950
 Osborne, A. D., 469
 O'Shea, D. C., 26
 Ostrovskii, V. S., 632
 Otis, C., 333
 Ovander, L. N., 758, 835
 Ovcharenko, V. V., 598
 Ovchinnikov, A. A., 476
 Ovchinnikova, M. Ya., 381
 Overell, J. S. W., 1074
 Ovsyankin, V. V., 693
 Oxtoby, D. W., 383, 402
 Paczkowski, M., 500
 Padma Malar, E. J., 541
 Paerschke, H., 951
 Painter, L. R., 628
 Painter, P. C., 239
 Pakhomov, L. G., 1042
 Pakuła, B., 508
 Pakulov, S. N., 652
 Palchevskii, V. V., 73
 Palit, N. B., 629, 771
 Palmer, R. A., 19
 Panchenko, V. Ya., 328
 Pandey, V. M., 261, 590
 Pandya, M. L., 448
 Parisi, R., 77
 Park, J. M., 1041
 Parkinson, G. M., 567, 811, 1051, 1082

- Parks, K. D., 702
 Parmenter, C. S., 346
 Pasquier, B., 591
 Passell, L., 1106
 Passer, E. L., 1075
 Passerini, A., 212, 240
 Pastori Parravicini, G., 857
 Patey, G. N., 1033
 Pathak, A. N., 241
 Patzold, H. -J., 165
 Paul, I. C., 1045
 Pauling, L., 242
 Pavloshchuk, V. A., 634
 Pavlyuchko, A. I., 243
 Pawley, G. S., 547, 588, 592, 837, 1074
 Pecile, C., 985
 Pekcan, Ö., 952
 Pelipenko, V. P., 421
 Pellatt, M. G., 449
 Perchi, Z. I., 450
 Perehygin, I. S., 112
 Peretti, P., 630
 Perkampus, H. -H., 143
 Pershin, V. K., 1076, 1077
 Pershin, V. I. K., 1076, 1077
 Personov, R. I., 273
 Pertsov, N. V., 1067
 Petch, H. E., 839
 Petelenz, P., 524, 880, 1001
 Peter, G., 772
 Petersen, J., 486, 732
 Peticolas, W. L., 244
 Petrenko, A. D., 835
 Petrov, I. P., 734
 Petrov, S. N., 138
 Petrova, I. B., 527
 Petrovich, P. I., 429
 Pettinger, B., 263, 245
 Pfeiffer, M., 90
 Phillips, T. E., 870, 910, 992
 Philpott, M. R., 213, 515, 612, 619, 719, 861, 884
 Pick, R. M., 1078, 1097
 Pierce, R., 500
 Pigenet, C., 591
 Pikaev, A. K., 471
 Pikus, Yu. G., 631, 632
 Piryatinskii, Yu. P. (Pirjatinskii, Yu. P.), 677, 678
 Pitts, W. M., 139
 Plantenga, T. M., 74
 Plate, N. A., 27
 Platenkamp, R. J., 773
 Platonenko, V. T., 384
 Platonova, N. V., 76
 Plekhanov, V. G., 873, 881
 Plotnikov, V. G., 75, 78, 373
 Podgornii, A. P., 738, 767
 Podoprigora, V. G., 39, 836
 Pogarev, D. E., 550, 793, 794, 930, 931
 Pogarev, S. V., 550, 793, 794, 930, 931
 Pogorelov, V. E., 246, 385
 Pokatilov, E. P., 829, 878
 Pokrovskaya, F. S., 722, 728
 Poliacik, I., 442
 Pommier, J. F., 1038
 Ponte Goncalves, A. M., 694, 1079
 Popechits, V. I., 289, 290, 369, 752
 Popov, A. F., 206, 226, 227
 Popov, K. R., 76
 Popov, L. S., 132, 140
 Popov, V. A., 1068
 Popov, V. G., 192
 Popova, M. N., 264
 Port, H., 690, 695, 696
 Potapova, V. Ya., 227
 Povstyanoy, M. V., 437
 Powell, B. M., 592, 837
 Powell, R. C., 11, 964
 Powers, D. E., 108, 284, 361, 611
 Prasad, K. N., 1087
 Prasad, P. N., 571, 593, 720, 838
 Prasad, S. C., 254
 Pratt, J. C., 839
 Premaswarup, D., 248
 Priest, R. G., 1080
 Prigogine, I., 28, 29
 Prikhot'ko, A. F., 631, 632, 633, 634
 Prima, A. M., 247
 Prima, I. A., 247
 Prishchepov, A. S., 451
 Privalov, O. M., 826, 840
 Privalova, N. Yu., 434
 Priyutov, M. V., 172
 Prokhvatilov, A. I., 1059
 Pucci, R., 77
 Puchkovskaya, G., 95, 187
 Puchkovskaya, G. A., 565, 581, 594
 Pugovkin, M. M., 783
 Pulin, V. F., 206
 Pullman, B., 31
 Puza, M., 102, 483
 Pyatakhin, O. F., 826, 840
 Pyatosin, V. E., 141
 Rabin, Y., 308
 Rabinovich, B. S., 407
 Rachev, V. F., 368
 Radomska, K., 61
 Rahman, A., 568

- Rai, S. B., 179
 Raich, J. C., 1081
 Raidaru, A., 617
 Rakhmatov, M., 501
 Ramanamurti, D. V., 248
 Ramdas, S., 567, 811, 841, 1051, 1082, 1083
 Ranson, P., 630
 Rashba, E. I., 687, 688, 760, 761, 915, 920
 Rashev, S., 78
 Rashev, S. S., 75
 Ratanapun, S., 953
 Ratcliffe, C. I., 842
 Rava, R. P., 62, 113
 Ray, N. K., 82
 Razumaeva, A. E., 79
 Razumov, V. I., 140
 Razumova, T. K., 114
 Rebane, I. (Rebane, I. K.), 774, 775, 776
 Rebane, L. A., 739
 Reddoch, A. H., 1041
 Rees, W. L., 1084
 Reffy, J., 115
 Regev, H., 1030
 Reilly, J. P., 68, 80
 Reimschuessel, W., 249
 Reineker, P., 977
 Remizov, I. A., 836
 Renouprez, A. J., 225
 Rentzepis, P. M., 268, 336
 Resca, L., 882
 Resta, R., 882
 Rettschnick, R. P. H., 386
 Reva, M. G., 452, 453, 455
 Revinskii, V. V., 276
 Rhodes, W. T., 26
 Rice, J., 309
 Rice, S. A., 28, 29, 382
 Rich, N. H., 575
 Richter, D., 1106
 Ridley, T., 222
 Riedinger, T. S., 628
 Righini, R., 843
 Riley, S. J., 488
 Rinne, M., 635
 Ripmeester, J. A., 608, 1041
 Rippen, G., 697
 Rips, I. B., 921
 Rishishwar, R. P., 58
 Rivet, P., 802
 Robertson, G. B., 102, 483, 484
 Robinson, G. W., 250
 Roden, G., 303, 304, 305, 769
 Rodionov, A. N., 48, 49, 50, 81
 Rodionova, G. N., 81
 Roe, I. H. C., 449
 Romanovskii, Yu. V., 273
 Rom-Krichevskaya, I. A., 661
 Ross, I. G., 372
 Rossetti, R., 387
 Rosta, L., 1098
 Rotaru, A. Kh., 830
 Rousset, Y., 657, 698
 Rowe, J. E., 251
 Roy, D., 270
 Roy, G. K., 800, 935
 Rubanov, A. S., 431
 Rubinov, A. N., 445, 454
 Rudakoff, G., 142
 Rund, D., 696
 Rupasov, V. I., 649, 855
 Russegger, P., 388
 Ryabchikova, G. G., 471
 Ryabov, E. A., 2, 188
 Rybka, C., 620
 Ryzhikov, B. D., 452, 453, 455
 Saari, P., 617, 673, 777
 Saari, P. M., 314, 648
 Sabersky, A. P., 300, 691
 Sadkowski, P. J., 389
 Sadovskii, N. A., 534
 Saechnikov, V. A., 155, 404
 Sagaidak, D. I., 51
 Sagun, E. I., 355, 409, 410
 Sah, R. E., 456
 Saigusa, H., 390
 Saile, V., 636, 699, 883
 Sairam, R., 82
 Sakai, O., 914, 922
 Sakamoto, S., 105, 485
 Sakata, Y., 537
 Sakun, V. P., 900
 Saletskii, A. M., 440, 457
 Salivon, G. I., 246
 Saltiel, J., 323
 Samoc, M., 901, 1002, 1003, 1069
 Samsonov, B. F., 533
 Samsonova, L. G., 433
 Samsonova, L. S., 367
 Sanche, L., 1004
 Sanda, P. N., 202
 Sanquer, M., 562
 Santo, R., 619
 Sanyal, N. K., 116, 252, 595
 Sarzhevsky, A. M. (Sarzhevskii, A. M.), 155, 278, 289, 290, 340, 369, 404, 752

- Sato, H., 391, 458
 Sauer, G. W., 949
 Sauvajol, J. L., 596
 Savchenko, E. V., 667, 668
 Savchenkov, V. I. (Savchenkov, V.), 717, 718
 Saylor, M. C., 895
 Sazhnikov, V. A., 501
 Sbrana, G., 185
 Schaack, G., 606, 607
 Schaaf, R., 143
 Schanze, K., 323
 Schatz, G. C., 147, 253
 Schatz, P. N., 493
 Schein, L. B., 1005
 Schiferl, D., 1085
 Schlosser, D. W., 884
 Schmelzer, U., 588
 Schmidt, J., 703, 748, 902
 Schmidt, J. W., 597
 Schnabel, W., 506
 Schneider, G. M., 1092
 Schönherr, G., 954
 Schröter, O., 556
 Schulman, S. G., 502
 Schulte-Frohlinde, D., 489
 Schwalbe, L. A., 1085
 Schwentner, N., 778
 Scott, G. W., 117
 Scott, L. T., 204
 Sears, T. J., 297
 Sechkarev, A. V., 230, 598
 Segal, G. A., 32
 Seitz, F., 12
 Seki, H., 213, 637
 Seki, S., 1088
 Seld, M. V., 676
 Semack, M. G., 709
 Semenov, A. E., 598
 Semenov, S. G., 73, 266
 Senchishin, V. G., 527
 Senyuk, M. A., 654
 Seo, K., 173
 Serdyuk, A. D., 1073
 Sergienko, A. I., 867, 886
 Serikov, A. A., 885, 923
 Serov, V. V., 13
 Sethuraman, C., 638
 Sethuraman, V., 638
 Shabanov, V. F., 39, 836
 Shabestary, N., 529
 Shablya, A. V., 351
 Shalimo, A. L., 443
 Shamraev, V. N., 438
 Shanbhag, P. V., 118
 Shaner, J., 1085
 Shank, C. V., 251
 Shanskii, L. I., 631, 632, 634
 Shapiro, S. L., 174, 310, 392, 459
 Shapovalov, V. L., 503
 Sharma, S. (Smt), 215
 Sharma, S. D., 214
 Sharma, S. K., 217
 Sharma, S. N., 214, 215, 216, 252, 595
 Sharnoff, M., 624, 898, 973
 Shashidhar, M. A., 118
 Shatokhin, S. A., 112
 Shatrov, V. D., 138, 368
 Shaw, A. C., 547
 Shchapin, S. M., 98
 Shchukin, E. D., 1067
 Sheck, Yu. B., 504
 Sheka, E. F., 33, 554, 588, 687, 688, 760, 761, 797, 862, 915, 1099
 Sheneikh, R., 269
 Sheng, S. J., 496
 Sheremet'eva, T. A., 119
 Sherman, A. V., 675, 872
 Sherman, W. F., 842, 844
 Shestakov, N. P., 39
 Shevandin, V. S., 266, 414, 460, 474
 Shibaev, V. P., 27
 Shibuya, M., 706
 Shigorin, D. N., 48, 49, 50
 Shiley, R. H., 293, 997
 Shilov, V. B., 169
 Shimizu, M., 700
 Shindo, Y., 324
 Shinohara, H., 144
 Shirokov, V. I., 343
 Shishkina, E. Yu., 429
 Shiyanovsky, S. V., 889
 Shizuka, H., 400
 Shpak, M. T. (Shpak, M.), 423, 679, 680, 681, 683, 684, 689, 749, 1057
 Shtepa, Yu. D., 893, 894
 Shubert, D., 454
 Shulga, A. M., 273
 Shultin, A. A., 625
 Shurvell, H. F., 564
 Siebrand, W., 175, 393, 394, 395, 514, 860, 901, 984, 998, 1002
 Siegoczynski, R. M., 516
 Sigov, A. S., 757
 Silaeva, N. B., 789
 Silbey, R., 919, 924, 933, 962, 974, 980
 Silkis, E. G., 188
 Silver, M., 954
 Silverman, B. D., 542
 Simonetta, M., 567, 811, 1051, 1082

- Simons, J., 536
 Singer, K., 832, 833
 Singh, I. D., 600
 Singh, J., 907, 936, 1006, 1021
 Singh, P., 1086
 Singh, R. N., 254
 Singh, S. K., 120
 Sinha, B. K., 241
 Sinha, D. P., 1087
 Sinha, S. K., 800, 935
 Sinn, E., 136
 Sinyavskii, E. P., 153
 Siomos, K., 505
 Sivaram, B. M., 425
 Sivokhin, V. S., 461
 Sixl, H., 478, 479
 Skrinjar, M., 917
 Slobodin, Ya. M., 569
 Slobodyanik, V. V. (Slobodjanik, V. V.), 677, 678
 Slyusarev, V. A., 551, 1035
 Small, G. J., 638
 Smalley, R. E., 108, 284, 299, 361, 611
 Smirnov, V. P., 83
 Smirnov, V. S., 462, 463
 Smith, A. B. III, 500
 Smith, G. R., 784, 848
 Smithson, T. L., 255
 Smoes, M. G., 809
 Snegov, M. I., 464, 465
 Snyder, R. W., 239
 Soboleva, I. V., 534
 Sobolewski, A., 176
 Soinikov, Yu. A., 366
 Sokolenko, V. A., 88
 Sokolov, M. N., 177, 178, 311
 Sokolov, Yu. A., 256
 Soldatov, A. N., 420
 Solodovnik, A. A., 1058
 Soloviev, K. N., 273, 312
 Sorai, M., 599, 1088
 Soroka, G. M., 787
 Soos, Z. G., 870, 910, 992
 Sparks, M., 586, 828
 Speiser, S., 257
 Spiro, A. G., 169
 Springer, T., 20
 Spunta, G., 240
 Sribnaya, V. K., 887
 Srivastava, S. K., 84
 Srivastava, S. L., 116
 Srivastava, S. P., 600
 Stal'makhovich, S. I., 455
 Stankov, K. A., 466
 Starobogatov, I. O., 114
 Starr, H., 1052
 Startsev, A. V., 437, 441
 Starukhin, A. S., 273
 Stasyuk, I. V., 909
 Stefanski, K., 103
 Stehlik, D., 131
 Steiner, U., 545
 Steinfeld, J. I., 274
 Stel'makh, G. F., 313
 Steudle, W., 525, 704, 782
 Stidham, H. D., 258, 560
 Steller, H., 1047
 Stockburger, M., 121
 Stoilov, Yu. Yu., 437, 441
 Stone, J., 396
 Strizhevsky, V. L., 594
 Strommen, D. P., 244
 Struve, W. S., 397
 Stryukov, M. B., 436
 Stupak, A. P., 454
 Subramanyam, S. V., 513
 Sudnik-Hryniewicz, M., 1105
 Suemoto, T., 639
 Suga, H., 599, 1088
 Sugakov, V. I., 888, 889, 894
 Sühnel, J., 55, 283
 Sukhanov, V. B., 420
 Sukhareva, N. A., 384
 Sukstanskii, A. L., 758
 Sumarokov, V. V., 1068
 Sumin, V. V., 826
 Sumitani, M., 111, 390, 494, 495, 538, 539
 Sunamoto, J., 364
 Suryanarayana Rao, K., 118
 Süss, K. -E., 951
 Suzuka, I., 316
 Suzuki, M., 913
 Suzuki, N., 324
 Sverdlov, L. M., 177, 178, 191, 205, 206, 207, 226, 292, 311
 Svishchev, V. N., 663
 Swalen, J. D., 213, 619, 730
 Sworakowski, J., 1069
 Syркин, A. L., 711
 Szarras, S., 1072
 Szczepaniak, K., 189, 516
 Szucs, K., 444
 Szwarc, H., 1048
 Tabakova, S., 145
 Tagawa, S., 506
 Tajiri, A., 640
 Takagahara, T., 669
 Takagi, K., 345

- Takahashi, Y., 543, 701
 Takemura, T., 324
 Takeuchi, H., 601, 845
 Talapatra, G. B., 955
 Taliani, C., 71, 122
 Talley, L. D., 117
 Tamm, T., 777
 Tamm, T. B., 314, 648
 Tan, K. L., 315
 Tanabe, K., 259, 398
 Tanaka, H., 627, 999
 Tanaka, I., 57
 Tanaka, J., 467
 Tanaka, M., 467
 Tanaka, T., 66
 Tang, I.-M., 953
 Tanizaki, Y., 57
 Tanttilla, W. H., 891
 Tarnai, A. A., 450
 Tartakovskii, I. I., 583, 658, 685
 Tashita, N., 499, 540
 Tasumi, M., 601, 845
 Tavrizova, M. A., 492
 Tegeler, E., 85
 Ten Brink, H. M., 386
 Terada, T., 325
 Teranishi, H., 357
 Terauchi, H., 1089
 Terpugova, A. F., 533
 Teuchner, K., 530
 Thakur, S. N., 590
 Thiele, E., 396
 Thiery, M. M., 577
 Thirunamachandran, T., 399
 Thomas, J. M., 567, 811, 841, 1051,
 1082, 1083, 1084
 Thomas, M., 1043
 Thomson, J. A., 570
 Tikhomirov, S. A., 123
 Tikhonov, E. A., 423
 Timinskii, Yu. V., 480
 Timpmann, K., 617
 Tirzit, G. D., 100
 Titov, V. D., 188
 Tiunov, Yu. A., 728
 Tkach, N. V., 858, 859
 Tobisch, F., 1090
 Tobita, S., 400
 Tokura, Y., 641, 779, 890, 956
 Tolpygo, K. B., 871, 887
 Tolstorozhev, G. B., (Tolstoroshev,
 G. B.), 123, 535
 Tomasello, P., 77
 Tomashevskii, Yu. B., 205, 227
 Tomin, V. I., 302, 380, 445, 535
 Tomioka, K., 468
 Tomioka, K.-i., 1066
 Toms, D. J., 891
 Tomura, M., 701
 Topp, M. R., 344
 Tosic, B. S., 971
 Tramer, A., 356
 Traskin, V. Yu., 435
 Traverso, G., 86
 Tredwell, C. J., 469
 Treloar, F. E., 315
 Trethewey, K. R., 348
 Tric, C., 378
 Tripathi, G. N. R., 260, 261, 573, 602
 Tripathi, R., 179
 Tripathi, S. R., 260
 Trlifaj, M., 780
 Troitskaya, E. P., 806
 Trommsdorff, H. P., 158, 559, 622
 Tsang, J. C., 220
 Tsubomura, H., 124
 Tsuji, K., 1088
 Tsvirko, M. P., 141, 313
 Tsyashchenko, Yu. P., 578, 580, 819
 Tuchin, Yu. G., 81
 Tugushev, V. V., 989
 Tulub, A. A., 73
 Turek, A. M., 326, 768
 Turnbull, D., 12
 Turov, Yu. P., 783
 Tyrzyk, J., 426
 Tyu, N. S., 846
 Uchida, K., 267, 324, 543, 701
 Udagawa, Y., 316
 Udovenya, V. A., 354
 Ueda, M., 105, 485
 Uldrikis, Ya. R., 100
 Ulehla, M., 957
 Umarov, K. U., 507
 Umreiko, D. S., 247
 Uneberg, G. O., 87
 Upadhya, K. N., 120
 Uszynski, I., 877
 Uzhinov, B. M., 435
 Vainer, Y. G., 188
 Van Alsten, J., 104
 Van Duyne, R. P., 147, 253, 702
 Van Kooten, J. F. C., 902
 Van Strien, A. J., 703, 902
 Van Wasen, U., 1092
 Van der Avoird, A., 823
 Van der Maas, J. H., 262
 Van der Velden, G. P. M., 146,
 603, 1091

- Van der Waals, J. H., 401
Vandyukov, E. A., 298
Vannikov, A. V., 899
Vass, I., 96, 335
Vasudevan, K., 64
Veeman, W. S., 146
Velsko, S., 402
Venkatacharyulu, P., 248
Verma, P. K., 186
Vershinin, V. I., 281
Veselova, T. V., 464, 544
Veszpremi, T., 115
Vetrov, S. Ya., 642, 847
Vettegren, V. I., 574
Vial, M., 995
Vicharelli, P. A., 403
Vidmont, N. A., 1013
Vieth, H. M., 131
Viktorova, E. N., 464
Vincent-Geisse, J., 1049
Vincett, P. S., 643
Vinetskaya, Yu. M., 436
Vishnevskii, V. N., 276
Visscher, W. M., 958
Visser, T., 262
Vitukhnovskii, A. G., 714, 781, 788, 978
Vogel, S. V., 38
Vogt, B. S., 502
Voitländer, J., 129
Volkov, V. V., 734
Vollmann, W., 131
Voltz, R., 979
Von Burg, K., 903
Von der Linde, D., 604
Von der Weid, J. P., 892
Von Schütz, J. U., 512, 525, 704, 782
Voropai, E. S., 155, 404
Voszka, R., 1093
Vovelle, F., 561, 605
Vylegzhanin, O. N., 783
Vysotsky, Yu. B., 88
Wakabayashi, N., 1107
Wakayama, N. I., 89, 644, 645
Waldmann, J., 479
Walker, E. I. P., 1007
Walker, S., 349
Wallis, R. F., 23
Walmsley, S. H., 724, 843, 906, 938, 1065
Walters, M. A., 104
Waluk, J., 508
Wang, C. H., 196, 229
Ware, W. R., 56
Warren, J. A., 784, 848
Warta, W., 1005
Wasiewicz, R., 620
Wassam, W. A., Jr., 405
Watkins, A. R., 406
Watton, A., 839
Wawryszczuk, J., 620
Webb, J. B., 901, 1002, 1003
Webber, S. E., 785
Webster, D., 133
Weigmann, H. -J., 90, 165
Weisman, R. B., 279
Weitz, D. A., 209
Weller, A., 509, 546
Welsch, D. -G., 951
Wenning, U., 245, 263
Werncke, W., 90, 165
Wertheimer, R., 980
Wessel, J., 180
West, M. L., 317
Westrum, E. F., Jr., 1031, 1032, 1096
Wetzel, H., 245, 263
White, D., 709
White, G. K., 1027
White, J. G., 1075
White, W. B., 940
Wiech, G., 85
Wiegers, K. E., 1045
Wiersma, D. A., 36, 670, 742, 948, 976
Wieser, H., 255
Wieting, R. D., 646, 904
Wigren, J., 1094
Wild, U. P., 280, 666, 740
Wilkinson, G. R., 842
Williams, A. D., 548
Williams, D. E., 814, 849, 1052, 1095
Williams, D. F., 901, 1002, 1003, 1041
Willig, F., 692
Windsor, M. W., 347
Winn, K. R., 174, 310, 392, 459
Winnik, M. A., 756
Winscom, C. J., 731
Winter, G., 545
Winterfeldt, V., 606, 607
Wolf, H. C., 525, 704, 782
Wolters, F. C., 407
Wong, P. T. T., 608
Wong, W. -K., 1096
Wong, Y. M., 981
Woning, J., 146
Wood, D. E., 1064
Wood, M. K., 1052
Worley, S. D., 44
Wright, J. C., 705
Wuo Guo-Zhen, 850
Wu Jian, 851, 959
Wu S. -Y., 852
Wyncke, B., 609

- Yagi, M., 327
Yajima, Y., 408
Yakhot, V., 525, 782
Yakovlev, S. V., 716, 963
Yakub, L. N., 853
Yamada, Y., 1107
Yamamoto, N., 124
Yamamoto, S. -a., 509, 546
Yamashita, S., 706
Yang, N. C., 309
Yankovskaya, L. B., 684, 733, 762
Yao, Y. D., 647
Yaremko, A. M., 565
Yokoi, K., 707, 1008
Yonezawa, F., 936
Yoshihara, K., 111, 390, 391, 458, 494, 495, 537, 538, 539, 692
Young, C. Y., 647
Young, R. H., 1007
Yumashev, K. V., 276
Yunusova, M. O., 507
Yurtaeva, E. M., 663
Yuzhakov, V. I., 440, 457
Yvinec, M., 1078, 1097

Zagainova, L. I., 786, 787
Zaitsev, R. O., 960
Zakhidov, A. A., 1009

Zakhidov, U., 447, 470
Zalesskaya, G. A., 318, 319
Zalesskii, I. E., 736, 737
Zaletaev, S. P., 708
Zaporozhchenko, V. A., 411
Zare, R. N., 67
Zarochentsev, E. V., 806
Zboinski, Z., 1069
Zegarski, B. R., 297
Zen'kevich, E. I., 355, 409, 410
Zewail, A. H., 135, 754, 863
Zgierski, M. Z., 175, 393, 394, 395
Zharkov, I. P., 125
Zhbakov, R. G., 812
Zhestkova, T. P., 471
Zhevandrov, N. D., 714, 781, 788, 978
Zhigalova, E. B., 434
Zhilinsky, A. G., 94
Zhizhin, G. N., 264
Zholnerevich, I. I., 278
Ziegler, L. D., 126
Zietek, B., 472
Zink, J. I., 660
Zinoviev, P. V., 789
Zorkii, P. M., 79
Zschokke-Gränacher, I., 903
Zumofen, G., 932
Zwemer, D. A., 251
Zyat'kov, I. P., 51