Molecular Crystals and Liquid Crystals Incorporating Nonlinear Optics

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/gmcl17

Spectroscopy of Molecular Crystals A Bibliography for 1984

E. F. Sheka [a] , V. S. Makarova [a] , T. A. Krivenko [a] & E. F. Sheka [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: 13 Dec 2006.

To cite this article: E. F. Sheka , V. S. Makarova , T. A. Krivenko & E. F. Sheka (1987): Spectroscopy of Molecular Crystals A Bibliography for 1984, Molecular Crystals and Liquid Crystals Incorporating Nonlinear Optics, 150:1, 493-548

To link to this article: http://dx.doi.org/10.1080/00268948708074816

Mol. Cryst. Liq. Cryst., 1987, Vol. 150b, pp. 493–565
Photocopying permitted by license only

Printed in the United States of America

Spectroscopy of Molecular Crystals
A Bibliography for 1984

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 January 9, 1987)

CONTENTS

1. INTRODUCTION

The 1984 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, 1978, 1979, 1980, 1981, 1982 and 1983 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**, 60(1979), **61**, 251(1980), **73**, 105(1981), **91**, 197(1983), **104**, 1(1984), and **135**, 129(1986).

As all previous issues, the 1984 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. Agranovich, V. M., and Ginzburg, V. L., Crystal optics with spatial dispersion and excitons. Second corrected and updated edition. Berlin, Germany: Springer-Verlag, xi, 441 p. (1984) (Eng) (P.A. **87**:101583).

2. Arecchi, F. T., Strumia, F., and Walther, H.,Eds. Advances in laser spectroscopy. New York and London: Plenum press, ix, 506 p. (1983) (Eng) (*Eur. Spectrosc. News,* 1984, N 53, p. 41).
3. Aussenegg, F. R., Leitner, A., and Lippitsch, M. E., Eds. Surface studies with lasers. Berlin etc., Springer-Verlag. ix, 241 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 52, p. 37).
4. Beijing/ Shanghai proceedings of an international conference on lasers May 1980. New York and Chichester, China Academic Publishers and John Wiley and Sons, xix, 909 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 54, p. 41).
5. Benard, J., Ed., Adsorption on metal surfaces. An integrated approach. Amsterdam, Oxford, New York. 337 p. (1983) (Eng).
6. Bersuker, I. B., The Jahn-Teller effect. A bibliographic review. New York, Washington and London: IFI/Plenum, ix, 589 p. (1984) (Eng) (*Eur. Spectrosc. News*, 1984, N 55, p. 43).
7. Bersuker, I. B., The Jahn-Teller effect and vibronic interactions in modern chemistry. New York and London: Plenum, xiv, 319 p. (1984) (Eng) (*Eur. Spectrosc. News*, 1984, N 55, p. 43).
8. Bianconi, A., Incoccia, L., and Stipcich, S., Eds. EXAFS and near edge structure. Berlin etc.: Springer-Verlag, xii, 420 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 52, p. 37).
9. Brodin, M. S., Myasnikov, E. N., and Marisova, S. V., Polaritons in crystallooptics. Kiev: *Naukova dumka. 200 p.* (1984) (Russ).
10. Brown, J. M. et al. Molecular constants. Vol. 14. Berlin etc., Springer-Verlag, ix, 373 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 54, p. 41).
11. Burgess, C., and Knowles, A., Practical absorption spectrometry. London: *Chapman and Hall, 300 p.* (1983) (Eng) (Techniques in visible and ultraviolet spectrometry; Vol. 3).
12. Clark, R. J. H., and Hester, R. E., Eds. Advances in infrared and Raman spectroscopy. Vol. 11. Chichester etc., Wiley, 336 p. (1984) (Eng) (*Eur. Spectrosc. News*, 1983–1984, N 51. p. 38).
13. Coffey, W. T., Evans, M., and Grigolini, P., Molecular diffusion and spectra. New York: John Wiley and Sons, xiii, 378 p. (1984) (Eng) (*J. Amer. Chem. Soc.*, 1985, **107**, N 10, p. 3002).
14. Condensed matter research using neutrons, today and tomorrow. Proceedings of a NATO advanced study institute. New York, USA: *Plenum, viii, 329 p.* (1984) (Eng) (P. A. **88**:74316). Conference held at: Abingdon, Oxon., England. Date 26–29 March 1984.
15. Csizmadia, I. G., Ed. Molecular structure and conformation. Recent advances. Amsterdam, Netherlands: *Elsevier, vi, 344 p.* (1982) (Eng) (P.A. **87**:67889).
16. Cummins, H. Z, and Levanyuk, A. P., Eds. Light scattering near phase transitions. Vol. 5. Amsterdam and New York: North-Holland, xvii, 666 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 55, p. 43).
17. Davydov, A. S., Solitons in molecular systems. Kiev, *Naukova dumka, 288 p.* (1984) (Russ).
18. Durig, J. R., Ed. Vibrational spectra and structure. Vol. 12. Amsterdam, Oxford and New York: Elsevier, xvi, 498 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 55, p. 42).
19. Durig, J. R., Ed. Vibrational spectra and structure. A series of advances. Vol. 13. Amsterdam, Netherlands: Elsevier, xvii, 459 p. (1984) (Eng) (P. A. **88**:69065).
20. Garetz, B. A., and Lombarsi, J. R., Eds. Advances in laser spectroscopy. Vol. 2. Chichester and New York: John Wiley and Sons, ix, 261 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 53, p. 40).
21. Gordy, W., and Cook, R. L., Microwave molecular spectra. 3d ed. New York etc.: Wiley, cop. xiv, 929 p. (1984) (Eng) (Techniques of chemistry; Vol. 18).

22. Gribov, L. A., Baranov, V. I., and Novosadov, B. K. Calculational methods for electronic-vibrational spectra of polyatomic molecules. Moscow, 326 p. (1984) (Russ).
23. Gutmann, F., Keyzer, H., Lyons, L. E., and Somoano, R. B., Organic semiconductors. Part B. Malabar, FL, USA: Robert E. Krieger publishing, xvii, 723 p. (1983) (Eng) (P. A. **88**:40848).
24. Kadish, K. M., Ed. Electrochemical and spectrochemical studies of biological redox components. New York, American Chemical Society, xii, 752 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 54, p. 41).
25. Kloffer, W. Introduction to polymer spectroscopy. Berlin etc.: Springer-Verlag, xii, 184 p. (1984) (Eng) (*Eur. Spectrosc. News*, 1984, N 55, p. 43).
26. Knowles, A., Burgess, C., Eds. Practical absorption spectroscopy. London and New York, Chapman and Hall, xxii, 234 p. (1984) (Eng) (*Eur. Spectrosc. News*, 1984, N 54, p. 41).
27. Kolotyrkin, Ya. M., and Shigorin, D. N., Ed. Electronic-vibrational spectra of aromatic compounds with heteroatoms. Moscow, *Nauka, 183 p.* (1984) (Russ).
28. Koptyug, V. A., Ed. Aromatic and heterocyclic compound spectrum atlas. Vyp. 21. Infrared, ultraviolet and visible absorption spectra of pyrrole and I-vinylpyrrole derivatives. Novosibirsk, 103 p. (1981) (Russ).
29. Koptyug, V. A., Ed. Aromatic and heterocyclic compound spectrum atlas. Vyp. 24. Infrared, ultraviolet and visible absorption spectra of nitroxyl radicals of 3-imidazoline, pyrroline, pyrrolidine, piperidine and diazepine derivatives and their predecessors. Novosibirsk, 139 p. (1982) (Russ).
30. Krivoglaz, M. A. X-ray and neutron diffuse scattering on fluctuational heterogeneities in nonperfect crystals. Kiev, Naukova dumka, 289 p. (1984) (Russ).
31. Lagarde, P., and Dexpert, H., EXAFS in catalysis, *Adv. Phys.* **33**, N 6, 567–594 (1984) (Eng).
32. Letokhov, V. S., Nonlinear laser chemistry. Berlin, Heidelberg, New York: Springer-Verlag, xiv, 417 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 53, p. 40).
33. Lisitsa, M. P., and Yaremko, A. M., Fermi resonance. Kiev, 264 p. (1984) (Russ).
34. Mayer, G. V., and Danilova, V. I., Quantum chemistry, structure and photonics of molecules. Tomsk, Izd-vo Tomsk. Univ., 281 p. (1984) (Russ).
35. Organic molecular aggregates. Electronic excitation and interaction processes. Proceedings of the international symposium on organic materials. Berlin, Germany: Springer-Verlag, ix, 285 p. (1983) (Eng) (P.A. **88**:18992).
36. Painter, P. C., Coleman, M. M., and Koenig, J. L., The theory of vibrational spectroscopy and its application to polymeric materials. New York etc.: John Wiley and Sons, 530 p. (1982) (Eng).
37. Parker, F. S., Applications of infrared and Raman spectroscopy in biochemistry. New York and London: Plenum press, x, 550 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 53, p. 41).
38. Paul, R., Field theoretical methods in chemical physics. Amsterdam, Oxford and New York: Elsevier, viii, 414 p. (1982) (Eng) (*Eur. Spectrosc. News*, 1984, N 53, p. 39).
39. Person, W. B., and Zerbi, G., Eds. Vibrational intensities in infrared and Raman spectroscopy. Amsterdam, Oxford, New York: Elsevier scientific publ. company, XV, 466 p. (1982) (Eng) (Studies in physical and theoretical chemistry. Vol. 20).
40. Pethrick, R. A., and Richards, R. W., Eds. Static and dynamic properties of the polymeric solid state. Proceedings of the NATO advanced study institute held at Glasgow, U.K., Sept. 6–18, 1981. Dordrecht etc.: D. Reidel publishing company, 475 p. (1982) (Eng) (NATO advanced study institute series. Ser. C— Mathematical and physical sciences. Vol. 94).
41. Phillips, J. P., et al., Eds. Organic electronic spectral data. Vol. 19, 1977. New York and Chichester, Wiley-Interscience, xii, 1068 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 54, p. 41).

42. Piepho, S. B., and Schatz, P. N., Group theory in spectroscopy. New York and Chichester: Wiley-Interscience, xxv, 634 p. (1983) (*Eur. Spectrosc. News*, 1984, N 53, p. 41).
43. Position-sensitive detection of thermal neutrons. Proceedings of a workshop. London, England: Academic press, xxii, 430 p. (1983) (Eng) (P. A. **88**:18989).
44. Pretsch, E. et al. Spectral data for structure determination of organic compounds. Berlin etc.: Springer-Verlag, ix, 316 p. (Eng) (*Eur. Spectrosc. News*, 1984, N 54, p. 41).
45. Proceedings of the 2nd International conference on radiation effects in insulators, *Nucl. Instrum. and Methods Phys. Res. Sect. B*, **229**, N 2-3 (1984) (Eng) (P.A. **87**:73143).
46. Proceedings of the IX international conference on Raman spectroscopy (papers in summary form only received). Conference held at: Tokyo, Japan. Data 27 Aug.–1 Sept. 1984. Tokyo, Japan: Organ. Committee for the IXth int. conf. on Raman spectrosc., xxxvi, 894 p. (1984) (Eng) (P.A. **88**:88127).
47. Proceedings of the national symposium on molecular spectroscopy, *Indian J. Phys. B* **58**, N 4-5 (1984) (Eng) (P.A. **88**:30116). Conference held at: Calcutta, India. Date 13–15 Feb. 1984.
48. Proceedings of the symposium on solid state chemistry, *Mol. Cryst. and Liquid Cryst.* **107**, N 1-2 (1984) (Eng) (P.A. **87**:73146).
49. Proceedings of the workshop on neutron scattering instrumentation for SNQ (Jul–1954). Julich, Germany: Kernforschungsanlage Julich, 542 p. (1984) (Eng) (P.A. **88**:69041). Conference held at: Maria Laach, Germany. Date 3–5 Sept. 1984.
50. Sample environments in neutron and X-ray experiments. Institut Max von Laue-Paul Langevin (Grenobl, France), 13–15 Feb. 1984, *Rev. Phys. Appl.* **19**, N 9, x, 643–857 (1984) (Fr.).
51. Schmid, E. R. et al., Eds. Mass spectrometry advances 1982, parts A, B, C, and D. Amsterdam, Oxford and New York: Elsevier (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 52, p. 37).
52. Sheka, E. F., Makarova, V. S., and Krivenko, T. A., Spectroscopy of molecular crystals. A bibliography for 1981, *Mol. Cryst. and Liquid Cryst.* **104**, N 1–2, 1–94 (1984) (Eng) (P. A. **87**:42647).
53. Smith, J. A. S., Ed. Advances in nuclear quadrupole resonance. Vol. 5. Chichester and New York: John Wiley and Sons, xiii, 182 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 53, p. 41).
54. Solid state chemistry 1982. Proceedings of the second European conference. Conference held at : Veldhoven, Netherlands. Date 7–9 June 1982. Amsterdam, Netherlands: Elsevier, xxii, 852 p. (1983) (Eng) (P.A. **87**:67863).
55. Spectroscopy of liquids and crystals. Sbornik. Kemerov. Univ. Kemerovo, 110 p. (1984) (Russ).
56. Thosar, B. V. et al., Eds. Advances in Mössbauer spectroscopy. Amsterdam, Oxford and New York: Elsevier, xxiv, 924 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 55, p. 42).
57. Walton, A. J., and Reynolds, G. T., Sonoluminescence, Adv. Phys. **33**, N 6, 595–660 (1984) (Eng).
58. Weber, H. P., and Lüthy, W., Eds., Laser spectroscopy VI. Berlin etc.: Springer-Verlag, xvii, 442 p. (1983) (Eng) (*Eur. Spectrosc. News*, 1984, N 53, p. 41).
59. Willis, R. F., Ed. Vibrational spectroscopy of adsorbates. Berlin, Heidelberg, New York: Springer-Verlag (1980) (Eng).
60. Wilson, J., and Hawkes, J. F. B. Optoelectronics: An introduction. New York: Prentice Hall, 464 p. (1983) (Eng) (*Eur. Spectrosc. New.*, 1984, N 52, p. 37).
61. Wolf, H. C., Modern trends in organic crystal spectroscopy, *Mater. Sci.* **10**, N 3, 419–434 (1984) (Eng) (P.A. **88**:22371).
62. Yen, W. M., and Wright, J. C., Eds. Proceedings of the 1984 international conference on luminescence. Madison, Wisconsin, Aug. 13–17, 1984, J. Lumin. 31/32, pt. 1,2, 3–514, 514–1022 (1984) (Eng).

63. Zhizhin, G. N., Mavrin, B. N., and Shabanov, V. F., Optic vibrational crystal spectra. Moscow, Nauka, 232 p. (1984) (Russ).

3. SPECTRA OF AROMATIC MOLECULES IN GASEOUS AND CONDENSED STATES

3.1. Electronic states

64. Aroney, M. J., and Pratten, S. G., Electric birefringences and molecular anisotropic polarisabilities of benzene and of nine methylbenzenes and t-butylbenzenes, *J. Chem. Soc. Faraday Trans. I* **80**, N 5, 1201–1204 (1984) (Eng).
65. Azarov, V. Yu., Nurmukhametov, R. N., Khalbaev, B. Kh., and Misurkin, I. A., Determination of the polarization of electronic transitions in low-symmetry molecules. Phthalimide derivatives, *Zh. Prikl. Spektrosk.* **40**, N 1, 131–136 (1984) (Russ).
66. Berges, J., and Perrin, H., Theoretical conformational study of dimethyl azoxy benzene molecule, *Mol. Cryst. and Liquid Cryst.* **113**, N 1–4, 269–275 (1984) (Eng) (P.A. **88**:36932).
67. Brackmann, U., Ernsting, N. P., Ouw, D., and Schmitt, K., Barrier for excited-state intramolecular proton transfer and proton tunneling in bis-2,5-(2-benzoxazolyl)-hydroquinone, *Chem. Phys. Lett. 110*, N 3, 319–324 (1984) (Eng) (P.A. **88**:1394).
68. Colapietro, M., Domenicano, A., Portalone, G., Schultz, G., and Hargittai, I., Molecular structure and ring distortions of p-dicyanobenzene in the gas phase and in the crystal, *J. Mol. Struct.* **112**, N 1/2, 141–157 (1984) (Eng) (P.A. **87**:43986).
69. Dewey, T. G., Theory of electronic circular dichroism lineshapes, *Chem. Phys. Lett.* **107**, N 3, 245–248 (1984) (Eng).
70. Doris, K. A., Delley, B., Ratner, M. A., Marks, T. J., and Ellis, D. E., Improved potential representations in the discrete-variational local-exchange method: the electronic structures of benzene and p-xylene, *J. Phys. Chem.* **88**, N 14, 3157–3159 (1984) (Eng) (P.A. **88**:20096).
71. Galaup, J. P., and Trommsdorff, H. P., Stark effect of interfering electronic states; localization of the $n\pi^*$ excitations in toluquinone, *Chem. Phys.* **85**, N 3, 461–471 (1984) (Eng).
72. Gough, K. M., and Henry, B. R., Overtone spectral investigation of substituent-induced bond-length changes in gas-phase fluorinated benzenes and their correlation with ab initio STO-3G and 4-21G calculations, *J. Amer. Chem. Soc.* **106**, N 10, 2781–2787 (1984) (Eng) (P.A. **87**:107275).
73. Grubb, S. G., Whetten, R. L., Albrecht, A. C., and Grant, E. R., A precise determination of the first ionization potential of benzene, *Chem. Phys. Lett.* **108**, N 5, 420–424 (1984) (Eng).
74. Hiltunen, Y., Jokisaari, J., Pulkkinen, A., and Väänänen, T., An experimental ^{1}H NMR study of structural deformation of benzene and the dipolar C-H splitting of methane in various nematic liquid crystals and in smectic HAB, *Chem. Phys. Lett.* **109**, N 5, 509–513 (1984) (Eng).
75. Hohlneicher, G., and Dick, B., Experimental determination of the low-lying excited a states of trans-stilbene, *J. Photochem.* **27**, N 2, 215–231 (1984) (Eng).
76. Jankowiak, R., and Bässler, H., Deformation-induced increase of spin-orbit coupling in the benzophenone molecule, *Chem. Phys. Lett.* **108**, N 3, 209–213 (1984) (Eng) (P.A. **87**:87149).
77. Krishna Murthy, P., Rangacharyulu, M., and Premaswarup, D., Molecular polarizabilities of some substituted benzenes, *Indian J. Pure and Appl. Phys.* **22**, N 3, 172–174 (1984) (Eng).

78. Lalanne, J. R., Rayez, J. C., Duguay, B., Proutiere, A., and Viani, R., Molecular aspect of the even-odd effect in cyanobiphenyls (nCB): Theoretical studies of the molecular geometrical conformation and optical anisotropy. 1.n≤6, *J. Chem. Phys.* **81**, N 1, 344–348 (1984) (Eng).
79. Manz, J., Meyer, R., Pollak, E., Romelt, J., and Schor, H. H. R., On spectroscopic properties and isotope effects of vibrationally stabilized molecules, *Chem. Phys.* **83**, N 3, 333–343 (1984) (Eng) (P.A. **87**:33345).
80. Mestechkin, M. M., Poltavets, V. N., Degtyarev, L. S., and Pokhodenko, V. D., A restricted Hartree–Fock calculation of the spin density distribution and the ionization potentials of the benzyl, aminophenyl, and phenoxy radicals, *Teor. and Eksp. Khim.* **20**, N 1, 81–83 (1984) (Russ) (P.A. **88**:31445).
81. Mirek, J., and Buda, A., MNDO studies on electron affinity and ionization potentials of polycyano derivatives of some unsaturated hydrocarbons and benzene, *Z. Naturforsch. A* **39**, N 4, 386–390 (1984) (Eng) (P.A. **87**:68958).
82. Oleinikova, T. A., Vorobiyova, R. P., Barsukova, L. G., Devyatkina, M. N., and Zalukaev, L. P., On the possible relationship between the lowest triplet state nature and the anti-K-vitamin activity of some phenilindandion-1,3 derivatives, *Zh. Prikl. Spektrosk.* **40**, N 3, 431–434 (1984) (Russ).
83. Orttung, W. H., Scott, G. W., and Vosooghi, D., Investigation of ground and excited state properties of internally hydrogenbonded aromatic carbonyls using molecular orbital methods, *THEOCHEM* **18**, N 3–4, 161–176 (1984) (Eng) (P.A. **88**:1188).
84. Padma Malar, E. J., and Jug, K., Structures and properties of excited states of benzene and some monosubstituted benzenes, *J. Phys. Chem.* **88**, N 16, 3508–3516 (1984) (Eng).
85. Perov, A. N., Polarizability of dye molecules in the framework of a vibronic-state four-level scheme, *Opt. and Spektrosk.* **57**, N 3, 450–454 (1984) (Russ).
86. Prabhumirashi, L. S., Satrute, R. S., and Kshirasagar, R. J., Application of excited state dipole moments in correlating the electronic transitions in mono- and disubstituted benzenes, *Indian J. Phys. B* **58**, N 4–5, 239–245 (1984) (Eng) (P.A. **88**:31467).
87. Rabideau, P. W., Lipkowitz, K. B., and Nachbar, R. B., Jr., Structure and conformation of dihydro aromatic compounds. Cis- and trans-disubstituted 1,4-dihydrobenzenes, 1,4-dihydronaphthalenes, and 9,10-dihydroanthracenes, *J. Amer. Chem. Soc.* **106**, N 11, 3119–3123 (1984) (Eng) (P.A. **88**:1172).
88. Ram, S., Yadav, J. S., and Bist, H. D., $\pi \overset{*}{\leftarrow} \pi$ electronic transition in hydroxybenzonitriles. 1. Orthohydroxybenzonitrile, *Pramana* **22**, N 1, 17–30 (1984) (Eng) (P.A. **87**:38184).
89. Ramasesha, S., and Soos, Z. G., Magnetic and optical properties of exact PPP states of naphthalene, *Chem. Phys.* **91**, N 1, 35–42 (1984) (Eng).
90. Ruessink, B. H., and Maclean, C., The ^{14}N quadrupole coupling tensor of pyridine and pyrimidine in solution, assigned by NMR in an electric field, *Chem. Phys. Lett.* **110**, N 6, 634–638 (1984) (Eng).
91. Salman, S. R., Carbon-13 chemical shift and the conformation of substituted naphthalenes, *Spectrochim. acta A* **40**, N 3, 229–232 (1984) (Eng) (P.A. **87**:43906).
92. Semenov, S. G., and Tulub, A. A., Quantum-chemical and spectroscopic study of 1,2,9,10-tetraoxyanthracene, *Zh. Fiz. Khim.* **58**, N 2, 472–473 (1984) (Russ).
93. Sharpe, S., and Johnson, P., The energy of the lowest triplet state of gas phase benzene, *J. Chem. Phys.* **81**, N 9, 4176–4177 (1984) (Eng) (P.A. **88**:20116).
94. Srivastava, S. L., and Prasad, M., Spectra of substituted N-heterocyclic molecules. 2. n-π transitions in some substituted pyridines, *Spectrochim. acta A* **40**, N 11/12, 1101–1109 (1984) (Eng).
95. Taszner, S., and Wojciechowska, E., A study of the electronic properties of 6,7-dihydroxycoumarin molecule, *Acta phys. pol. A* **65**, N 4, 355–360 (1984) (Eng).

96. Ushomirsky, M. N., Lifshits, E. B., and Tyurin, V. S., Investigation of the correlation between the absorption and fluorescence of symmetric polymethenyl dyes and the position of energy levels of corresponding benzol derivatives, *Zh. Prikl. Spektrosk.* **40**, N 4, 593–599 (1984) (Russ).
97. Waite, J., and Papadopoulos, M. G., The second hyperpolarizability of 1-nitronaphthalene, *J. Chem. Phys.* **80**, N 7, 3503–3504 (1984) (Eng) (P.A. **87**:68959).

3.2. Singlet absorption spectra

98. Allan, M., Vibrational and electronic excitation in p-benzoquinone by electron impact, *Chem. Phys.* **84**, N 2, 311–319 (1984) (Eng).
99. Ayachit, N. H., Shanbhag, P. V., Suryanarayana Rao, K., and Shashidhar, M. A., Infrared and ultraviolet absorption spectra of 5-chloroindole and 5-aminoindole, *Indian J. Pure and Appl. Phys.* **22**, N 6, 360–362 (1984) (Eng) (P.A. **87**:102679).
100. Bakhshiev, N. G., Korovina, V. M., and Piterskaya, I. V., Nonspecific solvation, polarizabilities of excited states and UV absorption spectra of anthracene in the second electronic-transition range, *Opt. and Spektrosk.* **57**, N 3, 444–449 (1984) (Russ).
101. Blau, W., Dankesreiter, W., and Penzkofer, A., Saturable absorption of dyes excited to the long-wavelength region of the $S_0 - S_1$ absorption band, *Chem. Phys.* **85**, N 3, 473–479 (1984) (Eng).
102. Bolovinos, A., Tsekeris, P., Philis, J., Pantos, E., and Andritsopoulos, G., Absolute vacuum ultraviolet absorption spectra of some gaseous azabenzenes, *J. Mol. Spectrosc.* **103**, N 2, 240–256 (1984) (Eng).
103. Huralikoppi, A. M., Ayachit, N. H., and Shashidhar, M. A., Electronic absorption spectra of 5-chloroindole and 5-methylindole, *Indian J. Phys. B* **58**, N 4–5, 230–233 (1984) (Eng) (P.A. **88**:31523).
104. Kakitani, T., Molecular dynamics as studied by fourier transforms of optical absorption spectra. Theoretical method and application to benzene, *Chem. Phys. Lett.* **109**, N 5, 488–491 (1984) (Eng).
105. Kalcheva, V. B., Peshakova, L. S., and Simov, D. A., UV spectra and ionization constants of 2-aminobenzoxazoles substituted in benzene nucleus, *C. R. Acad. Bulg. Sci.* **36**, N 11, 1411–1414 (1983) (Eng) (P.A. **87**:74256).
106. Kesarwani, R. N., and Varshni, Y. P., Effects of high pressure on molecular electronic spectra, *J. Chem. Phys.* **81**, N 12, pt. 1, 5508–5513 (1984) (Eng) (P.A. **88**:42250).
107. Konschin, H., and Tylli, H., The temperature-dependent low-resolution 190-300 nm vapour-phase UV spectrum of anisole, *Chem. Phys. Lett.* **108**, N 2, 191–194 (1984) (Eng).
108. Majewski, W., and Meerts, W. L., Near-UV spectra with fully resolved rotational structure of naphthalene and perdeuterated naphthalene, *J. Mol. Spectrosc.* **104**, N 2, 271–281 (1984) (Eng) (P.A. **88**:1361).
109. Meenakshi, A., and Ghosh, D. K., 276-nm absorption band system of m-dichlorobenzene: rotational band contour analysis, *J. Mol. Spectrosc.* **103**, N 2, 195–207 (1984) (Eng).
110. Meenakshi, A., and Ghosh, D. K., 276-nm absorption band system of m-dichlorobenzene: vibrational fine structure analysis, *J. Mol. Spectrosc.* **103**, N 2, 208–220 (1984) (Eng).
111. Menzel, R., and Rapp, W., Excited singlet- and triplet-absorptions of pentaphene, *Chem. Phys.* **89**, N 3, 445–455 (1984) (Eng).
112. Mishra, A. K., and Dogra, S. K., Photophysical properties of 2-(m-aminophenyl) benzimidazoles, *Indian J. Phys. B* **58**, N 4–5, 480–486 (1984) (Eng) (P.A. **88**:31574).

113. Penzkofer, A., and Sperber, P., Measurement of absorption cross sections in the long-wavelength region of the $S_0 - S_1$ absorption band of dyes, *Chem. Phys.* **88**, N 2, 309–313 (1984) (Eng).
114. Rodionova, G. N., Mova, L. N., Vorozhtsov, G. P., Ovsyannikova, S. V., and Bystritskii, G. I., Investigation of electronic absorption spectra of I and 8-derivative of naphthostyrene, *Zh. Fiz. Khim.* **58**, N 9, 2245–2249 (1984) (Russ).
115. Seliskar, C. J., Leugers, M. A., Heaven, M., and Hardwick, J. L., On the p-fluorotoluene 2710-Å band system, *J. Mol. Spectrosc.* **106**, N 2, 330–336 (1984) (Eng).
116. Sharma, O. P., Bhatti, H. S., Unnikrishnan Nair, N. V., and Singh, R. D., Singlet-singlet absorption spectra of 1-amino- and 2-methoxynaphthalenes, *Indian J. Pure and Appl. Phys.* **21**, N 8, 466–470 (1983) (Eng).
117. Snavely, D. L., Walters, V. A., Colson, S. D., and Wiberg, K. B., FTIR spectrum of benzene in a supersonic expansion, *Chem. Phys. Lett.* **103**, N 5, 423–429 (1984) (Eng).
118. Ushomirsky, M. N., Lifshits, E. B., and Tyurin, V. S., Investigation of the correlation between the absorption and fluorescence of symmetric polymethenyl dyes and the position of energy levels of corresponding benzol derivatives, *Zh. Prikl. Spektrosk.* **40**, N 4, 593–599 (1984) (Russ).
119. Veselova, T. V., Stolbova, O. V., and Cherkasov, A. S., Conformers as the cause of inhomogeneity of absorbing and radiating centers in 2-acetyl-9,10-dipropyl- and 2-acetyl-9,10-diphenylanthracene solutions, *Opt. and Spektrosk.* **57**, N 4, 615–622 (1984) (Russ) (P.A. **88**:100050).
120. Yip, R. W., Sharma, D. K., Giasson, R., and Gravel, D., Picosecond excited-state absorption of alkyl nitrobenzenes in solution, *J. Phys. Chem.* **88**, N 24, 5770–5772 (1984) (Eng) (P.A. **88**:31516).

3.3. Triplet absorption spectra and ESR spectra

121. Fujara, F., and Vollmann, W., Spin-lattice relaxation in the triplet state of acridine in fluorene, *Chem. Phys.* **90**, N 1,2, 137–146 (1984) (Eng).
122. Hamanoue, K., Nakajima, K., Kajiwara, Y., Nakayama, T., and Teranishi, H., Observation of a new absorption due to a precursor of the lowest triplet state of 1,8-dichloroanthraquinone, *Chem, Phys. Lett.* **110**, N 2, 178–182 (1984) (Eng) (P.A. **88**:1392).
123. Hsiang-Lin Yu, Tien-Sung Lin, Weissman, S. I., and Sloop, D. J., Time resolved studies of pentacene triplets by electron spin echo spectroscopy, *J. Chem. Phys.* **80**, N 1, 102–107 (1984) (Eng) (P.A. **87**:38214).
124. Menzel, R., and Rapp, W., Excited singlet- and triplet absorptions of pentaphene, *Chem. Phys.* **89**, N 3, 445–455 (1984) (Eng).

3.4. Electronic-vibrational interaction and vibronic spectra

125. Baranov, V. I., and Solov'ev, A. N., Calculation of the electron-vibration spectra of stilbene, *Zh. Prikl. Spektrosk.* **40**, N 5, 780–785 (1984) (Russ) (P.A. **88**:75271).
126. Baranov, V. I., and Gribov, L. A., Calculation of the electronic spectra structure of polyatomic molecules with allowance for the anharmonic nature of the vibrations and internal rotations, *Zh. Prikl. Spektrosk.* **41**, N 1, 97–101 (1984) (Russ) (P.A. **88**:99915).
127. Baranov, V. I., Towards the account for the vibronic interaction in calculation of the electron-vibrational spectra of polyatomic molecules, *Zh. Prikl. Spektrosk.* **40**, N 6, 961–964 (1984) (Russ).

128. Bolotnikova, T. N., Zhidkin, P. I., and Dement'ev, V. A., Effect of deuteration on naphthalene vibronic spectra, *Opt. and Spektrosk.* **57**, N 3, 425–429 (1984) (Russ).
129. Chan, C. K., Exact treatment of linear non-Condon terms in the theory of $T \neq 0$ K multimode resonance Raman scattering and optical absorption, *J. Chem. Phys.* **81**, N 4, 1614–1619 (1984) (Eng).
130. Clough, S., Heidemann, A., Lichtenbelt, J. H., Paley, M. N. J., Silbey, R., Trommsdorff, H. P., and Wiersma, D. A., Tunneling of methyl groups in toluquinone: Dependence on the electronic state of the molecule, *J. Chem. Phys.* **81**, N 7, 2879–2883 (1984) (Eng).
131. Fainberg, B. D., Multi-well potentials and temperature expansions in the theory of electron-vibrational spectra, *Khim. Fiz.* **3**, N 1, 32–45 (1984) (Russ).
132. Friedman, R. S., Kelsall, B. J., and Andrews, L., Vibronic absorption spectra of dichloro- and dibromobenzene cations in solid argon at 20 K, *J. Phys. Chem.* **88**, N 10, 1944–1950 (1984) (Eng).
133. Gustav, K., and Seydenschwanz, C., Vibronic spectral behaviour of molecules. Theoretical analysis of the biphenyl phosphorescence, *Chem. Phys. Lett.* **109**, N 2, 156–159 (1984) (Eng) (P.A. **87**:102723).
134. Heider, N., and Fischer, S. F., Multimode effects in molecular spectra involving vibronically coupled excited states with application to pyrazine, *Chem. Phys.* **88**, N 2, 209–220 (1984) (Eng).
135. Kawazumi, H., Oomori, T., Yamani, N., and Ogawa, T., Excitation to symmetry forbidden vibronic levels in the $^1B_{2u}$ state by controlled electron impact on benzene, *Chem. Phys. Lett.* **106**, N 4, 351–353 (1984) (Eng) (P.A. **87**:69224).
136. Krogh-Jespersen, K., Rava, R. P., and Goodman, L., Potential energy surface of the $^1B_{2u}$ excited state in benzene. Mode forms and spectroscopic consequences, *J. Phys. Chem.* **88**, N 23, 5503–5513 (1984) (Eng).
137. Marconi, G., and Orlandi, G., CNDO/S evaluation of second-order vibronic coupling effects in benzene and s-triazine, *Chem. Phys. Lett.* **112**, N 6, 513–518 (1984) (Eng) (P.A. **88**:36930).
138. Markarewicz, J., Adiabatic and Born-Oppenheimer methods in the description of low-frequency vibrations in molecules, *J. Mol. Spectrosc.* **105**, N 1, 1–7 (1984) (Eng) (P.A. **88**:1272).
139. Mirumyants, S. O., and Demchuk, Yu. S., On the discovering of parameters determining the broadening of multiatom-molecule vapour vibronic spectra, *Opt. and Spektrosk.* **56**, N 2, 241–246 (1984) (Russ) (P.A. **88**:20168).
140. Muller, D. J., and Knight, A. E. W., Vibronic activity of $\nu_8(e_{2g})$ in the benzene 260-nm transition: direct confirmation from single vibronic level fluorescence in a supersonic jet, *J. Phys. Chem.* **88**, N 16, 3392–3395 (1984) (Eng).
141. Nazarenko, T. G., An algorithm for the calculation of matrix elements of the vibronic-transition dipole moment operator, *Opt. and Spektrosk.* **57**, N 2, 225–229 (1984) (Russ).
142. Nikitina, A. N., Vasilieva, I. A., Berdyugin, V. V., and Yanovskaya, L. A., Vibronic interactions in the spectra of substituted polyenes, *Zh. Prikl. Spektrosk.* **41**, N 1, 91–97 (1984) (Russ) (P.A. **88**:100058).
143. Okuyama, K., Hasegawa, T., Ito, M., and Mikami, N., Electronic spectra of tolane in a supersonic free jet: Large-amplitude torsional motion, *J. Phys. Chem.* **88**, N 9, 1711–1716 (1984) (Eng) (P.A. **87**:102735).
144. Priyutov, M. V., Kamenskii, Yu. V., and Kovalev, I. F., Quantum-mechanical calculation of vibrational frequency variations in an electronically excited polyatomic molecule, *Opt. and Spektrosk.* **57**, N 4, 588–592 (1984) (Russ) (P.A. **88**:99911).
145. Salvi, P. R., Castellucci, E., Foggi, P., and Quacquarini, R., Vibronic coupling of pyrene in the first $\pi\pi^*$ excited state, *Chem. Phys.* **83**, N 3, 345–356 (1984) (Eng) (P.A. **87**:33386).

146. Stephenson, T. A., Radloff, P. L., and Rice, S. A., $^1B_{2u} \leftrightarrow {}^1A_{1g}$ spectroscopy of jet-cooled benzene: Single vibronic level fluorescence studies, *J. Chem. Phys.* **81**, N 3, 1060–1072 (1984) (Eng) (P.A. **87**:102726).
147. Terazima, M., Yamauchi, S., and Hirota, N., Direct electron paramagnetic resonance observation of strong vibronic mixing in a nonphosphorescent triplet state. Phthalazine in a biphenyl host, *J. Phys. Chem.* **88**, N 13, 2682–2685 (1984) (Eng).
148. Tsaune, A. Ya., and Golovchenko, E. I., Relationship between linear vibrational coordinates of different electronic states of a molecule, *Opt. and Spektrosk.* **56**, N 5, 794–799 (1984) (Russ).
149. Wagner, M., An exponential alternative to the Fulton-Gouterman transformation, *J. Phys. A* **17**, N 18, 3409–3413 (1984) (Eng) (P.A. **88**:44068).
150. Warren, J. A., Hayes, J. M., and Small, G. J., Symmetry reduction-vibronically induced mode mixing in the S_1 state of β-methylnaphthalene, *J. Chem. Phys.* **80**, N 5, 1786–1790 (1984) (Eng).
151. Whetten, R. L., and Grant, E. R., Strong vibronic coupling in molecular Rydberg states, *J. Chem. Phys.* **80**, N 12, 5999–6005 (1984) (Eng) (P.A. **87**:87096).

3.5. Vibrational spectra

152. Akiyama, M., Conformational analysis of p-terphenyl in solution state by infrared band intensities, *Spectrochim. acta A* **40**, N 4, 367–371 (1984) (Eng).
153. Ayachit, N. H., Shanbhag, P. V., Suryanarayana Rao, K., and Shashidhar, M. A., Infrared and ultraviolet absorption spectra of 5-chloroindole and 5-aminoindole, *Indian J. Pure and Appl. Phys.* **22**, N 6, 360–362 (1984) (Eng) (P.A. **87**:102679).
154. Besnard, M., Lassegues, J. C., Lichanot, A., and Nery, H., Dynamics of non-rigid molecules. 1. – $^{13}CT_1$ NMR study of the reorientational and ring-puckering motions of cyclopentene in the liquid state, *J. phys.* **45**, N 3, 487–496 (1984) (Eng).
155. Borisevich, N. A., Blokhin, A. P., Zalesskaya, G. A., Lastochkina, V. A., and Shukurov, T., Forming of outlines of polyatomic molecule vapor infrared absorption bands by high pressures of gaseous impurities, *Izv. Akad. Nauk. SSSR. Ser. Fiz.* **48**, N 4, 709–714 (1984) (Russ).
156. Brunvoll, J., Cyvin, B. N., and Cyvin, S. J., Application of the Keating bendings to the in-plane vibrations of naphthalene and benzene, *Spectrosc. Lett.* **17**, N 9, 551–557 (1984) (Eng) (P.A. **88**:20176).
157. Chao, J., Desando, M. A., Gourlay, D. L., Orr, D. E., and Walker, S., Eyring activation barriers for the anomalous dielectric relaxations of diphenyl ether type molecules, *J. Phys. Chem.* **88**, N 4, 711–716 (1984) (Eng).
158. Clough, S., Heidemann, A., Lichtenbelt, J. H., Paley, M. N. J., Silbey, R., Trommsdorff, H. P., and Wiersma, D. A., Tunneling of methyl groups in toluquinone: Dependence of the electronic state of the molecule, *J. Chem. Phys.* **81**, N 7, 2879–2883 (1984) (Eng).
159. Cyvin, B. N., Brunvoll, J., and Cyvin, S. J., Normal coordinate analysis of the dodecaborane ion, *Spectrosc. Lett.* **17**, N 9, 569–577 (1984) (Eng) (P.A. **88**:20178).
160. Cyvin, B. N., Brunvoll, J., Cyvin, S. J., and Klaeboe, P., A simple force-field approximation applied to the in-plane vibrations of some condensed aromatics, *Spectrosc. Lett.* **17**, N 9, 559–567 (1984) (Eng) (P.A. **88**:20177).
161. Cyvin, S. J., Keating's bending: A new internal coordinate in molecular vibrations, *Spectrosc. Lett.* **17**, N 9, 489–492 (1984) (Eng) (P.A. **88**:20170).
162. Devine, T. R., and Keiderling, T. A., Magnetic vibrational circular dichroism of benzene and 1,3,5-substituted derivatives, *J. Phys. Chem.* **88**, N 3, 390–394 (1984) (Eng) (P.A. **87**:69130).

163. El'kin, M. D., Anharmonic intensity analysis of IR vibrational spectra of polyatomic molecules, *Opt. and Spektrosk.* **57**, N 3, 561–564 (1984) (Russ) (P.A. **88**:89240).
164. Ervin, A. M., Shupack, S. I., and Byler, D. M., Raman spectroscopic studies of CH_3- and CD_3-(4-*tert*-butylpyridine)-*bis*(dimethylglyoximato)cobalt (III) complexes: reassignment of the methylcobalt stretching vibration, *Spectrosc. Lett.* **17**, N 10, 603–613 (1984) (Eng).
165. Filippini, G., Simonetta, M., and Gramaccioli, C. M., A simplified force field for non-planar vibrations in aromatic polycyclic hydrocarbons, *Mol. Phys.* **51**, N 2, 445–459 (1984) (Eng) (P.A. **87**:38152).
166. Freundlich, P., Kołodziej, H. A., Narewski, E., and Sorriso, S., Dielectric relaxation mechanism and internal rotation in phenylpyridines, *Chem. Phys. Lett.* **108**, N 4, 373–377 (1984) (Eng).
167. Gastilovich, E. A., Danchinov, K. M. Klimenko, V. G., Mishenina, K. A., and Rodionov, A. N., Calculation of out-of-plane vibration frequencies and forms of elementoorganic fluorene derivatives, *Zh. Fiz. Khim.* **58**, N 11, 2774–2777 (1984) (Russ).
168. Gershikov, A. G., Kinematic and dynamic anharmonicity of vibrations in structural analysis of polyatomic molecules, *Khim. Fiz.* **3**, N 4, 503–510 (1984) (Russ).
169. Ghosh, P. N., and Ganguly, S. K., Vibration-internal rotation interaction and normal modes in nonrigid asymmetric top molecules: application to trans-methylnitrite, *J. Mol. Spectrosc.* **104**, N 1, 1–11 (1984) (Eng) (P.A. **88**:1268).
170. Gribov, L. A., and Rasovskii, M. R., The theory of intensities in the IR spectra of molecules with several internal rotations, *Zh. Prikl. Spektrosk.* **40**, N 5, 843–846 (1984) (Russ).
171. Gribov, L. A., and Rasovskii, M. R., The variational method for the solution of the problem of arbitrary internal motions in a polyatomic molecule in the presence of several internal rotations, *Zh. Prikl. Spektrosk.* **40**, N 2, 284–290 (1984) (Russ) (P.A. **88**:31441).
172. Kholopova, G. D., Rubailo, A. I., and Bondarenko, V. S., The H-complexes of pentachlor- and pentafluorinebenzenes with bases; The Fermy-resonance within the ν(CH) region, *Zh. Prikl. Spektrosk.* **41**, N 5, 796–800 (1984) (Russ).
173. Krasnoshchekov, S. V., Panchenko, Yu. N., Khristenko, L. V., Matveev, V. K., and Pentin, Yu. A., An algorithm for the computer calculation of mean square amplitudes of molecular vibrations, *Zh. Prikl. Spektrosk.* **41**, N 3, 507–510 (1984) (Russ).
174. Lassegues, J. C., Fouassier, M., Besnard, M., Jobic, H., and Dianoux, A. J., Dynamics of non-rigid molecules. 2. Quasi-elastic neutron scattering study of liquid cyclopentene, *J. phys.* **45**, N 3, 497–503 (1984) (Eng).
175. Lunelli, B., and Giorgini, M. G., Out-of-plane vibrations of 1,2-difluorobenzene and 1,2-difluorobenzene-d_4, *J. Mol. Spectrosc.* **104**, N 1, 203–207 (1984) (Eng) (P.A. **88**:1322).
176. Makarewicz, J., A simple method for determining potential parameters for anharmonic molecular vibration, *Chem. Phys. Lett.* **106**, N 4, 360–363 (1984) (Eng).
177. Makhnev, A. S., and Panchenko, Yu. N., Different determinations of normal coordinates and harmonic approximations in the theory of molecular vibrational spectra, *Opt. and Spektrosk.* **56**, N 4, 647–652 (1984) (Russ).
178. Makushkin, Yu. S., Naumenko, O. V., and Ulenikov, O. N., On the account for large-amplitude vibration in vibration-rotation hamiltonian of a molecule, *Opt. and Spektrosk.* **57**, N 5, 815–820 (1984) (Russ) (P.A. **88**:99912).
179. Medhi, K. C., The study of the infrared and Raman spectra of 3-hydroxypyridine, *Indian J. Phys.* B **58** N 4–5, 328-335 (1984) (Eng) (P.A. **88**:34000).
180. Mohan, S., and Ravikumar, K. G., Dynamical model of force constants on the vibrational analysis of benzene and benzene-d_6 molecules, *Acta phys. pol. A* **65**, N 6, 557–572 (1984) (Eng).
181. Naqvi, K. R., and Cyvin, S. J., Molecular vibrations as a variational problem, *Spectrosc. Lett.* **17**, N 2, 137–143 (1984) (Eng) (P.A. **87**:102671).

182. Neto, N., Displacement coordinates in molecular dynamics, *Chem. Phys.* **87**, N 1, 43–53 (1984) (Eng).
183. Nicolaisen, F. M., and Hansen, J. S., Vibrational assignments of acetyliodide and deuterated species, based on infrared gas spectra and valence force field calculations, *Acta chem. scand. A* **38**, N 6, 453–466 (1984) (Eng).
184. Oldani, M., and Bauder, A., Pure rotational spectrum of benzene-d_1, *Chem. Phys. Lett.* **108**, N 1, 7–10 (1984) (Eng).
185. Paramonov, G. K., and Savva, V. A., Effect of selective excitation of separate vibrational isolated molecule states by picosecond laser infrared pulse, *Izv. Akad Nauk SSSR. Ser. Fiz.* **48**, N 3, 449–452 (1984) (Russ).
186. Perry, J. W., and Zewail, A. H., High energy CH-overtone spectra of benzene at 1.8 K, *J. Chem. Phys.* **80**, N 10, 5333–5335 (1984) (Eng) (P.A. **87**:74239).
187. Pongor, G., Pulay, P., Fogarasi, G., and Boggs, J. E., Theoretical prediction of vibrational spectra. 1. The in-plane force field and vibrational spectra of pyridine, *J. Amer. Chem. Soc.* **106**, N 10, 2765–2769 (1984) (Eng) (P.A. **87**:107327).
188. Rao, P. M., and Rao, G. R., Substituted benzenes. 1. Normal coordinate analysis of fluoronitrobenzenes, *Indian J. Pure and Appl. Phys.* **22**, N 6, 337–341 (1984) (Eng) (P.A. **87**:102759).
189. Rao, P. M., and Rao, G. R., Substituted benzenes. 3. Normal coordinate analysis of monobromonitrobenzenes, *Indian J. Pure and Appl. Phys.* **22**, N 3, 148–153 (1984) (Eng).
190. Rao, P. M., and Rao, G. R., Substituted benzenes. 5. Normal coordinate analysis of out-of-plane vibrations of mono iodonitrobenzenes, *Indian J. Pure and Appl. Phys.* **21**, N 6, 332–335 (1983) (Eng).
191. Rao, P. M., and Rao, G. R., Substituted benzenes. 6. Vibrational analysis of out-of-plane vibrations of mono bromonitrobenzenes, *Indian J. Pure and Appl. Phys.* **21**, N 6, 336–338 (1983) (Eng).
192. Rasovskii, M. R., The variational method of solution to the problem of arbitrary internal motions in a polyatomic molecule. The calculation of the torsional levels of energy by the Mathieu functions, Zh. Prikl. Spektrosk. **40**, N 3, 505–507 (1984) (Russ).
193. Riedle, E., and Neusser, H. J., Homogeneous linewidths of single rotational lines in the 'channel three' region of C_6H_6, *J. Chem. Phys.* **80**, N 10, 4686–4693 (1984) (Eng) (P.A. **87**:74302).
194. Rybkova, I. E., Priyutov, M. V., and Kamenskii, Yu. V., The quantum-mechanic method for the calculation of force constants of an arbitrary electronic state of a multiatom molecule, *Zh. Prikl. Spektrosk.* **40**, N 5, 849–850 (1984) (Russ).
195. Sibert, E. L. III, Hynes, J. T., Reinhardt, W. P., Classical dynamics of highly excited CH and CD overtones in benzene and perdeuterobenzene, *J. Chem. Phys.* **81**, N 3, 1135–1144 (1984) (Eng) (P.A. **87**:102664).
196. Sinha, A., and Kinsey, J. L., Symmetry-specific densities of vibrational levels for polyatomic molecules, *J. Chem. Phys.* **80**, N 5, 2029–2033 (1984) (Eng).
197. Snyder, R. G., Aljibury, A. L.,j Strauss, H. L., Casal, H. L., Gough, K. M., and Murphy, W. F., Isolated C-H stretching vibrations of n-alkanes: assignments and relation to structure, *J. Chem. Phys.* **81**, N 12, pt. 1, 5352–5361 (1984) (Eng) (P.A. **88**:42281).
198. Sultanov, B. Yu., The IR-spectra and hydrogen bondings of 1,1-diphenylpropanol-1, *Zh. Prikl. Spektrosk.* **41**, N 5, 739–742 (1984) (Russ).
199. Sundar, N. S., Vibrational spectra of substituted phenols: 2,6-dichloro-4-nitrophenol and 2,4-dichloro-6-nitrophenol, *Indian J. Pure and Appl. Phys.* **22**, N 4, 193–200 (1984) (Eng).
200. Sztraka, I., Symmetry properties and the calculation of the rotation-internal rotation-inversion energy levels in methylamine, *Acta phys. hung.* **55**, N 1–4, 135–160 (1984) (Eng) (P.A. **88**:20081).

201. Thijs, R., and Zeegers-Huyskens, Th., Infrared and Raman studies of hydrogen bonded complexes involving acetone, acetophenone and benzophenone. 1. Thermodynamic constants and frequency shifts of the ν_{OH} and $\nu_{C=O}$ stretching vibrations, *Spectrochim. acta A* **40**, N 3, 307–313 (1984) (Eng).
202. Thijs, R., and Zeegers-Huyskens, Th., Infrared and Raman studies of hydrogen bonded complexes involving acetone, acetophenone and benzophenone. 2. Raman intensity of the $\nu_{C=O}$ band, *Spectrochim. acta A* **40**, N 11/12, 1057–1061 (1984) (Eng).
203. Todorovsky, A. T., The formation of vibrational equations of polyphenyl hydrocarbons with the aid of the computer library of molecular fragments, *Zh. Prikl. Spektrosk.* **41**, N 1, 120–125 (1984) (Russ) (P.A. **88**:99916).
204. Tzidoni, E., and Oref, I., Dynamics of vibrational energy transfer in polyatomic molecules. A model calculation, *Chem. Phys.* **84**, N 3, 403–412 (1984) (Eng).
205. Wallace, R., Large amplitude vibration in polyatomic molecules. 1. A polar representation of orthogonal relative coordinates, *Chem. Phys.* **88**, N 2, 247–260 (1984) (Eng).

3.6. Raman spectra

206. Baran, J., Langley, A. J., Grofcsik, A., and Jones, W. J., Coherent amplification in fluorescent dye solutions. 2. The inverse pre-resonance Raman spectrum of rhodamine 6G, *Chem. Phys.* **87**, N 2, 321–329 (1984) (Eng).
207. Baran, J., Beaman, R. A., Langley, A. J., and Jones, W. J., Coherent amplification in fluorescent dye solutions. 3. On the merits of inverse Raman spectroscopy for the rejection of sample fluorescence, *Chem. Phys.* **87**, N 2, 331–337 (1984) (Eng).
208. Baranov, A. V., Bobovich, Ya. S., Denisov, V. N., Petrov, V. I., and Podobedov, V. B., Giant hyper-Raman scattering of higher orders and symmetry of scattering centers, *Opt. and Spektrosk.* **56**, N 4, 580–582 (1984) (Russ) (P.A. **88**:42283).
209. Bermejo, D., and Montero, S., Anharmonic potential functions as derived from Raman intensities: methane, *J. Chem. Phys.* **81**, N 9, 3835–3841 (1984) (Eng) (P.A. **88**:20204).
210. Brafman, O., Chan, C. K., Khodadoost, B., Page, J. B., and Walker, C. T., Resonance Raman scattering study of azulene. 1. Experiment and theoretical analysis via transform techniques, *J. Chem. Phys.* **80**, N 11, 5406–5417 (1984) (Eng).
211. Dellepiane, G., Degli Antoni, L., Piseri, L., Staffini, L., and Tubino, R., Resonant Raman scattering in molecules with unresolved absorption spectra and strong electron-vibrational interactions, *J. Phys. Chem.* **88**, N 3, 560–563 (1984) (Eng).
212. Gustafson, T. L., Roberts, D. M., and Chernoff, D. A., The structure of electronic excited states in trans-stilbene: Picosecond transient Stokes and anti-Stokes Raman spectra, *J. Chem. Phys.* **81**, N 8, 3438–3443 (1984) (Eng).
213. Hallmark, V. M., and Campion, A., Unenhanced Raman spectroscopy of benzene adsorbed on single crystal silver surfaces: evidence for surface selection rules, *Chem. Phys. Lett.* **110**, N 6, 561–564 (1984) (Eng).
214. Hamaguchi, H., Urano, T., and Tasumi, M., Transient resonance Raman spectra and vibrational assignments of the S_1 state of trans-stilbene and its deuterated analogues, *Chem. Phys. Lett.* **106**, N 3, 153–156 (1984) (Eng).
215. Kessler, R. J., Fisher, M. R., and Tripathi, G. N. R., Triplet state (T_1) resonance Raman spectroscopy of phenazine and acridine, *Chem. Phys. Lett.* **112**, N 6, 575–579 (1984) (Eng) (P.A. **88**:37046).
216. Kryzhanovskii, B. V., and Melikyan, A. O., Resonance fluorescence and Raman scattering under pumping by an adiabatic pulse, *Kvantovaya Elektron.* **11**, N 1, 126–132 (1984) (Russ).

217. Lassegues, J. C., Besnard, M., Cavagnat, D., and Lascombe, J., Spectroscopic studies of fast internal motions of non-rigid molecules in condensed state. In: Proceedings of the IXth international conference on Raman spectroscopy (papers in summary form only received). Tokyo, Japan, 27 Aug.–1 Sept. 1984. Tokyo, Japan: Organ. Committee for the IXth int. conf. on *Raman Spectrosc.*, 50–53 (1984) (Eng) (P.A. **88**:91361).
218. Mazurenko, Yu. T., Excitation spectra of resonance Raman scattering, *Opt. and Spektrosk.* **56**, N 4, 653–658 (1984) (Russ) (P.A. **88**:42284).
219. Medhi, K. C., The study of the infrared and Raman spectra of 3-hydroxypyridine, *Indian J. Phys.* B **58**, N 4–5, 328–335 (1984) (Eng) (P.A. **88**:34000.
220. Mullins, D. R., and Campion, A., Unenhanced Raman scattering from pyridine chemisorbed on a stepped silver surface: implications for proposed SERS mechanisms, *Chem. Phys. Lett.* **110**, N 6, 565–570 (1984) (Eng).
221. Myers, A. B., and Mathies, R. A., Excited-state torsional dynamics of cis-stilbene from resonance Raman intensities, *J. Chem. Phys.* **81**, N 4, 1552–1558 (1984) (Eng) (P.A. **87**:107353).
222. Potts, J. E., and Merlin, R., Comment on enhanced Raman scattering from adsorbates on semiconductor surfaces, *Surf. Sci.* **147**, N 1, L617–L618 (1984) (Eng) (P.A. **88**:39232).
223. Roy, D., and Furtak, T. E., Characterization of surface complexes in enhanced Raman scattering, *J. Chem. Phys.* **81**, N 9, 4168–4175 (1984) (Eng) (P.A. **88**:22417).
224. Rupprecht, A., Relationships in Raman intensity theories, in particular the Mayants-Averbukh theory, *J. Mol. Spectrosc.* **108**, N 2, 165–205 (1984) (Eng) (P.A. **88**:37049).
225. Seifert, F., Oehme, K.-L., Rudakoff, G., Hölzer, W., Carius, W., and Schröter, O., Vibrational relaxation of liquid benzene. A temperature-dependent Raman lineshape study of the selectively deuterated molecules, *Chem. Phys. Lett.* **105**, N 6, 635–640 (1984) (Eng).
226. Soma, Y., Soma, M., and Harada, I., The reaction of aromatic molecules in the interlayer of transition-metal ion-exchanged montmorillonite studied by resonance Raman spectroscopy. 1. Benzene and p-phenylenes, *J. Phys. Chem.* **88**, N 14, 3034–3038 (1984) (Eng).
227. Thijs, R., and Zeegers-Huyskens, Th., Infrared and Raman studies of hydrogen bonded complexes involving acetone, acetophenone and benzophenone. 1. Thermodynamic constants and frequency shifts of the ν_{OH} and $\nu_{C=O}$ stretching vibrations, *Spectrochim. acta A* **40**, N 3, 307–313 (1984) (Eng).
228. Tyakht, V. V., Sounding of a vibrational quasi-continuum of molecules by the coherent active Raman spectroscopy method, *Kvantovaya Elektron.* **11**, N 4, 790–794 (1984) (Russ).
229. Van Zeyl, P. H. M., Varma, C. A. G. O., and Vroege, G., Resonance Raman scattering from triplet states of acridine and anthracene, *Chem. Phys. Lett.* **105**, N 2, 127–133 (1984) (Eng).
230. Vetchinkon, S. I., and Bakhrakh, V. L., Resonance Raman scattering and hot luminescence as nonadiabatic processes, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 4, 715–720 (1984) (Russ).
231. Zgierski, M. Z., The effect of dimerization on the resonance Raman excitation profiles of metalloporphyrins, *Chem. Phys. Lett.* **111**, N 6, 553–559 (1984) (Eng).

3.7. Fluorescence

232. Alekseeva, V. I., Gretsov, Yu. V., Lebedev, S. A., Lukiyanets, E. A., Savvina, L. P., and Slivka, L. K., Synthesis and spectral-luminescent properties of rhodamine 6G with different anions, *Zh. Prikl. Spektrosk.* **41**, N 6, 1045 (1984) (Russ). VINITI N 4427–84. Dep.

233. Amirav, A., and Jortner, J., Non-additivity of spectral shifts of tetracene·Ar_n complexes, *Chem. Phys.* **85**, N 1, 19–22 (1984) (Eng).
234. Amirav, A., Sonnenschein, M., and Jortner, J., Spectroscopy and dynamics of 9,10-dichloroanthracene·Ar_n van der Waals complexes, *Chem. Phys.* **88**, N 2, 199–207 (1984) (Eng).
235. Andreeshchev, E. A., Viktorova, V. S., Kilin, S. F., Kovyrzina, K. A., Kushakevich, Yu. P., Rozman, I. M., and Shoniya, V. M., Quenching of fluorescence of rigid solutions in the presence of lead tetraphenyl, *Opt. and Spektrosk.* **57**, N 6, 1022–1025 (1984) (Russ).
236. Auty, A. R., Jones, A. C., and Phillips, D., Fluorescence excitation spectra and decay times of jet-cooled dibenzofuran and the dibenzofuran-water complex, *Chem. Phys. Lett.* **112**, N6, 529–533 (1984) (Eng) (P.A. **88**:37094).
237. Baran, J., Langley, A. J., and Jones, W. J., Coherent amplification in fluorescent dye solutions. 1. The fluorescence gain spectrum of cresyl violet, *Chem. Phys.* **87**, N 2, 305–319 (1984) (Eng).
238. Baran, J., Langley, A. J., Grofcsik, A., and Jones, W. J., Coherent amplification in fluorescent dye solutions. 2. The inverse pre-resonance Raman spectrum of rhodamine 6G, *Chem. Phys.* **87**, N 2, 321–329 (1984) (Eng).
239. Baran, J., Beaman, R. A., Langley, A. J., and Jones, W. J., Coherent amplification in fluorescent dye solutions. 3. On the merits of inverse Raman spectroscopy for the rejection of sample fluorescence, *Chem. Phys.* **87**, N 2, 331–337 (1984) (Eng).
240. Barkova, L. A., Gruzinsky, V. V., and Kaputerko, M. N., The effect of foreign gases on the anthracene vapour fluorescence at high pressures typical of electron excitation, *Zh. Prikl. Spektrosk.* **41**, N 2, 221–225 (1984) (Russ) (P.A. **88**:105949).
241. Bersohn, R., Even, U., and Jortner, J., Fluorescence excitation spectra of indole, 3-methyl indole, and 3-indole acetic acid in supersonic jets, *J. Chem. Phys.* **80**, N 3, 1050–1058 (1984) (Eng) (P.A. **87**:38237).
242. Bespalov, V. A., Kiselev, V. F., Plotnikov, G. S., and Saletskii, A. M., Fluorescence decay of adsorbed dye molecules on solid surfaces, *Phys. status solidi (a)* **85**, N 1, K73–K76 (1984) (Eng).
243. Bogdanov, V. L., Excitation-frequency dependence of quantum yield of luminescence from higher electronic states of organic molecules in solutions, *Opt. and Spektrosk.* **56**, N 3, 441–446 (1984) (Russ).
244. Botelho Do Rego, A. M., and Lopes Da Silva, J., Delayed specific luminescence of aromatic scintillators, *Chem. Phys. Lett.* **105**, N 5, 559–562 (1984) (Eng).
245. Chen Shangxian, Wu Peiji, and Bai Fenglian, The fluorescence spectra of naphthalene in the film of polystyrene, *Kexue Tongbao* **28**, N 11, 1481–1485 (1983) (Eng) (P.A. **87**:40519).
246. Code, R. F., Popovic, Z. D., and Sharp, J. H., Electric-field-induced modulation of fluorescence from rhodamine 610 dye in a thin plastic film, *Chem. Phys.* **83**, N 1,2, 181–186 (1984) (Eng) (P.A. **87**:33434).
247. Colmsjo, A., Zebuhr, Y., and Ostman, C., Low-temperature quasilinear fluorescence spectra of some partial hydrogenated polyaromatic hydrocarbons, *Chem. scripta* **23**, N 4, 185–188 (1984) (Eng) (P.A. **87**:107385).
248. Cooke, B. J., and Palmer, T. F., Effect of temperature on the fluorescence of methyl- and phenyl-substituted biphenyl molecules, *J. Photochem.* **26**, N 2–3, 149–163 (1984) (Eng).
249. Delaire, J. A., Rodgers, M. A. J., and Webber, S. E., Quenching of fluorescence in water-soluble copolymers of methacrylic acid and vinyldiphenylanthracene, *J. Phys. Chem.* **88**, N 25, 6219–6227 (1984) (Eng).
250. Diverdi, L. A., and Topp, M. R., Subnanosecond time-resolved fluorescence of acridine in solution, *J. Phys. Chem.* **88**, N 16, 3447–3451 (1984) (Eng).
251. Ellis-Davis, G. C. R., and Malcolme-Laws, D. J., β-induced fluorescence spectra of some polynuclear aromatic hydrocarbons, *Int. J. Appl. Radiat. and Isot.* **35**, N 5, 423–424 (1984) (Eng) (P.A. **87**:88879).

252. Ermolaev, V. L., and Lyubimtsev, V. A., Quantum yields of fluorescence from higher singlet excited states of dye molecules populated by cascade transitions, *Opt. and Spektrosk.* **56**, N 6, 1026–1032 (1984) (Russ).
253. Fuke, K., Yoshiuchi, H., and Kaya, K., Electronic spectra and tautomerism of hydrogen-bonded complexes of 7-azaindole in a supersonic jet, *J. Phys. Chem.* **88**, N 24, 5840–5844 (1984) (Eng) (P.A. **88**:31517).
254. Gao, X., Wan, C., He, T., Li, J., Xin, H., and Liu, F., Surface-enhanced Raman scattering and enhanced fluorescence of dyes on silver chloride sols, *Chem. Phys. Lett.* **112**, N 5, 465–468 (1984) (Eng) (P.A. **88**:39214).
255. Haynam, C. A., Brumbaugh, D. V., and Levy D. H., The spectroscopy of dimethyl-s-tetrazine cooled in a supersonic free jet, *J. Chem. Phys.* **81**, N 5, 2270–2281 (1984) (Eng) (P.A. **88**:1398).
256. Hirayama, S., and Shimono, Y., Temperature and viscosity effects on fluorescence in 9-t-butylanthracene, *J. Chem. Soc. Faraday Trans. II* **80**, N 8, 941–955 (1984) (Eng).
257. Hollas, J. M., and Ridley, T., The 330-nm $S_1 - S_0$ electronic spectrum of 1-pyrazoline: probable hindered pseudorotation of S_1 and confirmation of the ring-puckering potential function in S_0 by single vibronic level fluorescence spectroscopy, *J. Mol. Spectrosc.* **104**, N 2, 353–371 (1984) (Eng) (P.A. **88**:1408).
258. Holtzclaw, K. W., and Parmenter, C. S., A time-resolved fluorescence search for intramolecular vibrational redistribution in S_1 p-difluorobenzene vapor, *J. Phys. Chem.* **88**, N 15, 3182–3185 (1984) (Eng) (P.A. **88**:20248).
259. Itoh, K., Chiyokawa, Y., Nakao, M., and Honda, K., Fluorescence quenching processes of rhodamine B on oxide semiconductors and light-harvesting action of its dimers, J. Amer. Chem. Soc. **106**, N 6, 1620–1627 (1984) (Eng) (P.A. **87**:102725).
260. Itoh, T., Emission spectrum of p-benzoquinone in a fluid solution, *Spectrochim. Acta A* **40**, N 4, 387–389 (1984) (Eng).
261. Janowski, A., Rzeszotarska, J., Makulski, W., and Ranachowski, J., Investigations of the luminescence of N-alkenyl-carbazoles and their charge-transfer complexes with 2,4,7-trinitro-9-fluorenone and 7,7,8,8-tetracyanoquinodimethane, *J. Lumin. 31/32*, N 2, 535–537 (1984) (Eng).
262. Khrolova, O. R., Kunavin, N. I., Komlev, I. V., Tavrizova, M. A., Trofimova, S. I., Madii, V. A., and Petukhov, V. A., The spectral-luminescent properties of the phosphorylmethyl derivatives of 3-aminobenzanthrone, *Zh. Prikl. Spektrosk.* **41**, N 1, 53–57 (1984) (Russ).
263. Korolkova, N. V., and Uzhinov, B. M., The influence of intermolecular interactions on the spectral-luminescent and lasing characteristics of oxazine 17, *Zh. Prikl. Spektrosk.* **41**, N 2, 216–220 (1984) (Russ).
264. Koyava, V. T., Sarzhevsky, A. M., and Sharonov, G. V., The effect of the energy of intermolecular interactions on the excited state duration of solution fluorescence, *Zh. Prikl. Spektrosk.* **41**, N 4, 580–583 (1984) (Russ).
265. Kozlov, N. S., Mikhalevskaya, S. V., Serzhanina, V. A., and Sauts, R. D., Synthesis and spectral properties of 1-aryl-3-(4-pyridyl) benzo[f]quinolines, *Dokl. Akad. Nauk BSSR* **28**, N 9, 810–813 (1984) (Russ).
266. Lambert, W. R., Felker, P. M., Syage, J. A., and Zewail, A. H., Jet spectroscopy of anthracene and deuterated anthracenes, *J. Chem. Phys.* **81**, N 5, 2195–2208 (1984) (Eng) (P.A. **88**:1395).
267. Lambert, W. R., Felker, P. M., and Zewail, A. H., Picosecond excitation and selective intramolecular rates in supersonic molecular beams. 1. SVL fluorescence spectra and lifetimes of anthracene and deuterated anthracenes, *J. Chem. Phys.* **81**, N 5, 2209–2216 (1984) (Eng) (P.A. **88**:1396).
268. Laplante, J. P., Micheau, J. C., and Gimenez, M., Oscillatory fluorescence in irradiated solutions of 9,10-dimethylanthracene in chloroform. A probe for the convective motion? *J. Phys. Chem.* **88**, N 18, 4135–4137 (1984) (Eng).

269. Le Bris, M.-T., Mugnier, J., Bourson, J., and Valeur, B., Spectral properties of a new fluorescent dye emitting in the red: a benzoxazinone derivative, *Chem. Phys. Lett.* **106**, N 1,2, 124–127 (1984) (Eng).
270. Leitner, A., Lippitsch, M. E., and Aussenegg, F. P., Picosecond fluorescence decay of dye molecules adsorbed to small metal particles. In: Surface studies with lasers. Proceedings of the international conference, Mauterndorf, Austria, 9–11 March 1983. Berlin, Germany: Springer-Verlag, 90–93 (1983) (Eng) (P.A. **87**:87156).
271. Loboda, L. I., Sokolova, I. V., Il'chenko, A. Ya., and Koval'chuk, R. E., The effect of substitution and medium on the spectral-luminescent properties of aminocoumarins, *Zh. Prikl. Spektrosk.* **40**, N 6, 954–957 (1984) (Russ) (P.A. **88**, 70497).
272. Love, L. J. C., and Weinberger, R., Recent advances and future prospects in fluorescence and phosphorescence spectroscopy, *Spectrochim. Acta B* **38**, N 11–12, 1421–1433 (1983) (Eng) (P.A. **87**:37213).
273. Maier, G. V., and Galeeva, A. I., Spectral-luminescent properties and nature of electronically excited states of 1,4-di-(5-phenyl-1,3-oxazol-2-Yl)-benzene(POPOP), *Opt. and Spektrosk.* **57**, N 4, 858–862 (1984) (Russ) (P.A. **88**:99826).
274. Melishchuk, M. V., Tikhonov, E. A., and Shpak, M. T., Fluorescence of selectively excited polymethine dyes with nanosecond resolution, *Opt. and Spektrosk.* **56**, N 6, 1033–1036 (1984) (Russ).
275. Mirumyants, S. O., Vandyukov, E. A., and Kozlov, V. K., Effect of foreign gas on anthracene-vapour quasi-line fluorescence spectrum, *Opt. and Spektrosk.* **56**, N 5, 836–841 (1984) (Russ).
276. Muller, D. J., and Knight, A. E. W., Vibronic activity of $\nu_8(e_{2g})$ in the benzene 260-nm transition: direct confirmation from single vibronic level fluorescence in a supersonic jet, *J. Phys. Chem.* **88**, N 16, 3392–3395 (1984) (Eng).
277. Nathanson, G. M., and McClelland, G. M., Fluorescence polarization as a probe of the rotational dynamics of isolated highly excited molecules, *J. Chem. Phys.* **81**, N 2, 629–642 (1984) (Eng).
278. Neely, W. C., Mandal, K., and Peters, C. R., UV induced thermoluminescence of benzophenone, *J. Lumin.* **29**, N 3, 341–347 (1984) (Eng).
279. Obyknovennaya, I. E., Snegov, M. I., and Cherkasov, A. S., Concentration quenching of fluorescence of anthracenes in an aqueous-micellar solvent, *Opt. and Spektrosk.* **57**, N 4, 604–609 (1984) (Russ) (P.A. **88**:100049).
280. Obyknovennaya, I. E., Snegov, M. I., and Cherkasov, A. S., Quenching of fluorescence of anthracene compounds by paratoluidine in aqueous-micellar solutions of sodium dodecyl-sulphate, *Opt. and Spektrosk.* **57**, N 5, 863–868 (1984) (Russ) (P.A. **88**:100051).
281. Oikawa, A., Abe, H., Mikami, N., and Ito, M., Rotational isomers of meta-substituted phenols and β-naphthol studied by electronic spectra in supersonic free jets, *J. Phys. Chem.* **88**, N 22, 5180–5186 (1984) (Eng) (P.A. **88**:42251).
282. Okamoto, M., and Teranishi, H., Effect of pressure on the external heavy atom quenching of pyrene fluorescence in fluid solution, *J. Phys. Chem.* **88**, N 23, 5644–5646 (1984) (Eng).
283. Pavolovich, V. S., Pershukevich, P. P., Pikulik, L. G., and Zabolotskii, S. V., A reverse shift of instantaneous fluorescence spectra of alcoholic phthalimide solutions during luminescence decay, *Dokl. Akad. Nauk BSSR* **28**, N 9, 800–803 (1984) (Russ).
284. Personov, R. I., Site selection spectroscopy of polyatomic molecules: principles, applications and possibilities, *Spectrochim. Acta B* **38**, N 11–12, 1533–1544 (1983) (Eng) (P.A. **87**:38156).
285. Ponomaryova, V. A., and Leplyanin, G. V., Anthracene fluorescence quenching by azo-isobutyric acid dinitrile, *Zh. Prikl. Spektrosk.* **40**, N 6, 1023–1026 (1984) (Russ).

286. Raikhshtat, M. M., and Thogina, V. V., Investigation of the electron-excited states of polyatomic molecules and electron spectra interpretation, *Zh. Prikl. Spektrosk.* **41**, N 3, 455–461 (1984) (Russ).
287. Schauer, M., Law, K., and Bernstein, E. R., Supersonic molecular jet studies of toluene-helium and toluene-methane clusters, *J. Chem. Phys.* **81**, N 1, 49–56 (1984) (Eng) (P.A. **87**:107387).
288. Schweitzer, G. K., and Ishii, I., Electron-impact fragmentographic fluorescence spectroscopy of ethanol, acetaldehyde, 1- and 2-propanol and acetone, *Spectrosc. Lett.* **17**, N 11, 713–719 (1984) (Eng).
289. Sekhar Basu, and Rohatgi-Mukherjee, K. K., Temperature dependence of fluorescence quantum yields of some side-substituted anthracene sulphonates, *J. Lumin.* **29**, N 1, 39–45 (1984) (Eng).
290. Sekiguchi, O., Ohta, N., and Baba, H., Rotational-level dependence of the fluorescence yield of pyrazine: computer simulation of the quantum yield spectrum, *Chem. Phys. Lett.* **106**, N 5, 387–390 (1984) (Eng) (P.A. **87**:69131).
291. Solov'ev, K. N., Stanishevsky, I. V., Starukhin, A. S., Shul'ga, A. M., and Egorova, G. D., Polarization of zero-phonon lines in the fluorescence spectra of porphin metal complexes under selection laser excitation at 4,2, K, *Zh. Prikl. Spektrosk.* **40**, N 5, 765–773 (1984) (Russ) (P.A. **88**:70498).
292. Sonnenschein, M., Amirav, A., and Jortner, J., Absolute fluorescence quantum yields of large molecules in supersonic expansions, *J. Phys. Chem.* **88**, N 19, 4214–4218 (1984) (Eng) (P.A. **88**:37097).
293. Stephenson, T. A., Radloff, P. L., and Rice, S. A., $^1B_{2u} \leftrightarrow {}^1A_{1g}$ spectroscopy of jet-cooled benzene: Single vibronic level fluorescence studies, *J. Chem. Phys.* **81**, N 3, 1060–1072 (1984) (Eng) (P.A. **87**:102726).
294. Studenov, V. I., Smirnov, V. S., and Korostelev, K. P., Spectral-luminescent and generation performances of oxazine-17 solutions, *Opt. and Spektrosk.* **56**, N 4, 637–642 (1984) (Russ).
295. Subbi, J., Hot luminescence spectra of quinizarin in a supersonic expansion, *Chem. Phys. Lett.* **109**, N 1, 1–6 (1984) (Eng).
296. Suijker, J. L. G., Varma, C. A. G. O., and Huizer, A. H., Hitherto unknown red fluorescence from benzene, pyridine and hexafluorobenzene excited to 4.7 eV above the ground state, *Chem. Phys. Lett.* **107**, N 6, 496–501 (1984) (Eng) (P.A. **87**:87147).
297. Umetskaya, V. N., Trubina, E. L., and Artamonova, O. M., The study of the intermolecular hydrogen bond effect on the fluorescence spectra of an indole solution with three components, *Zh. Prikl. Spektrosk.* **40**, N 2, 222–225 (1984) (Russ) (P.A. **88**:37099).
298. Ushomirsky, M. N., Lifshits, E. B., and Tyurin, V. S., Investigation of the correlation between the absorption and fluorescence of symmetric polymethenyl dyes and the position of energy levels of corresponding benzol derivatives, *Zh. Prikl. Spektrosk.* **40**, N 4, 593–599 (1984) (Russ).
299. Vabnits, Kh., and Vilgelmi, B., The anisotropy of the orientational distribution of molecules in solutions under strong picosecond excitation, *Zh. Prikl. Spektrosk.* **40**, N 2, 270–275 (1984) (Russ).
300. Van Benthem, M. H., and Gillispie, G. D., Intramolecular hydrogen bonding. 4. Dual fluorescence and excited-state proton transfer in 1,5-dihydroxyanthraquinone, *J. Phys. Chem.* **88**, N 14, 2954–2960 (1984) (Eng).
301. Vasil'eva, M. A., Gulbinas, V., Kabelka, V., Masalov, A. V., and Syrus, V., Dispersion of the phase response of dye solutions under the picosecond excitation, *Kvantovaya Elektron.* **11**, N 7, 1431–1436 (1984) (Russ).
302. Veselova, T. V., Stolbova, O. V., and Cherkasov, A. S., Conformers as the cause of inhomogeneity of absorbing and radiating centers in 2-acetyl-9,10-dipropyl- and 2-acetyl-9,10-diphenylanthracene solutions, *Opt. and Spektrosk.* **57**, N 4, 615–622 (1984) (Russ) (P.A. **88**:100050).

303. Vetchinkin, S. I., and Bakhrakh, V. L., Resonance Raman scattering at hot luminescence as nonadiabatic processes, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 4, 715–720 (1984) (Russ).
304. Vogel, W., Rabi oscillations and long-time behaviour in resonance fluorescence from vibronic systems, *Opt. Communs* **50**, N 5, 313–316 (1984) (Eng).
305. Voropai, E. S., Gaisenok, V. A., Kirsanov, A. A., Saechnikov, V. A., and Sarzhevsky, A. M., Spectral-polarization characteristics of luminescence of organic-molecule solutions in conditions of light quenching, *Opt. and Spektrosk.* **57**, N 2, 230–233 (1984) (Russ).
306. Weinberger, R., and Love, L. J. C., Luminescence properties of polycyclic aromatic hydrocarbons in colloidal or microcrystalline suspensions, *Spectrochim. acta A* **40**, N 1, 49–55 (1984) (Eng) (P.A. **87**:25805).
307. Wermuth, G., and Rettig, W., The interaction of close-lying excited states: Solvent influence on fluorescence rate and polarization in substituted indolines, *J. Phys. Chem.* **88**, N 13, 2729–2735 (1984) (Eng).

3.8. Phosphorescence

308. Abe, H., Kamei, S., Mikami, N., and Ito, M., Sensitized phosphorescence excitation spectra of biacetyl, benzaldehyde and benzophenone in supersonic jets, *Chem. Phys. Lett.* **109**, N 3, 217–220 (1984) (Eng) (P.A. **87**:107380).
309. Asano, K., Aita, S., and Azumi, T., Phosphorescence microwave double resonance studies on the sharp phosphorescence spectrum of benzil in a methylcyclohexane matrix. Evidence for the trans-planar triplet structure, *J. Phys. Chem.* **88**, N 23, 5538–5541 (1984) (Eng).
310. Dzhalmukhambetov, A. U., and Osad'ko, I. S., Effect of $S_1 \leftarrow S_0$ band homogeneous and inhomogeneous broadening on phosphorescence development, *Opt. and Spektrosk.* **56**, N 3, 447–450 (1984) (Russ).
311. Fraser, I. M., MacCallum, J. R., and Moran, K. T., Laser studies on the phosphorescence decay of benzophenone in polymer matrices. 1. Intensity dependence, *Eur. Polym. J.* **20**, N 5, 425–427 (1984) (Eng) (P.A. **87**:74283).
312. Fujii, T., Suzuki, S., and Arita, H., The influence of molecular conformation on electronic relaxation processes. Multiple phosphorescence spectra of m-terphenyl, *Chem. Phys. Lett.* **111**, N 4,5, 350–352 (1984) (Eng).
313. Gorban, I. S., Volkova, T. P., Kal'nitskii, A. Ya., and Yashchuk, V. N., On nature of structureless phosphorescence of vinyl aromatic polymers, *Ukr. Fiz. Zh.* **29**, N 8, 1267–1269 (1984) (Russ).
314. Gustav, K., and Seydenschwanz, C., Vibronic spectral behaviour of molecules. Theoretical analysis of the biphenyl phosphoresence, *Chem. Phys. Lett.* **109**, N 2, 156–159 (1984) (Eng) (P.A. **87**:102723).
315. Iwasaki, N., Misra, T. N., and Kinoshita, M., The phosphorescent states of pentachlorobenzene, 1,2,3,4- and 1,2,3,5-tetrachlorobenzenes, *J. Lumin.* **29**, N 1, 83–92 (1984) (Eng).
316. Klimenko, V. G., Anoshin, A. N., Gastilovich, E. A., and Shigorin, D. N., Study of intensity distribution in fine-structure $n\pi^*$-type phosphorescence spectra, *Opt. and Spektrosk.* **56**, N 3, 451–456 (1984) (Russ).
317. Love, L. J. C., and Weinberger, R., Recent advances and future prospects in fluorescence and phosphorescence spectroscopy, *Spectrochim. acta B* **38**, N 11–12, 1421–1433 (1983) (Eng) (P.A. **87**:37213).
318. Sushida, K., Fujita, M., Takemura, T., and Baba, H., Phosphorescence and its characteristics in pyridine vapor, *Chem. Phys.* **88**, N 2, 221–228 (1984) (Eng).

3.9. Dissipation and migration of molecular excitation energy, time constants

319. Akasheh, T. S., Intersystem crossing and radiative transitions in naphthalene triplet mini-excitons, *Mol. Cryst. and Liquid Cryst.* **111**, N 3–4, 215–226 (1984) (Eng) (P.A. **88**:31580).
320. Amirav, A. and Jortner, J., Spectroscopic manifestation of intramolecular relaxation of azulene in supersonic jets, *J. Chem. Phys.* **81**, N 10, 4200–4205 (1984) (Eng).
321. Amirav, A., Sonnenschein, M., and Jortner, J., Statistical-limit broadening in the S_2 state of phenanthrene in supersonic jets, *J. Phys. Chem.* **88**, N 23, 5593–5596 (1984) (Eng).
322. Bakhshiev, N. G., On some new possibilities to study liquid molecular systems by intermolecular-relaxation spectroscopy, *Opt. and Spektrosk.* **56**, N 4, 746–749 (1984) (Russ).
323. Barker, J. R., Direct measurements of energy transfer involving large molecules in the electronic ground state, *J. Phys. Chem.* **88**, N 1, 11–18 (1984) (Eng).
324. Boczar, B. P., and Topp, M. R., Picosecond time-resolved fluorescence from vibrationally unrelaxed perylene: limiting relaxation rates in the statistical limit, *Chem. Phys. Lett.* **108**, N 5, 490–495 (1984) (Eng).
325. Bogdanov, V. L., and Klochkov, V. P., To the problem of excitation energy transfer from higher electronic states of organic molecules, *Opt. and Spektrosk.* **56**, N 2, 255–258 (1984) (Russ) (P.A. **88**:20250).
326. Bondybey, V. E., Relaxation and vibrational energy redistribution processes in polyatomic molecules. In: Annual review of physical chemistry. Vol. 35/Eds.: Rabinovich, B. S., Schurr, J. M., Strauss, H. L., Palo Alto, California, 591–612 (1984) (Eng).
327. Bubekov, Yu. I., Kabelka, V., Lysak, N. A., Milyauskas, A., and Tolstorozhev, G. B., Influence of heavy atom on the radiationless interconversion and vibrational relaxation in polyatomic molecules, *Izv. Akad. Nauk. SSSR. Ser. Fiz.* **48**, N 3, 554–558 (1984) (Russ).
328. Bushuk, B. A., Murav'ev, A. A., and Rubinov, A. N., Super-rapid energy transfer between dyes molecules and orientational relaxation kinetics in polar solutions at picosecond excitation, *Khim. Fiz.* **3**, N 6, 848–852 (1984) (Russ).
329. Courtney, S. H., Fleming, G. R., Khundkar, L. R., and Zewail, A. H., Unimolecular reaction rates in solution and in the isolated molecule: Comparison of diphenyl butadiene nonradiative decay in solutions and supersonic jets, *J. Chem. Phys.* **80**, N 9, 4559–4560 (1984) (Eng).
330. Darmanyan, A. P., Experimental study of singlet-triplet energy transfer in liquid solutions, *Chem. Phys. Lett.* **110**, N 1, 89–94 (1984) (Eng).
331. Davydov, S. N., Godik, V. A., Rogozhin, K. L., Rodionov, A. N., and Shigorin, D. N., Some regularities of electronic-excited state deactivation of fluorene series heteroaromatic derivatives, *Zh. Fiz. Khim.* **58**, N 10, 2499–2502 (1984) (Russ).
332. Dunbar, R. C., and Chen, J.-H., Two-pulse photodissociation measurement of infrared fluorescence relaxation in bromobenzene ion, *J. Phys. Chem.* **88**, N 7, 1401–1404 (1984) (Eng) (P.A. **87**:102734).
333. Fain, B., and Lin, S. H., Non-equilibrium phonons in nonradiative rate processes, *Physica A* **128**, N 1–2, 164–177 (1984) (Eng) (P.A. **88**:33113).
334. Felker, P. M., and Zewail, A. H., Direct observation of non-chaotic multilevel vibrational energy flow in isolated polyatomic molecules, *Phys. Rev. Lett.* **53**, N 5, 501–504 (1984) (Eng).
335. Felker, P. M., and Zewail, A. H., Direct picosecond time resolution of dissipative intramolecular vibrational-energy redistribution (IVR) in isolated molecules, *Chem. Phys. Lett.* **108**, N 4, 303–310 (1984) (Eng).

336. Felker, P. M., and Zewail, A. H., Mode-specific intramolecular vibrational energy redistribution: Direct picosecond measurements, *J. Phys. Chem.* **88**, N 25, 6106–6108 (1984) (Eng).
337. Forch, B. E., and Lim, E. C., Coriolis interaction and intramolecular vibrational redistribution: a high-resolution spectroscopic probe of the rotational contribution to vibrational energy flow, *Chem. Phys. Lett.* **110**, N 6, 593–596 (1984) (Eng).
338. Freed, K. F., Mechanism for efficient collision induced intramolecular vibrational relaxation: Comparisons with experiment, *Chem. Phys. Lett.* **106**, N 1,2 1–6 (1984) (Eng).
339. Fujii, M., Ebata, T., Mikami, N., Ito, M., Kable, S. H., Lawrance, W. D., Parsons, T. B., and Knight, A. E. W., Mode-dependent intramolecular vibrational redistribution in the S_1 state of jet-cooled p-difluorobenzene, *J. Phys. Chem.* **88**, N 14, 2937–2940 (1984) (Eng) (P.A. **88**:20246).
340. Hammerich, B., Schmidt, R., and Brauer, H.-D., Volumes of activation for the $S_1 \leftrightarrow T_2$ intersystem crossing in n-methyl-acrydone in several solvents. In: High pressure in science and technology. Proceedings of the 9th AIRAPT international high pressure conference, Albany, NY, USA, 24–29 July 1983. New York, USA: North-Holland, 323–326, pt. 3 (1984) (Eng) (P.A. **88**:37107).
341. Hashimoto, S., and Thomas, J. K., Effect of environment on decay pathways of the singlet excited state of N,N,N′,N′-tetramethylbenzidine, *J. Phys. Chem.* **88**, N 18, 4044–4049 (1984) (Eng).
342. Hochstrasser, R. M., and Moore, R., Observation of collisional-free spectral relaxation in p-difluorobenzene, *Chem. Phys. Lett.* **105**, N 4, 359–362 (1984) (Eng).
343. Holtzclaw, K. W., and Parmenter, C. S., A time-resolved fluorescence search for intramolecular vibrational redistribution in S_1 p-difluorobenzene vapor, *J. Phys. Chem.* **88**, N 15, 3182–3185 (1984) (Eng) (P.A. **88**:20248).
344. Hornburger, H., Kono, H., and Lin, S. H., Excess energy dependence in radiationless transitions. Triplet to ground state nonradiative rate calculations in benzene, *J. Chem. Phys.* **81**, N 8, 3554–3558 (1984) (Eng).
345. Kajii, Y., Obi, K., Tanaka, I., and Tobita, S., Isotope effects on radiationless transitions from the lowest excited singlet state of tetraphenylporphin, *Chem. Phys. Lett.* **111**, N 4,5, 347–349 (1984) (Eng).
346. Keller, W. W. A., Schubert, W., Germer, R., and Strauss, E., Time resolved photoacoustic spectroscopy of metastable electronic states of dye molecules, *J. Phys. Colloq.* **44**, N C-6, 397–400 (1983) (Eng) (P.A. **87**:38104).
347. Khwaja, H. A., Semeluk, G. P., and Unger, I., Quenching of the singlet and triplet state of benzene in condensed phase, *Can. J. Chem.* **62**, N 8, 1487–1491 (1984) (Eng) (P.A. **88**:22462).
348. Knee, J. L., Otis, C. E., and Johnson, P. M., Nonradiative transitions in collisionless perdeuterobenzene, *J. Chem. Phys.* **81**, N 10, 4455–4457 (1984) (Eng).
349. Köppel, H., and Meyer, H.-D., Novel aspects of ultrafast nonradiative processes, *Chem. Phys. Lett.* **107**, N 2, 149–154 (1984) (Eng).
350. Lambert, W. R., Felker, P. M., and Zewail, A. H., Picosecond excitation and selective intramolecular rates in supersonic molecular beams. 1. SVL fluorescence spectra and lifetimes of anthracene and deuterated anthracenes, *J. Chem. Phys.* **81**, N 5, 2209–2216 (1984) (Eng) (P.A. **88**:1396).
351. Lambert, W. R., Felker, P. M., and Zewail, A. H., Picosecond excitation and selective intramolecular rates in supersonic molecular beams. 2. Intramolecular quantum beats and IVR, *J. Chem Phys.* **81**, N 5, 2217–2232 (1984) (Eng) (P.A. **88**:1397).
352. Langan, J. G., Sitzmann, E. V., and Eisenthal, K. B., Picosecond laser studies on the effect of structure and environment on intersystem crossing in aromatic carbenes, *Chem. Phys. Lett.* **110**, N 5, 521–527 (1984) (Eng).

353. Lorincz, A., Novak, F. A., and Rice, S. A., Relaxation of large molecules following ultrafast excitation, *Chem. Phys. Lett.* **111**, N 4,5, 322–325 (1984) (Eng).
354. Maciejewski, A., Safaradeh-Amiri, A., Verrall, R. E., and Steer, R. P., Radiationless decay of the second excited singlet states of aromatic thiones: experimental verification of the energy gap law, *Chem. Phys.* **87**, N 2, 295–303 (1984) (Eng.)
355. Mahaney, M., and Huber, J. R., Solvent effect on the nonradiative $S_2(\pi\pi^*)$ decay of xanthione, *Chem. Phys. Lett.* **105**, N 4, 395–399 (1984) (Eng).
356. Matsumoto, Y., Spangler, L. H., and Pratt, D. W., Intersystem crossing in isolated molecules. Magnetic field effects on the fluorescence decay behavior of $^1B_{3u}$ pyrazine with "single" rovibronic level excitation, *J. Chem. Phys.* **80**, N 11, 5539–5544 (1984) (Eng).
357. Moore, R., Doany, F. E., Heilweil, E. J., and Hochstrasser, R. M., Energy redistribution in large molecules. Direct study of intramolecular relaxation in the gas phase with picosecond gating, *Faraday Disc. Chem. Soc.* N 75, 331–340 (1983) (Eng) (P.A. **87**:38229).
358. Muthuramu, K., and Ramamurthy, V., 7-alkoxy coumarins as fluorescence probes for microenvironments, *J. Photochem.* **26**, N 1, 57–64 (1984) (Eng).
359. Negus, D. K., and Hochstrasser, R. M., Molecular motion and energy transfer in molecular and biological systems, *J. Lumin.* **31/32**, pt. 1, 3–8 (1984) (Eng).
360. Neporent, B. S., Rapid relaxations and electronic level structure of polyenes, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 3, 453–461 (1984) (Russ).
361. Parmenter, C. S., Vibrational redistribution within excited electronic states of polyatomic molecules, *Faraday Disc. Chem. Soc.* N 75, 7–22 (1983) (Eng) (P.A. **87**:38296).
362. Philippetis, A. L., and Poulopoulos, P. N., Energy migration between the molecules of an aromatic compound at high concentration in liquid and solid solutions, *Lett. Nuovo Cimento* **40**, ser. 2, N 15, 457–460 (1984) (Eng) (P.A. **88**:1486).
363. Rebane, K. K., and Saari, P. M., Study of picosecond relaxations in organic and bioorganic systems, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 3, 428–433 (1984) (Russ).
364. Rentzepis, P. M., and Bondybey, V. E., Large molecule relaxation: Spectroscopy, structure, and vibrational energy redistribution in naphthazarin, *J. Chem. Phys.* **80**, N 10, 4727–4737 (1984) (Eng) (P.A. **87**:74286).
365. Riedle, E., Neusser, H. J., Schlag, E. W., and Lin, S. H., Intramolecular vibrational relaxation of benzene, *J. Phys. Chem.* **88**, N 2, 198–202 (1984) (Eng).
366. Rulliere, C., Declemy, A., and Kottis, Ph., Picosecond spectroscopic investigation of the internal conversion rate of excited perylene in solution, *Chem. Phys. Lett.* **110**, N 3, 308–314 (1984) (Eng) (P.A. **87**:44099).
367. Saletskii, A. M., Zhuravlev, S. V., Levshin, L. V., and Yuzhakov, V. I., On the possibility of pre-relaxational excitation energy transfer in rhodamine 6G and coumarin 47 solutions, *Zh. Prikl. Spektrosk.* **40**, N 1, 73–77 (1984) (Russ).
368. Sasson, R., and Weinreb, A., Deactivation of excited states of liquid alkyl benzenes at the entrance window, *J. Lumin.* **31/32**, pt. 2, 586–588 (1984) (Eng).
369. Scharf, B., and Dinur, U., Striking dependence of the rate of electronic radiationless transitions on the size of the molecular system, *Chem. Phys. Lett.* **105**, N 1, 78–82 (1984) (Eng).
370. Scherer, N. F., Shepanski, J. F., and Zewail, A. H., Picosecond pump-probe and polarization techniques in supersonic molecular beams: Measurement of ultrafast vibrational-rotational dephasing and coherence, *J. Chem. Phys.* **81**, N 4, 2181–2182 (1984) (Eng).
371. Schwartz, S. A., and Topp, M. R., Intramolecular relaxation of excess vibrational energy in jet-cooled perylene, *Chem. Phys.* **86**, N 3, 245–255 (1984) (Eng) (P.A. **87**:69132).

372. Seilmeier, A., Scherer, P. O. J., and Kaiser, W., Ultrafast energy dissipation in solutions measured by a molecular thermometer, *Chem. Phys. Lett.* **105**, N 2, 140–146 (1984) (Eng).
373. Selco, J. I., Holt, P. L, and Weisman, R. B., Ground-state repopulation dynamics in pyridine vapor, *Chem. Phys. Lett.* **106**, N 5, 437–442 (1984) (Eng).
374. Sibert, E. L., III, Reinhardt, W. P., and Hynes, J. T., Intramolecular vibrational relaxation and spectra of CH and CD overtones in benzene and perdeuterobenzene, *J. Chem. Phys.* **81**, N 3, 1115–1134 (1984) (Eng) (P.A. **87**:102663).
375. Sipp, B., and Voltz, R., Determination method of the characteristic parameters of different interaction potentials from energy transfer measurements, *J. Lumin.* **31/32**, pt. 2, 609–611 (1984) (Eng).
376. Smith, D. D., Rice, S. A., and Struve, W., Intramolecular dephasing: picosecond evolution of wavepacket states in a molecule with intermediate-case level structure, *Faraday Disc. Chem. Soc.* N 75, 173–182 (1983) (Eng) (P.A. **87**:38254).
377. Sobolewski, A. L., and Prochorow, J., Is the $S_2 \leftrightarrow S_0$ internal conversion an important pathway for radiationless decay of the S_2 state of azulene? *J. Lumin.* **31/32**, pt. 2, 589– 591 (1984) (Eng).
378. Sorriso, S., Dynamics of the dielectric relaxation process in some dichlorotoluenes, *J. Chem. Soc. Faraday Trans. II* **80**, N 8, 933–939 (1984) (Eng).
379. Stephenson, T. A., and Rice, S. A., Relaxation dynamics of photoexcited benzene-rare gas van der Waals complexes, *J. Chem. Phys.* **81**, N 3, 1083–1101 (1984) (Eng) (P.A. **87**:102753).
380. Stephenson, T. A., and Rice, S. A., Vibrational state dependence of radiationless processes in $^1B_{2u}$ benzene, *J. Chem. Phys.* **81**, N 3, 1073–1082 (1984) (Eng) (P.A. **87**:102727).
381. Sumitani, M., O'Connor, D. V., Takagi, Y., and Yoshihara, K., The importance of the ν_7 vibration in the study of channel three decay in S_1 benzene, *Chem. Phys. Lett.* **108**, N 1, 11–13 (1984) (Eng).
382. Syage, J. A., Felker, P. M., and Zewail, A. H., Picosecond excitation and selective intramolecular rates in supersonic molecular beams. 3. Photochemistry and rates of a charge transfer reaction, *J. Chem. Phys.* **81**, N 5, 2233–2256 (1984) (Eng) (P.A. **88**:3869).
383. Taylor, A. J., Erskine, D. J., and Tang, C. L., Femtosecond vibrational relaxation of large organic molecules, *Chem. Phys. Lett.* **103**, N 5, 430–435 (1984) (Eng).
384. Tikhomirov, S. A., and Dobrinevskii, S. F., Direct measurements of vibrational energy redistribution rate in oxazole molecules in gaseous phase, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 3, 445–448 (1984) (Russ).
385. Tikhomirov, S. A., Intramolecular vibrational relaxation in free perylene molecules, *Dokl. Akad. Nauk BSSR* **28**, N 1, 21–24 (1984) (Russ).
386. Trakhtenberg, L. I., Milikh, G. M., and Pshezhetsky, S. Ya., Relaxation of highly vibrationally excited molecules, *Chem. Phys.* **89**, N 3, 403–414 (1984) (Eng) (P.A. **88**:1479).
387. Trusov, K. K., Radiationless internal conversion and decay of dye molecules in a gas phase, *Opt. and Spektrosk.* **57**, N 4, 593–596 (1984) (Russ) (P.A. **88**:100048).
388. Umarjee, D. M., and Chikkur, G. C., Electronic excitation energy transfer and quenching studies in an organic liquid scintillator, *Indian J. Pure and Appl. Phys.* **22**, N 6, 351– 353 (1984) (Eng) (P.A. **87**:104651).
389. Vintsents, S. V., Kiselev, V. F., and Plotnikov, G. S., Energy transfer between excited adsorbed dye molecules and charged defects in insulator-semiconductor structures, *Phys. status solidi (a)* **85**, N 1, 273–281 (1984) (Eng).
390. Von Puttkamer, K., Dubal, H. R., and Quack, M., Time-dependent processes in polyatomic molecules during and after intense infrared irradiation, *Faraday Disc. Chem. Soc.* N 75, 197–210 (1983) (Eng) (P.A. **87**:38165).

391. Whetten, R. L., Fu, K.-J., and Grant, E. R., High Rydberg states of jet-cooled toluene observed by ultraviolet two-photon absorption spectroscopy: ultrafast radiationless decay and pseudo-Jahn-Teller effects, *Chem. Phys.* **90**, N 1, 2, 155–165 (1984) (Eng).
392. Willig, F., Blumen, A., and Zumofen, G., Dynamics of fluorescence quenching in disordered dye monolayers, *Chem. Phys. Lett.* **108**, N 3, 222–227 (1984) (Eng).
393. Wondrazek, F., Seilmeier, A., and Kaiser, W., Ultrafast intramolecular redistribution and intermolecular relaxation of vibrational energy in large molecules, *Chem. Phys. Lett.* **104**, N 2, 3, 121–128 (1984) (Eng).
394. Wrigley, S. P., Oswald, D. A., and Rabinovich, B. S., On the question of heavy-atom blocking of intramolecular vibrational energy transfer, *Chem. Phys. Lett.* **104**, N 6, 521–525 (1984) (Eng).
395. Zhuravlev, S. V., Levshin, L. V., Saletskii, A. M., and Yuzhakov, V. I., Migration of electronic excitation in mixed dye solutions, *Opt. and Spektrosk.* **56**, N 6, 1044–1048 (1984) (Russ).

3.10. Laser excitation, stimulated emission and light generation

396. Alekseev, V. A., Trinchuk, B. F., and Shulenin, A. V., The specific features of unstable resonators in lasers based on the solutions of organic compounds with lamp pumping, *Zh. Prikl. Spektrosk.* **41**, N 1, 28–33 (1984) (Russ).
397. Apkarian, V. A., Stimulated emission as a major channel for the depopulation of laser-excited states in condensed media, *Chem. Phys. Lett.* **110**, N 2, 168–172 (1984) (Eng).
398. Aristov, A. V., Maslyukov, Yu. S., and Nikolaev, A. B., Effect of triplet-triplet absorption on the optical gain in solutions of anthracene derivatives, *Opt. and Spektrosk.* **56**, N 1, 117–122 (1984) (Russ).
399. Borisevich, N. A., Picosecond spectroscopy modern trends (Opening address), *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 3, 418–419 (1984) (Russ).
400. Borisevich, N. A., and Tolstorozhev, G. B., Picosecond spectroscopy of free complex molecules, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 3, 420–427 (1984) (Russ).
401. Dorofeev, S. N., Klimashina, A. G., Mnuskin, V. E., Tokareva, A. N., Fedorov, V. A., and Denisov, L. K., Performance of a tunable dye laser pumped with a high-power nitrogen laser, *Zh. Prikl. Spektrosk.* **41**, N 3, 388–392 (1984) (Russ).
402. Dupuy, F., Rulliere, C., Le Bris, M. T., and Valeur, B., A new class of laser dyes: benzoxazinone derivatives, *Opt. Communs* **51**, N 1, 36–40 (1984) (Eng).
403. Egorov, S. E., Letokhov, V. S., and Shibanov, A. N., A mechanism of ion formation upon exposure of molecular crystals to UV laser pulses, *Kvantovaya Elektron.* **11**, N 7, 1393–1403 (1984) (Russ).
404. Fraser, I. M., MacCallum, J. R., and Moran, K. T., Laser studies on the phosphorescence decay of benzophenone in polymer matrices. 1. Intensity dependence, *Eur. Polym. J.* **20**, N 5, 425–427 (1984) (Eng) (P.A. **87**:74283).
405. Gaisenok, V. A., Klishchenko, A. P., Sarzhevsky, A. M., and Slobodyanyuk, A. I., Energy cumulation of singlet excited rhodamine 6G molecules in solutions, *Opt. and Spektrosk.* **56**, N 2, 371–373 (1984) (Russ).
406. Galanin, M. D., and Chizhikova, Z. A., Rhodamine-6G solution S_2-S_0 luminescence spectrum broadening by high-power laser excitation, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **39**, N 8, 394–396 (1984) (Russ) (P.A. **88**:22477).
407. Guha, S., Kunc, J., Braun, C., and Gundersen, M., Metastable quenching by optical pumping. In: Digest of technical papers of the 4th IEEE pulsed power conference (cat. no. 83CH1908-3), Albuquerque, NM, USA, 6–8 June 1983. New York, USA: *IEEE*, 723–725 (1983) (Eng) (P.A. **88**:1441).
408. Jones, G., II, Bergmark, W. R., and Jackson, W. R., Products of photodegradation for coumarin laser dyes, *Opt. Communs* **50**, N 5, 320–324 (1984) (Eng).

409. Khalimanovich, D. M., and Borisevich, A. N., Enlightenment of organic compound vapours by powerful light pulses of ultra-short duration, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 3, 559–562 (1984) (Russ).
410. Kuznetsova, R. T., and Fofonova, R. M., Investigation of the photostability of rhodamine 6G based on generating and spectral characteristics, *Zh. Prikl. Spektrosk.* **40**, N 4, 550–554 (1984) (Russ).
411. Moll, D. J., Parker, G. R., Jr., and Kuppermann, A., Photoacoustic detection of stimulated emission pumping in p-difluorobenzene, *J. Chem. Phys.* **80**, N 10, 4800–4807 (1984) (Eng) (P.A. **87**:74295).
412. Mostovnikov, V. A., Nechaev, S. V., Khokhlov, I. V., Lobazov, A. F., Shalimo, A. L., Volodin, V. G., Avramenko, B. I., Lisovskaya, Z. I., Khokhlova, S. A., and Danilov, A. S., Application of frequency tunable lamp-pumped dye lasers for genetic-selection investigations, *Zh. Prikl. Spektrosk.* **41**, N 3, 392–396 (1984) (Russ).
413. Padhye, M. R., Varadarajan, T. S., and Deshpande, A. V., Biscoumarins—new laser dyes in coumarin series, *Spectrosc. Lett.* **17**, N 6–7, 369–376 (1984) (Eng) (P.A. **88**:1651).
414. Paramonov, G. K., and Savva, V. A., Effect of selective excitation of separate vibrational isolated molecule states by picosecond laser infrared pulse, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 3, 449–452 (1984) (Russ).
415. Rebane, A. K., and Kaarli, R. K., Picosecond spatially-temporal holography on the basis of photochemical hole burning, Izv. Akad. Nauk SSSR. Ser. Fiz. **48**, N 3, 545–549 (1984) (Russ).
416. Rebane, K. K., and Palm, V. V., Application of doppler effect for studying narrow photochemical dips in spectra, *Opt. and Spektrosk.* **57**, N 3, 381–383 (1984) (Russ).
417. Rodchenkova, V. V., Reva, M. G., Akimov, A. I., and Uzhinov, B. M., Use of electron-excitation energy transfer in dye laser active media, *Kvantovaya Elektron.* **14**, N 1, 77–80 (1984) (Russ) (P.A. **88**:1653).
418. Rubin, L. B., Braginskaya, O. V., Isakova, M. L., Efremov, N. A., and Paschenko, V. Z., Analysis of fluorescence kinetics upon intense picosecond laser pumping: excitation dynamics in photosynthesizing systems, *J. Lumin.* **29**, N 4, 399–411 (1984) (Eng).
419. Rulliere, C., Lasing ability of dyes related to symmetry of the fluorescent state: the example of naphthalene, *Can. J. Phys.* **62**, N 1, 73–76 (1984) (Eng) (P.A. **87**:44099).
420. Shanta, I., and Kozma, L., New method for measuring the duration of picosecond laser pulses on the basis of coherent anti-stokes Raman scattering, *Kvantovaya Elektron.* **11**, N 4, 814–815 (1984) (Russ).
421. Skorobogatov, G. A., and Dzevitsky, B. E., Stimulated-emission cross-section for excimer-molecule: experiment and theory, *Opt. and Spektrosk.* **57**, N 4, 597–603 (1984) (Russ).
422. Smirnov, V. S., Studenov, V. I., and Rozuvanova, V. A., Study of spectral and spatial-angular characteristics of light generation by rhodamine 6G solutions in a small-base cavity, *Opt. and Spektrosk.* **56**, N 5, 884–888 (1984) (Russ).
423. Studenov, V. I., Smirnov, V. S., and Korostelev, K. P., Spectral-luminescent and generation performances of oxazine-17 solutions, *Opt. and Spektrosk.* **56**, N 4, 637–642 (1984) (Russ).
424. Taliani, C., Bree, A., and Zwarich, R., Laser-excited fluorescence from dibenzofuran in a biphenyl host, *J. Phys. Chem.* **88**, N 11, 2357–2360 (1984) (Eng) (P.A. **87**:107395).
425. Zuev, V. E., Lopasov, V. P., and Yakovlev, N. E., Methods and means of laser visible and near infrared spectroscopy of molecules, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 4, 802–809 (1984) (Russ).

3.11. Spectroscopy of photochemical reactions

426. Abakumov, G. A., Polyakov, B. I., Simonov, A. P., and Chuiko, L. S., Photoionization cross-sections of electronically-excited benzene and some of its derivatives in the gas phase, *Opt. and Spektrosk.* **57**, N 5, 936–938 (1984) (Russ) (P.A. **88**:105965).
427. Akimova, E. I., and Snegov, M. I., Intramicellar photodimerization of 9-methylanthracene, *Khim. Fiz.* **3**, N 7, 954–959 (1984) (Russ).
428. Aldoshin, S. M., and Atovmyan, L. O., Structural aspect of photo- and thermochemistry of crystalline salicylalarylimines, *Khim. Fiz.* **3**, N 7, 915–926 (1984) (Russ).
429. Aldoshin, S. M., and Atovmyan, L. O., Structural aspect of photochromic transformations in organic compounds. In: Problems of crystallochemistry. Moscow, Nauka, 34–71 (1984) (Russ).
430. Allen, N. S., Binkley, J. P., Parsons, B. J., Navaratnam, S., Phillips, G. O., Tennent, N. H., A laser flash photolysis study of 4-N, N-diethylaminoazobenzene in solution: influence of epoxy resin components, *J. Photochem.* **26**, N 2-3, 213–220 (1984) (Eng).
431. Avila, V., Gsponer, H. E., and Previtali, C. M., Photochemistry of chlorobenzene in ethanol-water solutions, *J. Photochem.* **27**, N 2, 163–170 (1984) (Eng).
432. Baer, R., and Paul, H., Stationary nutations and CIDEP of benzyl radicals during photolysis of methyl benzyl ketone, *Chem. Phys.* **87**, N 1, 73–80 (1984) (Eng).
433. Bartocci, G., Masetti, F., Mazzucato, U., and Marconi, G., Photoisomerization mechanism and conformational equilibria of styrylnaphthalenes. A study based on photophysical properties and molecular-orbital calculations, *J. Chem. Soc. Faraday Trans. II* **80**, N 9, 1093–1105 (1984) (Eng).
434. Battacharyya, S. N., and Das, P. K., Photoreduction of benzophenone by amino acids, aminopolycarboxylic acids and their metal complexes. A laser-flash-photolysis study, *J. Chem. Soc. Faraday Trans. II* **80**, N 9, 1107–1116 (1984) (Eng).
435. Becker, H.-D., and Andersson, K., Photochemical Diels-Alder dimerization of 9-phenylethylanthracene, *J. Photochem.* **26**, N 1, 75–77 (1984) (Eng).
436. Bhadbhade, M. M., Murthy, G. S., Venkatesan, K., and Ramamurthy, V., Topochemical dimerization of non-parallel double bonds: 7-methoxycoumarin, *Chem. Phys. Lett.* **109**, N 3, 259–263 (1984) (Eng).
437. Biedrzycki, J., Blazejowski, J., Szychlinski, J., and Ledochowski, A., Photochemistry of nitracrine and its analogues: acridine derivatives as electron donors, *Z. Naturforsch. A* **39**, N 2, 195–200 (1984) (Eng) (P.A. **87**:46778).
438. Brown, R. G., Henderson, S., May, B., and Shankey, J., Exciplex formation between aromatic amines and 4-dimethylamino-2-pyridyl 3-pyridyl ketone, *J. Photochem.* **26**, N 1, 33–38 (1984) (Eng).
439. Bulska, H., Grabowska, A., Pakuła, B., Sepioł, J., Waluk, J., and Wild, U. P., Spectroscopy of doubly hydrogen-bonded 7-azaindole. Reinvestigation of the excited state reaction, *J. Lumin.* **29**, N 1, 65–81 (1984) (Eng).
440. Butenin, A. V., Kogan, B. Ya., and Gavrilyuk, V. I., Interconversion of oxygen quenching of fluorescence of rhodamine 6G in porous glass, *Opt. and Spektrosk.* **57**, N 4, 736–737 (1984) (Russ).
441. Chakravorty, K., and Poole, J. A., The effect of dissolved molecular oxygen on the fluorescence of 9,10-dimethylanthracene and 9,10-diphenylanthracene, *J. Photochem.* **26**, N 1, 25–31 (1984) (Eng).
442. Christov, S. G., Theory of non-radiative transitions in molecules and solids, *Phil. Mag. B* **49**, N 4, 325–339 (1984) (Eng) (P.A. **87**:71440).
443. Colpa, J. P., Prass, B., and Stehlik, D., Evidence for tunneling as a mechanism for a photochemical hydrogen-transfer reaction in molecular crystals, *Chem. Phys. Lett.* **107**, N 4,5, 469–474 (1984) (Eng).

444. Costanzo, L. L., Pistara, S., and Chiacchio, U., Effect of azulene on the direct and benzil-sensitized photoisomerization of 2-styrylthiophene, *J. Photochem.* **26**, N 1, 79–84 (1984) (Eng).
445. Davis, H. F., Chattopadhyay, S. K., and Das, P. K., Photophysical behavior of exciplexes of 1,4-dicyanonaphthalene with methyl- and methoxy-substituted benzenes, *J. Phys. Chem.* **88**, N 13, 2798–2803 (1984) (Eng).
446. Debuda, P. G., and Kostin, M. D., Potential energy surface and rate constants for an intramolecular hydrogen-deuterium exchange on a benzene ring, *J. Chem. Phys.* **81**, N 9, 3972–3975 (1984) (Eng) (P.A. **88**:20098).
447. Degani, Y., Willner, I., and Haas, Y., Lasing of rhodamine B in aqueous solutions containing β-cyclodextrin, *Chem. Phys. Lett.* **104**, N 5, 496–499 (1984) (Eng) (P.A. **87**:44100).
448. Doany, F. E., Heilweil, E. J., Moore, R., and Hochstrasser, R. M., Picosecond study of an intermediate in the trans to cis isomerization pathway of stiff stilbene, *J. Chem. Phys.* **80**, N 1, 201–206 (1984) (Eng).
449. Drajeva, L. I., Study of electrophotographic properties of crystalline poly-(N-vinylcarbazole) layers, *Dokl. Bolg. Akad. Nauk* **37**, N 1, 31–33 (1984) (Eng).
450. Durant, J. L., and Rider, D. M., Anderson, S. L., Proch, F. D., and Zare, R. N., Unimolecular dissociation rates of the chlorobenzene cation prepared by multiphoton ionization, *J. Chem. Phys.* **80**, N 5, 1817–1825 (1984) (Eng).
451. Ebeid, E-Z. M., and Bridge, N. J., Fluorescence and photodimerization of crystalline 9-cyanoanthracene. Spectroscopic evidence for a distinct nucleation step, *J. Chem. Soc. Faraday Trans. I* **80**, N 5, 1131–1138 (1984) (Eng).
452. Freund, H.-J., Slaughter, A. R., Ballina, S. M., Banna, M. S., Bigelow, R. W., Dick, B., Lex, J., and Deger, H. M., Comparison of core-hole excitation spectra of organic donor/acceptor molecules in the vapor and condensed phases: p-nitroaniline, 2-amino-6-nitronaphthalene and 1-amino-4-nitronaphthalene, *J. Chem. Phys.* **81**, N 6, 2535–2555 (1984) (Eng) (P.A. **88**:1422).
453. Fuke, K., Yoshiuchi, H., Kaya, K., Achiba, Y., Sato, K., and Kimura, K., Multiphoton ionization photoelectron spectroscopy and two-color multiphoton ionization threshold spectroscopy on the hydrogen bonded phenol and 7-azaindole in a supersonic jet, *Chem. Phys. Lett.* **108**, N 2, 179–184 (1984) (Eng).
454. Gnanaguru, K., Murthy, G. S., Venkatesan, K., and Ramamurthy, V., A study in crystal engineering: solid-state photodimerization of chloro- and methyl-coumarins, *Chem. Phys. Lett.* **109**, N 3, 255–258 (1984) (Eng).
455. Gnanaguru, K., Ramasubbu, N., Venkatesan, K., and Ramamurthy, V., Topochemical solid state photodimerization of non-ideally oriented monomers: 7-chlorocoumarin and 7-methoxy-coumarin, *J. Photochem.* **27**, N 3, 355–362 (1984) (Eng).
456. Gonchar, N. N., Khovratovich, N. N., and Chernikova, I. E., Spectral analysis of ozone action on indol, *Zh. Prikl. Spektrosk.* **41**, N 5, 855–858 (1984) (Russ).
457. Gonohe, N., Shimizu, A., Abe, H., Mikami, N., and Ito, M., Two-color photoionization of van der Waals complexes of fluorobenzene in a supersonic free jet, *Chem. Phys. Lett.* **107**, N 1, 22–26 (1984) (Eng).
458. Gorman, A. A., Hamblett, I., and Jensen, N.-H., Reversible triplet energy transfer between neo-alloocimene and anthracene, *Chem. Phys. Lett.* **111**, N 3, 293–296 (1984) (Eng).
459. Grätzel, C. K., Jirousek, M., and Grätzel, M., Light-induced oxidation of aromatic hydrocarbons in functionalized microemulsions, *J. Phys. Chem.* **88**, N 6, 1055–1058 (1984) (Eng).
460. Greene, B. I., and Scott, T. W., Time-resolved multiphoton ionization in the organic condensed phase; picosecond conformational dynamics of cis-stilbene and tetraphenylethylene, *Chem. Phys. Lett.* **106**, N 5, 399–402 (1984) (Eng).
461. Hamanoue, K., Tai, S., Hidaka, T., Nakayama, T., Kimoto, M., and Teranishi, H., Photochemical debromination of meso-substituted bromoanthracenes studied by steady-state photolysis and laser photolysis, *J. Phys. Chem.* **88**, N 19, 4380–4384 (1984) (Eng).

462. Hamanoue, K., Yokoyama, K., Kajiwara, Y., Nakajima, K., Nakayama, T., and Teranishi, H., Primary processes in the photoreduction of 1-chloro- and 1,8-dichloro-anthraquinones in ethanol studied by laser spectroscopy, *Chem. Phys. Lett.* **110**, N 1, 25–28 (1984) (Eng).
463. Hashimoto, S., and Thomas, J. K., The effect of caffeine on the reactions of the excited singlet state of pyrene in micellar solium lauryl sulfate, *Chem. Phys. Lett.* **109**, N 2, 115–121 (1984) (Eng).
464. Hornburger, H., Schröder, H., and Brand, J., The effects of local modes and Morse oscillator potentials on the nonradiative "communicating states" rate calculations in benzene, *J. Chem. Phys.* **80**, N 7, 3197–3209 (1984) (Eng).
465. Ichimura, T., Mori, Y., Nakashima, N., and Yoshihara, K., Formation of hot hexafluorobenzene in the 193 nm photolysis, *Chem. Phys. Lett.* **104**, N 6, 533–537 (1984) (Eng).
466. Jones, G., II, and Bergmark, W. R., Photodegradation of coumarin laser dyes: an unexpected singlet self-quenching mechanism, *J. Photochem.* **26**, N 2–3, 179–184 (1984) (Eng).
467. Jonkman, H. T., and Wiersma, D. A., Spectroscopic study of conformational dynamics of 1,1′-binaphthyl in a jet, *J. Chem. Phys.* **81**, N 4, 1573–1582 (1984) (Eng).
468. Khudyakov, I. V., Prokof'ev, A. I., Margulis, L. A., and Kuzmin, V. A., Influence of magnetic field on the cage effect during photolysis of p-benzoquinone in n-propanol, *Chem. Phys. Lett.* **104**, N 5, 409–412 (1984) (Eng).
469. Kikuchi, K., Yamamoto, S.-A., and Kokubun, H., Hydrogen atom transfer reaction from excited carbazole to pyridine, *J. Photochem.* **24**, N 3, 271–283 (1984) (Eng).
470. Koplitz, B. D., and McVey, J. K., Mechanism and power dependence of the multiphoton ionization of bromobenzene, *J. Chem. Phys.* **80**, N 6, 2271–2282 (1984) (Eng).
471. Krysanov, S. A., and Alfimov, M. V., Picosecond spectroscopy of intermediate particles in photoisomerization, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 3, 462–465 (1984) (Russ).
472. Kumar, C. V., Ling Qin, and Das, P. K., Aromatic thioketone triplets and their quenching behaviour towards oxygen and di-t-butylnitroxy radical-A laser-flash-photolysis study, *J. Chem. Soc. Faraday Trans. II* **80**, N 7, 783–793 (1984) (Eng) (P.A. **88**:3871).
473. Kuznetsov, V. A., and Shamraev, V. N., Electron phototransfer in rhodamine 6G solutions, *Opt. and Spektrosk.* **57**, N 1, 55–61 (1984) (Russ).
474. Kuznetsova, N. A., Lebedeva, N. S., Ioffe, N. T., Kaliya, O. L., and Lukiyanets, E. A., The spectral dependence of the efficiency of photochemical radical formation in the ethanol solutions of rhodamine dyes, *Zh. Prikl. Spektrosk.* **40**, N 1, 154–156 (1984) (Russ).
475. Lazare, S., Lapouyade, R., and Robert, M.-P., β-naphthylethylene; a conformational study of the triplet state by laser flash photolysis, *Nouv. J. Chim.* **8**, N 6, 407–409 (1984) (Eng) (P.A. **88**:3875).
476. Lee, J., and Robinson, G. W., Indole: A model system for one-photon threshold photoionization in polar media, *J. Chem. Phys.* **81**, N 3, 1203–1208 (1984) (Eng).
477. Leong, B., and Hanson, D. M., Photophysics of 2,4,5-trimethylbenzaldehyde in durene single crystals, *Chem. Phys.* **86**, N 1,2, 1–7 (1984) (Eng).
478. Levin, P. P., Vago, Yu., Gal, D., and Kuzmin, V. A., Investigation of triphenylamine quenching of duroquinone triplet state by means of laser photolysis method, *Khim. Fiz.* **3**, N 10, 1380–1385 (1984) (Russ).
479. Lianos, P., Viriot, M.-L., and Zana, R., Study of the solubilization of aromatic hydrocarbons by aqueous micellar solutions, *J. Phys. Chem.* **88**, N 6, 1098–1101 (1984) (Eng).
480. Lougnot, D.-J., and Scaiano, J. C., A water-soluble benzophenone in reverse micelles: kinetics and spectroscopy, *J. Photochem.* **26**, N 2–3, 119–130 (1984) (Eng).

481. Lysak, N. A., and Tolstorozhev, G. B., Intramolecular exciplex luminescence in organic compound vapour, *Khim. Fiz.* **3**, N 9, 1274–1278 (1984) (Russ).
482. Majors, T. J., Even, U., and Jortner, J., Dynamics of trans-cis photoisomerization of large molecules in supersonic jets, *J. Chem. Phys.* **81**, N 5, 2330–2338 (1984) (Eng) (P.A. **88**:3809).
483. Makarov, B. P., and Gurman, V. S., The influence of triplet sensitizers on the efficiency of triplet carbene formation during photolysis of diazofluorene in solid phase at 77 K, *Dokl. Akad. Nauk SSSR* **275**, N 4, 930–933 (1984) (Russ).
484. Martin, M. M., Grand, D., Ikeda, N., Okada, T., and Mataga, N., Photoionization of dibenzocarbazoles in solid solution. Lowering of the photoionization threshold through hydrogen bonding with pyridine, *J. Phys. Chem.* **88**, N 1, 167–170 (1984) (Eng).
485. Masnovi, J. M., Huffman, J. C., Kochi, J. K., Hilinski, E. F., and Rentzepis, P. M., Picosecond spectroscopy of charge-transfer processes. Photochemistry of anthracene-tetranitromethane EDA complexes, *Chem. Phys. Lett.* **106**, N 1,2, 20–25 (1984) (Eng).
486. Masuhara, H., Shioyama, H., Saito, T., Hamada, K., Yasoshima, S., and Mataga, N., Fluorescence quenching mechanism of aromatic hydrocarbons by closed-shell heavy metal ions in aqueous and organic solutions, *J. Phys. Chem.* **88**, N 24, 5868–5873 (1984) (Eng) (P.A. **88**:31578).
487. Milhailov, Yu. T., and Rylkov, V. V., Concerning the two quanta photoionization of rhodamines in ethanol, *Zh. Prikl. Spektrosk.* **40**, N 4, 635–639 (1984) (Russ).
488. Mishra, A. K., Swaminathan, M., and Dogra, S. K., Some effects of phosphate buffers on the excited state phototropic equilibria in indazole, *J. Photochem.* **26**, N 1, 49–56 (1984) (Eng).
489. Miyagawa, K., Murai, H., and I'Haya, Y. J., Spin-polarized radical pairs transiently produced by the photochemical reaction of benzophenone with aromatic amines, *Chem. Phys. Lett.* **109**, N 1, 97–100 (1984) (Eng).
490. Mordzinski, A., Grabowska, A., and Teuchner, K., Mechanism of excited-state proton transfer in "double" benzoxazoles: bis-2,5-(2-benzoxazolyl) hydroquinone, *Chem. Phys. Lett.* **111**, N 4,5, 383–388 (1984) (Eng).
491. Muralikrishna, U., and Krishnamurthy, M., Spectroscopic studies on the electron donor-acceptor interaction between piperidines and tetrachloro-1,2-benzoquinone, *Spectrochim. acta A* **40**, N 1, 65–68 (1984) (Eng).
492. Nath, D. N., and Chowdhury, M., Effect of environment on the magnetic field modulation of exciplex luminescence, *Chem. Phys. Lett.* **109**, N 1, 13–17 (1984) (Eng).
493. Nowakowska, M., Solvent effect on the quantum yield of the self-sensitized photoperoxidation of 1,3-diphenylisobenzofuran, *J. Chem. Soc. Faraday Trans. I* **80**, N 8, 2119–2126 (1984) (Eng).
494. Op den Brouw, P. M., De Zeeuw, P., and Laarhoven, W. H., Photochemistry of 2-vinylstilbenes: importance of the ground state conformation for the type of photoreaction, *J. Photochem.* **27**, N 3, 327–341 (1984) (Eng).
495. Palmans, J. P., Van der Auweraer, M., Swinnen, A. M., and De Schryver, F. C., Intermolecular exciplex formation between pyrene derivatives and 1,2-dimethylindole, *J. Amer. Chem. Soc.* **106**, N 25, 7721–7728 (1984) (Eng) (P.A. **88**:87105).
496. Phillips, R., Photopolymerization, *J. Photochem.* **25**, N 1, 79–82 (1984) (Eng).
497. Ramesh, V., and Ramamurthy, V., Reactive state selectivity in photodimerization through micellar counter-ion effects: photodimerization of acenaphthylenes, *J. Photochem.* **24**, N 4, 395–402 (1984) (Eng).
498. Rau, H. Further evidence for rotation in the π,π^* and inversion in the n,π^* photoisomerization of azobenzenes, *J. Photochem.* **26**, N 2–3, 221–225 (1984) (Eng).
499. Rebane, K. K., and Palm, V. V., Application of doppler effect for studying narrow photochemical dips in spectra, *Opt. and Spektrosk.* **57**, N 3, 381–383 (1984) (Russ).

500. Riedle, E., Neusser, H. J., and Schlag, E. W., Sub-Doppler spectroscopy of benzene in the 'channel-three' region, *Faraday Disc. Chem. Soc.* N 75, 387–394 (1984) (Eng) (P.A. **87**: 38155).
501. Rumyantsev, B. M., Kuznetsov, V. A., Semyonova, L. V., and Fedotova, E. Ya., Investigation of the photoinduced charge transfer reaction to rhodamine 6G from carbazolyl-containing donors in solution, *Zh. Prikl. Spektrosk.* **40**, N 6, 939–945 (1984) (Russ).
502. Ryzhikov, B. D., Gorbunova, L. Yu., and Karavicheva, T. P., Concerning spectroscopic manifestations of association processes in complex organic compound solutions, *Zh. Prikl. Spektrosk.* **41**, N 6, 1039–1041 (1984) (Russ).
503. Saigusa, H., and Itoh, M., Intermolecular exciplex induced by the formation of a 1-cyanonaphthalene/triethylamine van der Waals complex in a molecular beam, *Chem. Phys. Lett.* **106**, N 5, 391–394 (1984) (Eng) (P.A. **87**: 69164).
504. Saigusa, H., and Itoh, M., Photochemistry of 1-cyanonaphthalene/triethylamine van der Waals complex: Intermolecular exciplex formation under collision free conditions, *J. Chem. Phys.* **81**, N 12, pt. 1, 5692–5699 (1984) (Eng).
505. Sakaguchi, Y., and Hayashi, H., Internal magnetic field effect of lanthanoid ions on the photochemical reaction of naphthoquinone in a micelle, *Chem. Phys. Lett.* **106**, N 5, 420–424 (1984) (Eng).
506. Sandrini, D., Maestri, M., and Moggi, L., Reactivity of trans-β-styrylnaphthalene photosensitized by tris(2,2'-bipyridine)chromium(III), *J. Photochem.* **26**, N 2–3, 203–211 (1984) (Eng).
507. Sato, T., Ogawa, T., and Kano, K., Molecular complexes of anionic porphyrin and anionic aromatics, *J. Phys. Chem.* **88**, N 16, 3678–3682 (1984) (Eng).
508. Scott, G., Photodegradation and photostabilization of polymers, *J. Photochem.* **25**, N 1, 83–90 (1984) (Eng).
509. Simon, J. D., and Peters, K. S., Picosecond dynamics of hydrogen-bond formation to radical anions of aromatic ketones, *J. Phys. Chem.* **87**, N 24, 4855–4857 (1983) (Eng) (P.A. **87**: 41193).
510. Slobodyanik, V. V., Kal'nitskii, A. Ya., Naidyonov, V. P., and Pochinok, V. Ya., Intramolecular exciplex formation in polyvinylcarbazole, *Chem. Phys. Lett.* **106**, N 5, 395–398 (1984) (Eng) (P.A. **87**:68923).
511. Soma, Y., Soma, M., and Harada, I., The reaction of aromatic molecules in the interlayer of transitional-metal ion-exchanged montmorillonite studied by resonance Raman spectroscopy. 1. Benzene and p-phenylenes, *J. Phys. Chem.* **88**, N 14, 3034–3038 (1984) (Eng).
512. Stevens, B., Electron-donor-acceptor orbital correlations. Cofacial isomers of the naphthalene-tetracyanoethylene system in C_{2v} and C_s symmetry, *Chem. Phys. Lett.* **107**, N 3, 235–238 (1984) (Eng) (P.A. **87**:74163).
513. Sundberg, R. L., and Heller, E. J., Predissociation rates as a probe of intramolecular dynamics, *J. Chem. Phys.* **80**, N 8, 3680–3686 (1984) (Eng) (P.A. **87**:69040).
514. Sundström, V., and Gillbro, T., Dynamic of the isomerization of trans-stilbene in n-alcohols studied by ultraviolet picosecond absorption recovery, *Chem. Phys. Lett.* **109**, N 6, 538–543 (1984) (Eng).
515. Syage, J. A., Felker, P. M., and Zewail, A. H., Picosecond dynamics and photoisomerization of stilbene in supersonic beams. 1. Spectra and mode assignments, *J. Chem. Phys.* **81**, N 11, 4685–4705 (1984) (Eng) (P.A. **88**:34606).
516. Syage, J. A., Felker, P. M., and Zewail, A. H., Picosecond dynamics and photoisomerization of stilbene in supersonic beams. 2. Reaction rates and potential energy surface, *J. Chem. Phys.* **81**, N 11, 4706–4723 (1984) (Eng) (P.A. **88**:34607).
517. Syage, J. A., Felker, P. M., and Zewail, A. H., Picosecond excitation and selective intramolecular rates in supersonic molecular beams. 3. Photochemistry and rates of a charge transfer reaction, *J. Chem. Phys.* **81**, N 5, 2233–2256 (1984) (Eng) (P.A. **88**:3869).

518. Tokumura, K., Watanabe, Y., and Itoh, M., A transient absorption and two-step laser excitation fluorescence study of the double proton transfer of 7-azaindole H-bonded dimers in 3-methyl-pentane, *Chem. Phys. Lett.* **111**, N 4,5, 379–382 (1984) (Eng).
519. Turley, W. D., and Offen H. W., Diffusion-controlled quenching in solutions at high pressures, *J. Phys. Chem.* **88**, N 16, 3605–3607 (1984) (Eng) (P.A. **88**:31576).
520. Turro, N. J., Organic photochemical mechanisms, *J. Photochem.* **25**, N 1, 69–72 (1984) (Eng).
521. Waltman, R. J., Diaz, A. F., and Bargon J., Substituent effects in the electropolymerization of aromatic heterocyclic compounds, *J. Phys. Chem.* **88**, N 19, 4343–4346 (1984) (Eng).
522. Waluk, J., Grabowska, A., Pakuła, B., and Sepiot, J., Viscosity vs. Temperature effects in excited-state double proton transfer. Comparison of 1-azacarbazole with 7-azaindole, *J. Phys. Chem.* **88**, N 6, 1160–1162 (1984) (Eng).
523. Watanesk, R., and Wilson, R. S., New approach to single-particle time-correlation function theory: application to intramolecular dephasing in the condensed phase, *Chem. Phys.* **86**, N 3, 407–411 (1984) (Eng) (P.A. **87**:71359).
524. Wismontski-Knittel, T., and Das, P. K., A laser flash photolysis study of triplets of trans-naphthylethylenes. Relative importance of planar and perpendicular forms, *J. Phys. Chem.* **88**, N 13, 2803–2808 (1984) (Eng).
525. Wojnarovits, L., Energy transfer from excited cyclohexane to aromatic solutes, *J. Photochem.* **24**, N 4, 341–353 (1984) (Eng).
526. Yaroslavtsev, V. T., Abakumov, G. A., and Simonov, A. P., Multiphoton dissociative ionization of molecules and laser photolysis of molecular ions of toluene, *Kvantovaya Elektron.* **11**, N 4, 752–756 (1984) (Russ).
527. Zinkovskaya, O. V., Kuznetsova, N. A., and Kaliya, O. L., Concerning the contribution of the singlet oxygen to the photodegradation of some coumarin dyes in aerated solutions, *Zh. Prikl. Spektrosk.* **41**, N 4, 626–630 (1984) (Russ).

3.12. Non-linear spectroscopy

528. Callis, P. R., Two-photon properties of the L_a and L_b bands of substituted benzenes computed from CNDO/S *Chem. Phys. Lett.* **107**, N 2, 125–130 (1984) (Eng).
529. Dick, B., and Hochstrasser, R. M., Absorption and emission spectroscopies of homogeneous and inhomogeneously broadened multilevel systems in strong light fields, *J. Chem. Phys.* **81**, N 7, 2897–2906 (1984) (Eng).
530. Dick, B., and Hochstrasser, R. M., Non-linear spectroscopic studies using sum- and difference-frequency generation, *Chem. Phys.* **91**, N 1, 1–11 (1984) (Eng).
531. Grubb, S. G., Otis, C. E., Haber, K. S., and Albrecht, A. C., The three-photon spectrum of the $^1B_{2u} \leftarrow {}^1A_{1g}$ transition in benzene: Analysis of vibronic and rotational structure, *J. Chem. Phys.* **81**, N 12. pt. 1, 5255–5265 (1984) (Eng).
532. Marconi, G., Salvi, P. R., and Quacquarini, R., Vibronic activity in the two-photon spectrum of pyrene, *Chem. Phys. Lett.* **107**, N 3, 314–321 (1984) (Eng) (P.A. **87**:74156).
533. Matsubara, S., and Takahashi, H., Resonance CARS spectra of the lowest excited singlet states of rhodamines, *Chem. Phys. Lett.* **108**, N 5, 475–479 (1984) (Eng).
534. Riedle, E., Stepp, H., and Neusser, H. J., Heterogeneous perturbations in the doppler-free $S_1 \leftarrow S_0$ two-photon spectrum of benzene: evidence for intrastate coupling, *Chem. Phys. Lett.* **110**, N 5, 452–458 (1984) (Eng).
535. Whetten, R. L., Fu, K.-J., and Grant, E. R., High Rydberg states of jet-cooled toluene observed by ultraviolet two-photon absorption spectroscopy: ultrafast radiationless decay and pseudo-Jahn-Teller effects, *Chem. Phys.* **90**, N 1,2, 155–165 (1984) (Eng).

4. ABSORPTION AND LUMINESCENCE SPECTRA OF INTERMOLECULAR COMPLEXES

4.1. Charge-transfer complexes

536. Abdel-Kader, M. H., Issa, R. M., Ayad, M. M., and Abdel-Mottaleb, M. S., Charge transfer complexes of aromatic nitrocompounds with disubstituted naphthalenes. 1. Spectroscopic investigation of the donor behavior of the 2,6- and 2,3-dimethylnaphthalene, *Z. Naturforsch. A* **39**, N 12, 1274–1278 (1984) (Eng) (P.A. **88**:42266).
537. Janowski, A., Rzeszotarska, J., Makulski, W., and Ranachowski, J., Investigations of the luminescence of N-alkenylcarbazoles and their charge-transfer complexes with 2,4,7-trinitro-9-fluorenone and 7,7,8,8-tetracyanoquinodimethane, *J. Lumin.* **31/32**, pt. 2, 535–537 (1984) (Eng).
538. Reineker, P., Schmid, U., and Kohler, J., ESR line shape and saturation of triplet excitons in molecular pairs, *Mater. Sci.* **10**, N 1–2, 227–230 (1984) (Eng) (P.A. **88**:22285).
539. Reineker, P., Schmid, B. J., and Petelenz, P., Triplet excitations in molecular pairs of anthracene and anthracene/TCNB: Numerical evaluation of charge-transfer contributions and ESR transition energies, *Chem. Phys.* **91**, N 1, 59–67 (1984) (Eng).
540. Schmid, B. J., and Reineker, P., The mixing of Frenkel and charge-transfer excited states. 2. Numerical treatment of non-symmetric dimers, *Phys. status solidi (b)* **125**, N 2, 593–604 (1984) (Eng).

4.2. Excimers, dimers, and other homomolecular complexes

541. Agranovich, V. M., Gartstein, Yu. N., Zakhidov, A., and Bussimer, P., An adiabatic local model for the internal structure of charge-transfer excitons: dimers and trimers, *Chem. Phys. Lett.* **110**, N 3, 270–274 (1984) (Eng) (P.A. **88**:2561).
542. Bornsen, K. O., Selzle, H. L., and Schlag, E. W., The interactions in the benzene dimer in a supersonic jet: study of the S_1 level with isotopic labelling, *Z. Naturforsch. A* **39**, N 12, 1255–1258 (1984) (Eng) (P.A. **88**:42289).
543. Doberer, U., Port, H., and Sauter, R., Triplet-state dimers in isotopically mixed phenazine crystals, *Chem. Phys.* **85**, N 3, 431–441 (1984) (Eng).
544. Engelke, R., Hay, P. J., Kleier, D. A., and Wadt, W. R., Theoretical study of dimeric forms of ground-state benzene molecules, *J. Amer. Chem. Soc.* **106**, N 19, 5439–5446 (1984) (Eng) (P.A. **88**:31428).
545. Haynam, C. A., Brumbaugh, D. V., and Levy, D. H., The spectroscopy, photophysics, and photochemistry of the dimer of dimethyl tetrazine, *J. Chem. Phys.* **81**, N 5, 2282–2294 (1984) (Eng) (P.A. **88**:1399).
546. Islampour, R., and Mukamel, S., Spectral lineshapes of molecular clusters, *Chem. Phys. Lett.* **107**, N 3, 239–244 (1984) (Eng).
547. Knapp, E. W., Lineshapes of molecular aggregates. Exchange narrowing and intersite correlation, *Chem. Phys.* **85**, N 1, 73–82 (1984) (Eng).
548. Knapp, E. W., Scherer, P. O. J., and Fischer, S. F., On the lineshapes of vibronically resolved molecular aggregate spectra. Application of pseudoisocyanin (PIC), *Chem. Phys. Lett.* **111**, N 4,5, 481–486 (1984) (Eng).
549. Law, K. S., Schauer, M., and Bernstein, E. R., Dimers of aromatic molecules: $(Benzene)_2$, $(toluene)_2$, and benzene-toluene, *J. Chem. Phys.* **81**, N 11, 4871–4882 (1984) (Eng).
550. Pawliszyn, J., Szczesniak, M. M., and Scheiner, S., Interactions between aromatic systems: Dimers of benzene and s-tetrazine, *J. Phys. Chem.* **88**, N 9, 1726–1730 (1984) (Eng) (P.A. **87**:102579).

551. Schmid, B. J., and Reineker, P., The mixing of Frenkel and charge-transfer excited states. 2. Numerical treatment of non-symmetric dimers, *Phys. status solidi (b)* **125**, N 2, 593–604 (1984) (Eng).
552. Silberstein, J., Ohmichi, N., and Levine, R. D., The nonstatistical multiphoton ionization-dissociation of the van der Waals toluene dimer, *J. Phys. Chem.* **88**, N 21, 4952–4955 (1984) (Eng).
553. Skorobogatov, G. A., and Dzevitsky, B. E., Stimulated-emission cross-section for excimer-molecule: experiment and theory, *Opt. and Spektrosk.* **57**, N 4, 597–603 (1984) (Russ).
554. Tokumura, K., Watanabe, Y., and Itoh, M., A transient absorption and two-step laser excitation fluorescence study of the doubly proton transfer of 7-azaindole H-bonded dimers in 3-methylpentane, *Chem. Phys. Lett.* **111**, N 4,5, 379–382 (1984) (Eng).
555. Waldmann, J., and Wolf, H. C., Triplet excimers in hexachlorobenzene crystals, *J. Lumin.* **31–32**, pt. 1, 56 (1984) (Eng).
556. Zgierski, M. Z., The effect of dimerization on the resonance Raman excitation profiles of metalloporphyrins, *Chem. Phys. Lett.* **111**, N 6, 553–559 (1984) (Eng).

5. SPECTRA OF PURE MOLECULAR CRYSTALS

5.1. Phonon spectra

557. Albano, A. M., Beckmann, P.A., Carrington, M. E., Fisch, E. E., Fusco, F. A., O'Neill, A. E., and Scott, M. E., Nuclear-spin-relaxation study of internal motion in two organic molecular solids, *Phys. Rev. B* **30**, N 5, 2334–2339 (1984) (Eng).
558. Antsygina, T. N., Slusarev, V. A., Freiman, Yu. A., and Erenburg, A. I., Anharmonic effects in librational motion of N_2-type crystals, *J. Low Temp. Phys.* **56**, N 3/4, 331–354 (1984) (Eng) (P.A. **87**:103892).
559. Belushkin, A. V., Natkaniec, I., Wasicki, J., and Zaleski, T., The phonon density of states near the structural phase transition of solid biphenyl, *Phys. status solidi (b)* **123**, N 2, K115–K118 (1984) (Eng) (P.A. **87**:88251).
560. Corn, R. M., Shannon, V. L., Snyder, R. G., and Strauss, H. L., Orientational dynamics and disorder of solid adamantane as studied by infrared spectroscopy, *J. Chem. Phys.* **81**, N 12, pt. 1, 5231–5238 (1984) (Eng) (P.A. **88**:44710).
561. Goel, R. K., and Sharma, S. K., Electronic and laser Raman spectra and thermodynamic functions of some di-substituted pyridines, *Indian J. Pure and Appl. Phys.* **22**, N 5, 257–264 (1984) (Eng).
562. Gottfried, N. H., Scilmeier, A., and Kaiser, W., Transient internal temperature of anthracene after picosecond infrared excitation, *Chem. Phys. Lett.* **111**, N 4,5, 326–332 (1984) (Eng).
563. Gruger, A., Romain, F., Le Calve, N., Crystalline polymorphism of the first seven members of the series of 4,4′-di-n-alkoxyazoxybenzenes. 1. Differential calorimetry and Raman spectroscopy (lattice modes), *Mol. Cryst. and Liquid Cryst.* **116**, N 1–2, 57–84 (1984) (Fr) (P.A. **88**:43830).
564. Gruger, A., Romain, F., and Le Calve, N., Crystalline polymorphism of the first seven members of the series of 4,4′-di-n-alkoxyazoxybenzenes. 2. Study of internal modes (IR and Raman spectroscopies), *Mol. Cryst. and Liquid Cryst.* **116**, N 1–2, 85–109 (1984) (Fr) (P.A. **88**:43831).
565. Heidemann, A., Lushington, K. J., Morrison, J. A., Neumaier, K., and Press, W., Rotational tunneling in CH_4 at temperatures below 1 K studied by inelastic neutron scattering, *J. Chem. Phys.* **81**, N 12, pt. 1, 5799–5804 (1984) (Eng).
566. Huang, K., Statistical distribution of phonons emitted in multiphonon transitions, *J. Lumin.* **31/32**, pt. 2, 738—743 (1984) (Eng).

567. Joannidou, M., and Fillaux, F., Infrared and Raman spectra of crystalline dimethylarsenic acid OH (OD) stretching band profiles and proton dynamics, *J. Chim. phys. et phys.-chim. biol.* **81**, N 6, 397–406 (1984) (Eng) (P.A. **88**:44712).
568. Kobashi, K., and Etters, R. D., Lattice dynamics of solid I_2 under high pressure. In: High pressure in science and technology. Proceedings of the 9th AIRAPT international high pressure conference, Albany, NY, USA, 24–29 July 1983. New York, USA: North-Holland, 319–322, pt. 3 (1984) (Eng) (P.A. **88**:38403).
569. Kuok, M. H., Looi, E. C., Tang, S. H., Lin, C. T., and Caetano, C. A., Raman studies of lattice vibrations in weak charge-transfer complexes: naphthalene-tetrachlorophthalic anhydride, *Chem. Phys. Lett.* **109**, N 6, 615–619 (1984) (Eng).
570. Lauter, H. J., and Jobic, H., High-resolution neutron inelastic scattering from hexamethylenetetramine, *Chem. Phys. Lett.* **108**, N 4, 393–396 (1984) (Eng).
571. Ouillon, R., Ranson, P., and Califano, S., Temperature dependence of the bandwidths and frequencies of some anthracene phonons. High-resolution Raman measurements, *Chem. Phys.* **91**, N 1, 119–131 (1984) (Eng).
572. Petzelt, J., Goncharov, Yu. G., Kozlov, G. V., Volkov, A. A., Wyncke, B., and Brehat, F., Soft mode behaviour in benzil, Czech. *J. Phys. B* **34**, N 8, 887–890 (1984) (Eng) (P.A. **88**:38399).
573. Ram Singh, S., Singh, I. S., and Shamir, J., The polarised Raman and infrared spectra of para-dibromobenzene single crystal, *J. Sci. Res. Banaras Hindu Univ.* **30**, N 2, 41–64 (1979–1980) (Eng) (P.A. **87**:46251).
574. Ranson, P., Ouillon, R., and Califano, S., Vibrational relaxation in molecular crystals. High-resolution Raman band profiles of some naphthalene and naphthalene-d_8 phonons at low temperature, *Chem. Phys.* **86**, N 1,2, 115–126 (1984) (Eng).
575. Schosser, C. L., and Dlott, D. D., Temperature dependent libron relaxation in naphthalene, *J. Chem. Phys.* **80**, N 3, 1369–1370 (1984) (Eng) (P.A. **87**:39410).
576. Sheka, E. F., Bokhenkov, E. L., Dorner, B., Kalus, J., Mackenzie, G. A., Natkaniec, I., Pawley, G. S., and Schmelzer, U., Anharmonicity of phonons in crystalline naphthalene, *J. Phys. C: Solid State Phys.* **17**, N 33, 5893–5914 (1984) (Eng) (P.A. **88**:21597).
577. Shimizu, H., and Matsumoto, K., High-pressure Raman study of liquid and molecular crystals at room temperature. 3. Chloroform and chloroform-d, *J. Phys. Chem.* **88**, N 14, 2934–2936 (1984) (Eng) (P.A. **88**:22418).
578. Sidorov, N. V., The investigation of phase transitions in crystals involving conformational unstable molecules on the basis of temperature changes in the Raman spectra, *Zh. Prikl. Spektrosk.* **40**, N 1, 119–124 (1984) (Russ).
579. Singh, R. K., and Neb, D. K., Mean square displacements of rare gas solids, *Phys. status solidi (b)* **126**, N 1, K15–K18 (1984) (Eng) (P.A. **88**:38401).
580. Trout, T. J., Velsko, S., Bozio, R., Decola, P. L., and Hochstrasser, R. M., Nonlinear Raman study of line shapes and relaxation of vibrational states of isotopically pure and mixed crystals of benzene, *J. Chem. Phys.* **81**, N 11, 4746–4759 (1984) (Eng) (P.A. **88**:34004).
581. Zelsmann, H. R., Excoffon, P., and Marechal, Y., Far-infrared spectra of imidazole monocrystals, *Chem. Phys. Lett.* **110**, N 3, 285–290 (1984) (Eng) (P.A. **88**:3239).

5.2. Electronic and vibronic states and absorption spectra

582. Averjushkin, A. S., Verbitsky, S. S., Vitukhnovsky, A. G., and Zhevandrov, N. D., Anisotropic transfer of the electron excitation energy in organic crystals, *Mater. Sci.* **10**, N 1–2, 15–18 (1984) (Eng) (P.A. **88**:22479).

583. Bitterling, K., Van der Auweraer, M., and Willig, F., Time-resolved hole injection from a monomolecular dye layer into an anthracene crystals, *Mater. Sci.* **10**, N 1–2, 27–30 (1984) (Eng) (P.A. **88**:21908).
584. Corn, R. M., Romagnoli, M., Levenson, M. D., and Philpott, M. R., Second harmonic generation at thin film electrodes via surface polaritons, *J. Chem. Phys.* **81**, N 9, 4127–4132 (1984) (Eng).
585. Drajeva, L. I., and Klein-Szymanska, B., Dark conductivity in crystalline poly(N-vinylcarbazole) layers, *Dokl. Bolg. Akad. Nauk* **37**, N 1, 35–38 (1984) (Eng).
586. Fugol', I. Ya., and Stepanenko, V. M., The coexistence of zone and self-localized exciton states in vibronic spectra of nitrogen cryocrystals, *Solid State Communs* **49**, N 8, 837–841 (1984) (Eng).
587. Honma, A., 0-99 energy bands of the Frenkel excitons in complex crystal lattices and the effect of medium on exciton energies, *Res. Rep. Fac. Eng. Meiji Univ. N* **45**, 1–12 (1983) (Jap) (P.A. **87**:75865).
588. Iguchi, K., and Kato, H., Two-soliton state of the exciton in polyacetylene, *Chem. Phys.* **88**, N 2, 315–322 (1984) (Eng).
589. Kojima, K., Suzuki, K., and Okada, I., Effect of specimen size on photoplastic effects in anthracene crystals, *J. Appl. Phys.* **56**, N 4, 927–931 (1984) (Eng) (P.A. **87**:103858).
590. Lagos, R. E., and Friesner, R. A., Vibronic excitons in crystalline anthracene, *J. Lumin.* **31/32**, pt. 2, 618 (1984) (Eng).
591. Law, K. S., Prasad, P. N., Martin, K. A., and Nishimura, A. M., Spin coherence in crystalline complexes. Naphthalene: 2(1,4-di-iodotefrafluorobenzene), *Chem. Phys. Lett.* **103**, N 6, 517–522 (1984) (Eng).
592. Matnishyan, A. A., and Grigoryan, L. S., Synthesis, spectral and electrical properties of new conductive polyatomic materials, *Mater. Sci.* **10**, N 1–2, 181–184 (1984) (Eng) (P.A. **88**:22428).
593. Matsui, A., Mizuno, K., and Nishimura, H., Zero-phonon lines associated with self-trapped exciton states and exciton dynamics in β-perylene, *J. Phys. Soc. Jap.* **53**, N 8, 2818–2827 (1984) (Eng) (P.A. **87**:108781).
594. Mizuno, K., Matsui, A., and Sloan, G. J., Intermediate exciton-phonon coupling in tetracene, *J. Phys. Soc. Jap.* **53**, N 8, 2799–2806 (1984) (Eng) (P.A. **87**:108780).
595. Morikawa, E., and Kotani, M., Two-photon absorption coefficient in p-terphenyl crystal determined through three-photon carrier generation, *Chem. Phys. Lett.* **105**, N 4, 391–394 (1984) (Eng).
596. Nowak R., and Poprawski, R., Pyroelectric properties of the molecular crystal N-isopropylcarbazole, *Ferroelectr. Lett. Sect.* **1**, N 5–6, 175–178 (1984) (Eng) (P.A. **87**:35370).
597. Ostapenko, N. I., Skryshevsky, Yu. A., and Shpak, M. T., p-terphenyl absorption spectra within a 5–300 K temperature range, *Ukr. Fiz. Zh.* **29**, N 4, 502–506 (1984) (Russ) (P.A. **87**:71421).
598. Piryatinskii, Yu. P., and Chayanov, B. A., Electronic properties of crystalline films of substituted diphenyl, *Khim. Fiz.* **3**, N 6, 858–866 (1984) (Russ).
599. Port, H., Walker, B., and Wolf, H. C., Time resolved excimer dynamics in perylene crystals, *J. Lumin.* **31/32**, pt. 2, 780–782 (1984) (Eng).
600. Ray, A. K., Trickey, S. B., and Kunz, A. B., Optical absorption of solid xenon at high pressure, *Phys. status solidi (b)* **121**, N 1, K47–K50 (1984) (Eng).
601. Razi Naqvi, K., Adili, M. S., and Abu-Zeid, M. E., Photoacoustic spectroscopy of naphthalene and 2-naphthol, *Chem. Phys. Lett.* **111**, N 3, 279–283 (1984) (Eng).
602. Shimizu, M., Igarashi, R., Adachi, Y., and Maeda, S., Two-photon absorption spectra of single crystalline anthracene by CARS and CSRS and observation of a charge-transfer band, *J. Chem. Phys.* **80**, N 1, 18–22 (1984) (Eng) (P.A. **87**:40432).
603. Signerski, R., and Kalinowski, J., Magnetic field effects on photovoltage in crystalline films of tetracene, *Mater. Sci.* **10**, N 1–2, 249–253 (1984) (Eng) (P.A. **88**:22062).

604. Silinsh, E. A., Muzikante, I. J., Rampans, A. J., and Taure, L. F., Quadrupolar traps for charge carriers in the vicinity of lattice vacancies in pentacene crystals, *Chem. Phys. Lett.* **105**, N 6, 617–620 (1984) (Eng).
605. Themans, B., Andre, J. M., Bredas, J. L., Electronic properties of polyquinolines and poly(2,6-naphthylene), *Solid State Communs* **50**, N 12, 1047–1050 (1984) (Eng).
606. Tokura, Y., Oowaki, Y., Koda, T., and Baughman, R. H., Electro-reflectance spectra of one-dimensional excitons in polydiacetylene crystals, *Chem. Phys.* **88**, N 3, 437–442 (1984) (Eng).
607. Van Kooten, J. F. C., Munowitz, M. G., Schmidt, J., and Benk, H., Exciton dynamics: intraband scattering and trapping in s-tetrachlorobenzene between 0.35K and 1.25K, *Mol. Phys.* **52**, N 6, 1397–1410 (1984) (Eng) (P.A. **87**:108783).
608. Vlasov, G. K., and Kalenkov, S. G., Sources of coherent far-infrared radiation of hot excitons in crystals, *Int. J. Infrared and Millim. Waves* **4**, N 6, 955–960 (1983) (Eng) (P.A. **87**:109213).
609. Waldmann, J., and Wolf, H. C., Triplet excimers in hexachlorobenzene crystals, *J. Lumin.* **31–32**, pt. 1, 56 (1984) (Eng).
610. Wilkinson, F., and Willsher, C. J., Detection of triplet-triplet absorption in microcrystalline benzophenone by diffuse-reflectance laser flash photolysis, *Chem. Phys. Lett.* **104**, N 2, 3, 272–276 (1984) (Eng) (P.A. **87**:46297).
611. Zhukov, V. D., Kurik, M. V., Piryatinskii, Yu. P., and Tsikora, L. I., Exciton reflection spectra of pentacene single crystals at low temperatures, *Fiz. Tverd. Tela* **26**, N 2, 601–603 (1984) (Russ) (P.A. **88**:22453).
612. Zuppiroli, L., Przybylski, M., and Pukacki, W., Extended and localized states, polarons, excitons and solitons in irradiated N-methyl derivatives of pyridinium with TCNQ, *J. phys.* **45**, N 12, 1925–1938 (1984) (Eng).

5.3. Fluorescence and phosphorescence

613. Aaviksoo, J., Lippmaa, J., Freiberg, A., and Anijalg, A., Picosecond time of flight measurement of polaritons in anthracene, *Solid State Communs* **49**, N 2, 115–117 (1984) (Eng).
614. Aaviksoo, Ya. Yu., Lippmaa, Ya. E., Freiberg, A. M., and Aniyalg, A. O., Picosecond time of flight study of polaritons in anthracene, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 3, 550–553 (1984) (Russ).
615. Agostini, G., Corvaja, C., Giacometti, G., and Pasimeni, L., ESR and de ODMR studies of photoexcited triplets in single crystals of t-stilbene-1,2,4,5-tetracyanobenzene (1:2) complex, *Chem. Phys.* **85**, N 3, 421–429 (1984) (Eng).
616. Argyrakis, P., Blumen, A., Kopelman, R., and Zumofen, G., Dynamics of anisotropic exciton hopping in molecular crystals, *J. Phys. Chem.* **88**, N 10, 1973–1976 (1984) (Eng).
617. Avdeenko, A. A., Kul'chitskii, V. A., Levitskii, I. A., and Pakulov, S. N., Effect of a strong magnetic field on the low-temperature exciton phosphorescence of crystalline 4,4'-dichlorobenzophenone, *Pis'ma v. Zh. Tekh. Fiz.* **10**, N 6, 353–357 (1984) (Russ) (P.A. **88**:72543).
618. Avdeenko, A. A., Karachevtsev, V. A., and Naboikin, Yu. V., Spectral-kinetic study on low temperature phosphorescence of crystals of the complex with naphthalene-tetrachlorphthalic anhydride charge transfer, *Ukr. Fiz. Zh.* **29**, N 12, 1873–1875 (1984) (Russ) (P.A. **88**:39289).
619. Benditskii, A. A., Granovskii, A. B., Rukman, G. I., and Stepanov, B. M., Mechanism of luminescence of the surfaces of some materials under the action of laser radiation, *Kvantovaya Elektron.* **11**, N 6, 1269–1270 (1984) (Russ) (P.A. **88**:44766).

620. Bos, F. C., and Schmidt, J., Optical/ESR studies of the 1:1 CT crystal anthracene/TCNB at 1.2 K: Evidence for $n\pi^*$ triplet excitations, *Chem. Phys. Lett.* **108**, N 6, 565–572 (1984) (Eng).
621. Chijiwa, E., and Kotani, M., Observation of anthracene single crystals with delayed fluorescence tomography, *Mol. Cryst. and Liquid Cryst.* **116**, N 1–2, 173–179 (1984) (Eng) (P.A. **88**:44756).
622. Coletti, F., and Debever, J. M., Self-trapping of excitons at the surface of rare gas solids and its manifestation in luminescence and desorption, *J. Lumin.* **31/32**, pt. 2, 927–929 (1984) (Eng).
623. Delyukov, A. A., Klimusheva, G. V., and Tripachko, N. A., Spin-lattice relaxation of local triplet excitations of benzophenon crystal, *Fiz. Tverd. Tela.* **26**, N 7, 2143–2147 (1984) (Russ).
624. Dunlap, D. H., and Kenkre, V. M., Analysis of excimer migration observations in molecular crystals, *J. Lumin.* **31/32**, pt. 2, 753–755 (1984) (Eng).
625. Fugol', I. Ya., and Stepanenko, V. M., Luminescence of nitrogen cryocrystals and N_2-Ar solid solution in vacuum ultraviolet region, *Fiz. Nizk. Temp.* **10**, N 9, 977–988 (1984) (Russ) (P.A. **88**:3272).
626. Gentry, S. T., and Kopelman, R., Triplet exciton transport in isotopic mixed naphthalene crystals. 1. Kinetic analysis of trapping and fusion, *J. Chem. Phys.* **81**, N 7, 3014–3021 (1984) (Eng).
627. Gentry, S. T., and Kopelman, R., Triplet exciton transport in isotopic mixed naphthalene crystals. 2. Master equation analysis, *J. Chem. Phys.* **81**, N 7, 3022–3030 (1984) (Eng).
628. Glushko, E. Ya., Metallic quenching of exciton luminescence in anthracene, *Phys. status solidi (b)* **122**, N 2, 569–580 (1984) (Eng) (P.A. **87**:76517).
629. Hitachi, A., Exciton kinetics in condensed rare gases, *J. Chem. Phys.* **80**, N 2, 745–748 (1984) (Eng) (P.A. **87**:34881).
630. Hoang Ngoc Cam, Nguyen Van Hieu, Nguyen Ai Viet, On the damping of the excitonic polaritons, *Phys. status solidi (b)* **126**, N 1, 247–252 (1984) (Eng).
631. Inoue, K., Sakamoto, H., and Kanzaki, H., Excitation spectrum of the visible luminescence in solid neon, *Solid State Communs* **49**, N 2, 191–193 (1984) (Eng).
632. Inoue, K., Sakamoto, H., and Kanzaki, H., Relaxation processes of electronic excited states in solid neon, argon and krypton, *J. Phys. Soc. Jap.* **53**, N 2, 819–826 (1984) (Eng).
633. Kalinowski, J., Godlewski, J., and Glinski, J., Spatial distribution and diffusion effects of singlet excitons in anthracene crystals, *Acta phys. pol. A* **65**, N 5, 413–430 (1984) (Eng).
634. Kenkre, V. M., and Tsironis, G. P., Proposal for experiments for the investigation of exciton coherence, *J. Lumin.* **31/32**, pt. 2, 615–617 (1984) (Eng).
635. Kenkre, V. M., and Parris, P. E., Usefulness of sensitized luminescence as a probe for exciton motion, *J. Lumin.* **31/32**, pt. 2, 612–614 (1984) (Eng).
636. Kozankiewicz, B., Delayed thermal fluorescence in the charge-transfer crystal pyromellitic dianhydride-hexamethylbenzene, *Mater. Sci.* **10**, N 1–2, 137–140 (1984) (Eng) (P.A. **88**:22480).
637. Kurik, M. V., and Piryatinskii, Yu. P., Luminescence of tetracene crystals, *J. Lumin.* **31/32**, pt. 2, 619–621 (1984) (Eng).
638. Likholit, N. I., Ponath, H.-E., Strizhevskii, V. L., and Yashkir, Yu. N., Transient coherent anti-stokes Raman spectroscopy of surface polaritons, *Phys. status solidi (b)* **123**, N 2, 691–701 (1984) (Eng).
639. Matsui, A., Mizuno, K., and Nishimura, H., Zero-phonon lines associated with self-trapped exciton states and exciton dynamics in β-perylene, *J. Phys. Soc. Jap.* **53**, N 8, 2818–2827 (1984) (Eng) (P.A. **87**:108781).
640. Molenkamp, L. W., and Wiersma, D. A., Optical dephasing by uncorrelated phonon scattering to librations. An optical and picosecond photon echo study of a photosite of pentacene, *J. Chem. Phys.* **80**, N 7, 3054–3063 (1984) (Eng).

641. Nishimura, H., Mizuno, K., and Matsui, A., Luminescence associated with free and bistable self-trapped excitons in β-perylene, *J. Lumin.* **31/32**, pt. 2, 786–788 (1984) (Eng).
642. Nishimura, H., Yamaoka, T., Mizuno, K.-i., Iemura, M., and Matsui, A., Luminescence of free and self-trapped excitons in α- and β-perylene crystals, *J. Phys. Soc. Jap.* **53**, N 11, 3999–4008 (1984) (Eng) (P.A. **88**:34073).
643. Parris, P. E., and Kenkre, V. M., Non-exponential luminescence intensities in exciton trapping: quantitative comparison for triplets in 1,2,4,5-tetrachlorobenzene, *Chem. Phys. Lett.* **107**, N 4, 5, 413–419 (1984) (Eng).
644. Roick, E., Gaethke, R., Gürtler, P., Woodruff, T. O., and Zimmerer, G., Observation of surface-sensitive luminescence in solid argon: relation to self-trapping and relaxation of excitons, *J. Phys. C: Solid State Phys.* **17**, N 5, 945–954 (1984) (Eng).
645. Rose, T. S., Righini, R., and Fayer, M. D., Picosecond transient grating measurements of singlet exciton transport in anthracene single crystals, *Chem. Phys. Lett.* **106**, N 1, 2, 13–19 (1984) (Eng).
646. Schosser, C. L., and Dlott, D. D., A picosecond CARS study of vibron dynamics in molecular crystals: Temperature dependence of homogeneous and inhomogeneous linewidths, *J. Chem. Phys.* **80**, N 4, 1394–1406 (1984) (Eng) (P.A. **87**:46243).

6. SPECTRA OF IMPURITY AND DISORDERED MOLECULAR CRYSTALS

647. Abramczyk, H., Marcinek, A., and Reimschüssel, W., Vibrational relaxation in pyridine-benzene and cyclohexane-carbon tetrachloride systems, *Chem. Phys. Lett.* **108**, N 3, 245–249 (1984) (Eng) (P.A. **87**:87121).
648. Artamonova, O. M., Klindukhov, V. P., Krasheninnikov, A. A., Meister, T. G., and Shablya, A. V., Electronic spectra of systems with intermolecular hydrogen bond. Quasi-line spectrum of carbazole-ammonia complex at 4 K, *Opt. and Spektrosk.* **57**, N 1, 163–166 (1984) (Russ) (P.A. **88**:75324).
649. Bahrdt, J., Kühle, H., Schwentner, N., and Wilcke, H., Vibrational relaxation of N_2 aggregates in rare gas matrices, *J. Lumin.* **31/32**, pt. 2, 599–602 (1984) (Eng).
650. Blumen, A., Zumofen, G., and Klafter, J., Continuous time random walks and the luminescence decay in disordered systems, *J. Lumin.* **31/32**, pt. 2, 639–641 (1984) (Eng).
651. Boeyens, J. C. A., and Levendis, D. C., Static disorder in crystals of the anthracene-tetracyanobenzene charge transfer complex, *J. Chem. Phys.* **80**, N 6, 2681–2688 (1984) (Eng).
652. Bonno, B., Laporte, J. L., and Rousset, Y., Delayed fluorescence of biphenyl-naphthalene mixed crystals: effect of the introduction of quadratic terms in kinetics, *J. chim. phys. et phys.-chim. biol.* **81**, N 3, 157–162 (1984) (Eng) (P.A. **87**:109232).
653. Breinl, W., Friedrich, J., and Haarer, D., Logarithmic decay of photochemically induced two-level systems in an organic glass, *Chem. Phys. Lett.* **106**, N 6, 487–490 (1984) (Eng) (P.A. **87**:77014).
654. Brenner, H. C., and Janes, S. M., The optically detected stimulated spin echo as a probe of triplet energy migration in mixed molecular crystals, *J. Lumin.* **31/32**, pt. 2, 756–758 (1984) (Eng).
655. Brovchenko, I. V., Valkunas, L. L., Vektaris, G. B., Ostapenko, N. I., and Shpak, M. T., Exciton and totally-symmetric phonon bound states near by defects of naphthalene crystals, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **39**, N 3, 105–107 (1984) (Russ) (P.A. **87**:108782).

656. Chen Hong, Wu Xiang, A microscopic model of atomic tunneling states in amorphous solids, *Commun. Theor. Phys.* **3**, N 3, 275–281 (1984) (Eng) (P.A. **88**:21603).
657. Chronister, E. L., Hill, J. R., and Dlott, D. D., Vibrational relaxation in isotopically disordered naphthalene crystals, *J. Lumin.* **31/32**, pt. 2, 622–624 (1984) (Eng).
658. Clemens, J. M., Hochstrasser, R. M., and Trommsdorff, H. P., Direct studies of proton tunneling in hydrogen bonded mixed molecular crystals by optical excitation, *J. Chem. Phys.* **80**, N 5, 1744–1753 (1984) (Eng).
659. Corn, R. M., Shannon, V. L., Snyder, R. G., and Strauss, H. L., Orientational dynamics and disorder of solid adamantane as studied by infrared spectroscopy, *J. Chem. Phys.* **81**, N 12, pt. 1, 5231–5328 (1984) (Eng) (P.A. **88**:44710).
660. Denisov, V. N., Mavrin, B. N., Podobedov, V. B., Sterin, Kh. E., and Varshal, B. G., Law of conservation of momentum and rule of mutual exclusion for vibrational excitations in hyper-Raman and Raman spectra of glasses, *J. Non-Cryst. Solids* **64**, N 1, 2, 195–210 (1984) (Eng).
661. Depondt, Ph., Debeau, M., and Pick, R. M., Temperature dependence of internal bandwidths in plastic adamantane by Raman light scattering, *J. Phys. Lett.* **45**, N 13, L685–L691 (1984) (Eng).
662. Descamps, M., Caucheteux, C., Odou, G., and Sauvajol, J. L., Local molecular order in the glassy crystalline phase of cyanoadamantane: diffuse X-ray scattering analysis, *J. Phys. Lett.* **45**, N 14, L719–L727 (1984) (Eng).
663. Despres, A., Lejeune, V., Migirdicyan, E., Mijoule, C., Marconi, G., Orlandi, G., Siebrand, W., and Zgierski, M. Z., Analysis of vibronic intensities in the phosphorescence spectrum of dimethylbenzaldehydes in durene, *Chem. Phys.* **88**, N 2, 229–245 (1984) (Eng).
664. Despres, A., Lejeune, V., Migirdicyan, E., and Siebrand, W., Site-selected fluorescence and fluorescence-excitation spectra of O-durylene-h_{12} and -d_{12} in n-hexane at 5-10 K, *Chem. Phys. Lett.* **111**, N 3, 201–206 (1984) (Eng).
665. Doberer, U., Port, H., and Sauter, R., Triplet-state dimers in isotopically mixed phenazine crystals, *Chem. Phys.* **85**, N 3, 431–441 (1984) (Eng).
666. Doberer, U., and Port, H., Triplet states in isotopically mixed naphthalene crystals: high resolution optical spectroscopy, *Z. Naturforsch. A* **39**, N 5, 413–426 (1984) (Eng) (P.A. **87**:75863).
667. Dubinin, N. V., and Surin, N. M., Stark effect of solid molecular solutions and impurity centers of 3, 4-benzopyrene at room and liquid nitrogen temperatures, *Zh. Prikl. Spektrosk.* **40**, N 3, 425–431 (1984) (Russ).
668. Dubost, H., Vibrational excitation dynamics of small molecular impurities in crystals, *J. Lumin.* **31/32**, pt. 1, 59–64 (1984) (Eng).
669. Duppen, K., Weitekamp, D. P., and Wiersma, D. A., Picosecond tri-transition and two-color photon echoes in a doped molecular solid, *Chem. Phys. Lett.* **106**, N 3, 147–152 (1984) (Eng).
670. Duppen, K., Weitekamp, D. P., and Wiersma, D. A., Two-color picosecond stimulated photon echoes in solids, *Chem. Phys. Lett.* **108**, N 6, 551–554 (1984) (Eng).
671. Ebeid, E-Z. M., and Bridge, N. J., Luminescence and lifetime measurements of 2, 5-distyrylpyrazine (DSP), 1, 4-bis(β-pyridyl-2-vinyl)benzene (P2VB) and their mixed crystals in the temperature range 8–300 K, *J. Chem. Soc. Faraday Trans. I* **80**, N 5, 1113–1122 (1984) (Eng).
672. Friedrich, J., and Haarer, D., Ground state tunneling and optical spectral diffusion in organic glasses, *J. Chem. Phys.* **80**, N 7, 3496–3497 (1984) (Eng) (P.A. **87**:71952).
673. Fugol', I. Ya., and Stepanenko, V. M., Luminescence of nitrogen cryocrystals and N_2-Ar solid solution in vacuum ultraviolet region, *Fiz. Nizk. Temp.* **10**, N 9, 977–988 (1984) (Russ) (P.A. **88**:3272).
674. Fünfschilling, J., and Zschokke-Gränacher, I., The temperature dependence of phosphorescence lines in glassy matrices, *Chem. Phys. Lett.* **110**, N 3, 315–318 (1984) (Eng) (P.A. **88**:1393).

675. Galanin, M. D., and Khan-Magometova, Sh. D., Polariton energy transfer to impurity in tetracene doped anthracene crystals, *Solid State Communs* **49**, N 7, 655–657 (1984) (Eng) (P.A. **87**:46329).
676. Galperin, Yu. M., Gurevich, V. L., and Parshin, D. A., About low-temperature thermal expansion of glasses, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **40**, N 7, 283–286 (1984) (Russ).
677. Gentry, S. T., and Kopelman, R., Exciton energy funnels in β-methylnaphthalene-doped naphthalene crystals, *J. Phys. Chem.* **88**, N 15, 3170–3172 (1984) (Eng) (P.A. **88**:21904).
678. Ghosh, S., Weers, J. G., Petrin, M., and Maki, A. H., Anisotropic spin-lattice relaxation in the triplet state of naphthalene-h_8 in n-pentane, *Chem. Phys. Lett.* **108**, N 1, 87–93 (1984) (Eng).
679. Hsu, D., and Skinner, J. L., On the thermal broadening of zero-phonon impurity lines in absorption and fluorescence spectra, *J. Chem. Phys.* **81**, N 4, 1604–1613 (1984) (Eng) (P.A. **87**:109216).
680. Hsu, D., and Skinner, J. L., Thermal zero-phonon line widths of impurities in crystals: theory and experiment, *J. Lumin.* **31/32**, pt. 2, 750–752 (1984) (Eng).
681. Huang, T.-H., Chen, W.-H., Rieckhoff, K. E., and Voigt, E. M., Resonance Raman, fluorescence, and phosphorescence of palladium phthalocyanine in Shpol'skii matrices, *J. Chem. Phys.* **80**, N 9, 4051–4064 (1984) (Eng).
682. Janes, S. M., and Brenner, H. C., Spin coherence studies of a quasi-one-dimensional crystal: trap-to-trap energy migration and stimulated echo decay, *Chem. Phys.* **91**, N 3, 449–458 (1984) (Eng) (P.A. **88**:33474).
683. Jankowiak, R., and Bassler, H., Energy-dependent triplet exciton diffusion in an amorphous organic solid (2- bromonaphthalene), *Mater. Sci.* **10**, N 1–2, 113–115 (1984) (Eng) (P.A. **88**:21910).
684. Jankowiak, R., Ries, B., and Bässler, H., Spectral diffusion and triplet exciton localization in an organic glass, *Phys. status solidi (b)* **124**, N 1, 363–371 (1984) (Eng).
685. Jankowiak, R., and Bässler, H., Structure-dependent site reorientation of tetracene in different p-terphenyl matrices, *Chem. Phys.* **89**, N 1, 81–92 (1984) (Eng) (P.A. **87**:107386).
686. Kakas, M., Janic, I., Kawski, A., and Gryczynski, I., Quasi-linear phosphorescence spectra of benzo[c]quinoline and 3-methyl-benzo[f]quinoline in n-paraffins at 77 K, *Acta phys. pol. A* **65**, N 5, 443–450 (1984) (Eng).
687. Kharlamov, B. M., Alshits, E. I., and Personov, R. I., Hole burning and broad outline transformation of molecule absorption bans in solutions, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 7, 1313–1321 (1984) (Russ).
688. Kharlamov, B. M., Alshits, E. I., and Personov, R. I., Zeeman effect in the phosphorescence spectra of complex molecules in disordered media on selective excitation, *Zh. Eksp. and Teor. Fiz.* **87**, N 3, 750–762 (1984) (Russ) (P.A. **88**:100054).
689. Kikas, Ya. V., Kaarli, R. K., and Rebane, A. K., On the limiting number of photochemical dips in the inhomogeneously broadened spectrum, *Opt. and Spektrosk.* **56**, N 3, 387–389 (1984) (Russ).
690. Klafter, J., Blumen, A., and Zumofen, G., Energy transfer in fractal structures, *J. Lumin.* **31/32**, pt. 2, 627–633 (1984) (Eng).
691. Knapp, E. W., and Fischer, S. F., Low-temperature emission spectra of disordered solids, *J. Phys. Chem.* **88**, N 12, 2432–2434 (1984) (Eng).
692. Konashenko, V. I., and Nikitin, V. I., On the correlation of "multiplet" components in the Shpolsky-system spectra, *Opt. and Spektrosk.* **56**, N 1, 182–183 (1983) (Russ).
693. Korshunov, M. A., and Shabanov, V. F., Study of paradichlorobenzene solid solutions by low-frequency Raman scattering, *Opt. and Spektrosk.* **57**, N 6, 1029–1032 (1984) (Russ).

694. Kottis, Ph., Rebiere, Y., Dupuy, F., Pee, Ph., and Brown, R., Secondary emission of an isotopic mixed molecular crystal: competition between resonant Raman scattering and relaxed fluorescence, *Mater. Sci.* **10**, N 4, 471–478 (1984) (Eng) (P.A. **88**:91391).
695. Kovaleva, N. N., Meletov, K. P., and Sheka, E. F., Anomalies of the phonon wings in impurity center spectra, *Zh. Eksp. and Teor. Fiz.* **87**, N 6, 2085–2094 (1984) (Russ) (P.A. **89**:4356).
696. Kramarenko, N. L., Mokhir, A. P., and Gluzman, E. M., Electron spectra of organic molecules in liquid-crystal matrices, *Ukr. Fiz. Zh.* **29**, N 8, 1170–1175 (1984) (Russ).
697. Kurnosov, I. V., Levitski, I. A., and Naboikin, Yu. V., Comparison of luminescence characteristics of doped molecular crystals grown by various methods, *Cryst. Res. and Technol.* **19**, N 2, 183–185 (1984) (Eng).
698. Leong, G., and Hanson, D. M., Photophysics of 2,4,5-trimethylbenzaldehyde in durene single crystals, *Chem. Phys.* **86**, N 1,2, 1–7 (1984) (Eng).
699. Libov, V. S., and Tikhomirov, A. Yu., Splitting of frequencies of polarized electron absorption spectra of doped dyes in nematic liquid crystals due to local-field anisotropy, *Opt. and Spektrosk.* **56**, N 4, 631–636 (1984) (Russ) (P.A. **88**:42293).
700. Loring, R. F., Anderson, H. C., and Fayer, M. D., Theory of photon echoes from interacting impurities in crystals with inhomogeneously broadened absorption spectra, *J. Chem. Phys.* **81**, N 12, pt. 1, 5395–5404 (1984) (Eng) (P.A. **88**:44743).
701. Murai, H., Hayashi, T., and I'Haya, Y. J., Time-resolved detection of spin-polarized ESR spectra of 9,10-anthraquinone triplet state in organic glass at 77 K, *Chem. Phys. Lett.* **106**, N 1,2, 139–142 (1984) (Eng).
702. Newhouse, E. I., and Kopelman, R., Fractal-like energy transport and fusion in a naphthalene-doped polymeric glass, *J. Lumin.* **31/32**, pt. 2, 651–653 (1984) (Eng).
703. Newhouse, J. S., and Kopelman, R., Fractal exciton fusion: simulations on long-range percolation clusters, *J. Lumin.* **31/32**, pt. 2, 657–659 (1984) (Eng).
704. Osad'ko, I. S., Tunneling in glasses and anomalous low-temperature broadening of optic impurity lines, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **39**, N 8, 354–357 (1984) (Russ).
705. Patterson, F. G., Lee, H. W. H., Wilson, W. L., and Fayer, M. D., Intersystem crossing from singlet states of molecular dimers and monomers in mixed molecular crystals: picosecond stimulated photon echo experiments, *Chem. Phys.* **84**, N 1, 51–60 (1984) (Eng) (P.A. **87**:40495).
706. Patterson, F. G., Wilson, W. L., Lee, H. W. H., and Fayer, M. D., Optical dephasing of molecular dimers in mixed crystals: picosecond photon echo experiments, *Chem. Phys. Lett.* **110**, N 1, 7–13 (1984) (Eng).
707. Personov, R. I., Selective spectroscopy of complex molecules and its application, *Vestn. Akad. Nauk SSSR N 4*, 49–56 (1984) (Russ).
708. Pinkevich, I. P., and Reshetnyak, V. Yu., Light scattering on impure molecules in nematic liquid crystals, *Ukr. Fiz. Zh.* **29**, N 12, 1803–1807 (1984) (Russ) (P.A. **88**:38179).
709. Primatarova, M. T., Influence of planar defects and disorder on the energy spectrum of molecular crystals, *Phys. status solidi (b)* **121**, N 1, 357–369 (1984) (Eng) (P.A. **87**:39785).
710. Rebane, A. K., and Kaarli, R. K., Picosecond spatially-temporal holography on the basis of photochemical hole burning, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 3, 545–549 (1984) (Russ).
711. Rebane, K. K., and Palm, V. V., Application of Doppler effect for studying narrow photochemical dips in spectra, *Opt. and Spektrosk.* **57**, N 3, 381–383 (1984) (Russ).

712. Rebane, K. K., Laser study of no-phonon lines in the inhomogeneously broadened spectra via photochemical hole burning, *J. Lumin.* **31/32**, pt. 2, 744–749 (1984) (Eng).
713. Reineker, P., Kassner, K., and Morawitz, H., Optical linewidth of guest molecules in organic glasses, *Mater. Sci.* **10**, N 1–2, 221–225 (1984) (Eng) (P.A. **88**:22370).
714. Rima, J., Nakhimovsky, L. A., Lamotte, M., and Joussot-Dubien, J., Evidence for solute-solute interactions in centers responsible for the Shpol'skii effect in solid solutions of phenanthrene and dibenzofuran in n-alkanes, *J. Phys. Chem.* **88**, N 19, 4302–4308 (1984) (Eng) (P.A. **88**:39269).
715. Romanovsky, Yu. V., Personov, R. I., and Bykovskaya, L. A., Polarization of phonon wings in luminescence spectra of complex molecules under selective excitation, *Opt. and Spektrosk.* **57**, N 1, 5–8 (1984) (Russ) (P.A. **88**:75323).
716. Root, L., and Skinner, J. L., Optical dephasing and photon echoes from energetically and substitutionally disordered crystals, *J. Chem. Phys.* **81**, N 12, pt. 1, 5310–5318 (1984) (Eng).
717. Sapozhnikov, M. N., and Alekseev, V. I., Site-selective luminescence spectroscopy of impurity centres in solids: model calculations and experiment, *Chem. Phys. Lett.* **107**, N 3, 265–271 (1984) (Eng) (P.A. **87**:76506).
718. Seidel, H., Mehring, M., and Stehlik, D., Room-temperature kinetics of the photoexcited triplet state of acridine in fluorene crystals as obtained from electron spin echo studies, *Chem. Phys. Lett.* **104**, N 6, 552–559 (1984) (Eng).
719. Shatz, S., and Halpern, V., The trapping of excitons by impurities and its dependence on the impurity concentration, *Chem. Phys.* **91**, N 2, 237–247 (1984) (Eng) (P.A. **88**:21902).
720. Singh, J., Mutual influence of the composite exciton-phonon states and impurity states on the spectra of doped molecular crystals, *Phys. Rev. B* **30**, N 12, 7267–7277 (1984) (Eng) (P.A. **88**:43761).
721. Slobodyanik, V. V., Yashchuk, V. N., Naidyonov, V. P., and Pochinok, V. Ya., Fluorescence and host-guest energy transfer in polymeric chains, *J. Lumin.* **29**, N 3, 309–319 (1984) (Eng).
722. Taliani, C., Bree, A., and Zwarich, R., Laser-excited fluorescence from dibenzofuran in a biphenyl host, *J. Phys. Chem.* **88**, N 11, 2357–2360 (1984) (Eng) (P.A. **87**:107395).
723. Taliani, C., and Bree, A., Resonantly excited defect emission from a biphenyl crystal, *J. Phys. Chem.* **88**, N 1, 2351–2357 (1984) (Eng) (P.A. **87**:109231).
724. Thijssen, H. P. H., Van den Berg, R., and Völker, S., Optical dephasing of impurities in amorphous organic solids down to 0.3 K, *J. Lumin.* **31/32**, pt. 2, 771–773 (1984) (Eng).
725. Treshchalov, A. B., Saturation of guest molecule vibronic transitions as a method for determination of uniform spectral characteristics, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **48**, N 4, 757–764 (1984) (Russ).
726. Trommsdorff, H. P., Casalegno, R., Miller, R. J. D., Clemens, J. M., and Hochstrasser, R. M., Direct optical studies of proton tunneling in hydrogen bonded mixed molecular crystals, *J. Lumin.* **31/32**, pt. 2, 517–524 (1984) (Eng).
727. Trout, T. J., Velsko, S., Bozio, R., Decola, P. L., and Hochstrasser, R. M., Nonlinear Raman study of line shapes and relaxation of vibrational state of isotopically pure and mixed crystals of benzene, *J. Chem. Phys.* **81**, N 11, 4746–4759 (1984) (Eng) (P.A. **88**:34004).
728. Velikaya, E. N., Ostapenko, N. I., Puchkovskaya, G. A., and Shpak, M. T., Manifestation of clusters of indole impurity molecules in IR-spectra of naphthalene-indole systems, *Ukr. Fiz. Zh.* **29**, N 5, 686–691 (1984) (Russ).
729. Vo-Dinh, T., and Wild, U. P., Luminescence of 1,4-naphthoquinone and the vitamin K system in Shpolskii matrices at 4 K, *Spectrochim. acta A* **40**, N 5, 411–418 (1984) (Eng) (P.A. **87**:74290).

730. Wäckerle, G., Zimmermann, H., and Dinse, K. P., Photon-echo experiments on singlet-triplet transitions in organic mixed crystals, *Chem. Phys. Lett.* **110**, N 2, 107–111 (1984) (Eng).
731. Winkler, I. C., and Hanson, D. M., Phosphorescence excitation spectra of methylbenzaldehydes in durene single crystals: site structure and effects of deuterium substitution, *Chem. Phys.* **91**, N 2, 173–181 (1984) (Eng).
732. Zalessky, I. E., and Nizhnikov, V. V., Fine-structure fluorescence spectrum of perylene in a n-heptane single crystal at 4.2 K, VINITI N 2516–84. Dep., *Zh. Prikl. Spektrosk.* **41**, N 2, 331–332 (1984) (Russ).
733. Zander, M., Microcrystal formation and intermolecular triplet-triplet energy transfer in rigid transparent glasses at 77K. The system N-methylcarbazole/naphthalene, *Z. Naturforsch. A 39*, N 5, 507–508 (1984) (Ger) (P.A. **87**:75297).
734. Zander, M., On the concentration dependence of the benzophenone-sensitized naphthalene phosphorescence in a hydrocarbon glass at 77K, *Z. Naturforsch. A* **39**, N 4, 397–398 (1984) (Ger) (P.A. **87**:69135).
735. Zavt, G. S., Plekhanov, V. G., Hizhnyakov, V. V., and Shepelev, V. V., Vibrational relaxation and hot luminescence in impurity centres with a strong vibronic coupling, *J. Phys. C: Solid State Phys.* **17**, N 16, 2839–2858 (1984) (Eng).

7. EXCITON PROBLEM OF MOLECULAR CRYSTALS

7.1. Lattice dynamics and phonon spectra

736. Bachmann, R., and Schulz, H., Anharmonic potentials and pseudo potentials in ordered and disordered crystals, *Acta Crystallogr. A* **40**, N 6, 668–675 (1984) (Eng) (P.A. **88**:21605).
737. Belushkin, A. V., Natkaniec, I., Wasicki, J., and Zaleski, T., The phonon density of states near the structural phase transition of solid biphenyl, *Phys. status solidi (b)* **123**, N 2, K115–K118 (1984) (Eng) (P.A. **87**:88251).
738. Bogani, F., and Salvi, P. R., Fermi resonance in solid CO_2, *J. Chem. Phys.* **81**, N 11, 4991–5001 (1984) (Eng).
739. Botvich, A. N., Shabanov, V. F., Kharitonova, T. A., and Podoprigora, V. G., Studies on the lattice energy and dynamics of a m-brominenitrobenzene crystal using multipoles and point changes, *Kristallografiya* **29**, N 3, 595–597 (1984) (Russ) (P.A. **88**:33114).
740. Briels, W. J., Jansen, A. P. J., and Van der Avoird, A., Ab initio description of large amplitude motions in solid N_2. 3. Libron-phonon coupling, *J. Chem. Phys.* **81**, N 9, 4118–4126 (1984) (Eng) (P.A. **88**:21593).
741. Della Valle, R. G., and Pawley, G. S., Molecular dynamics simulation of crystalline naphthalene, *Acta crystallogr. A* **40**, N 3, 297–305 (1984) (Eng).
742. Della Valle, R. G., and Fracassi, P. F., Polar modes in molecular crystals: Ewald splitting of infrared and Raman lines, *Can. J. Phys.* **62**, N 12, 1237–1247 (1984) (Eng).
743. Deus, P., and Frei, V., Estimation of phonon frequencies and force constants by means of the temperature dependence of the specific heat, *Czech. J. Phys. B* **34**, N 7, 680–693 (1984) (Ger).
744. Dove, M. T., and Pawley, G. S., A molecular dynamics simulation study of the orientationally disordered phase of sulphur hexafluoride, *J. Phys. C: Solid State Phys.* **17**, N 36, 6581–6599 (1984) (Eng).
745. Durman, R., Jayasooriya, U. A., Kettle, S. F. A., Mahasuverachai, S., Mortimer, R., and Norrby, L.-J., Factor group splitting and dispersion on internal vibrational modes: A qualitative discussion, *J. Chem. Phys.* **81**, N 12, pt. 1, 5247–5251 (1984) (Eng) (P.A. **88**:43749).

746. Feldbakh, E. Kh., Lushchik, Ch. B., and Kuusmann, I. L., Coexistence of large and small radii excitons tied with defects in solid state, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **39**, N 2, 54–56 (1984) (Russ).
747. Filippini, G., and Gramaccioli, C. M., Lattice-dynamical calculations for tetracene and pentacene, *Chem. Phys. Lett.* **104**, N 1, 50–53 (1984) (Eng) (P.A. **87**:39409).
748. Fracassi, P. F., Klein, M. L., and Della Valle, R. G., Lattice dynamics of ionic molecular crystals in the rigid ion approximation, phases II and III of sodium superoxide, *Can. J. Phys.* **62**, N 1, 54–64 (1984) (Eng) (P.A. **87**:45281).
749. Fracassi, P. F., and Della Valle, R. G., Potential models and torsional stability in molecular crystals, *Chem. Phys. Lett.* **104**, N 5, 435–439 (1984) (Eng) (P.A. **87**:45274).
750. Frei, F., and Polcik, M., Debye temperatures of cubic crystals estimated from measured phonon frequencies by means of a frequency sum rule, *Czech. J. Phys.* B **34**, N 8, 883–886 (1984) (Eng) (P.A. **88**:38415).
751. Gamba, Z., and Bonadeo, H., Vibrational intensities of lattice modes and the distributed dipole model: Crystalline acetylene, *J. Chem. Phys.* **81**, N 11, 4724–4728 (1984) (Eng) (P.A. **88**:33111).
752. Gantsevich, S. V., Kagan, V. D., Katilius, R., and Rzaev, E. A., Effect of phonon interaction on the width and shape of the Mandelstam-Brillouin light scattering line, *Zh. Eksp. and Teor. Fiz.* **87**, N 5, 1734–1744 (1984) (Russ).
753. Giua, R., and Schettino, V., Polarization interactions in lattice dynamics of molecular crystals, *Chem. Phys. Lett.* **105**, N 1, 86–90 (1984) (Eng).
754. Glushko, E. Ya., Kinetics and luminescence of spatially inhomogeneous excitonic system. Stationary excitonic packets. VINITI N 4007–84. *Dep. Izv. VUZ. Fiz.* N 12, 100 (1984) (Russ).
755. Gramaccioli, C. M., and Filippini, G., Lattice-dynamical calculations for orthorhombic sulfur: A non-rigid molecular model, *Chem. Phys. Lett.* **108**, N 6, 585–588 (1984) (Eng).
756. Grishchuk, V. P., and Slobodyanyuk, A. V., On the determination of Raman-scattering tensor components in gyrotropic crystals, *Opt. and Spektrosk.* **56**, N 4, 681–686 (1984) (Russ).
757. Jansen, A. P. J., Briels, W. J., and Van der Avoird, A., Ab initio description of large amplitude motions in solid N_2. 1. Librons in the ordered α and γ phases, *J. Chem. Phys.* **81**, N 8, 3648–3657 (1984) (Eng).
758. Kitamura, T., A quantum field theory of lattice dynamics at finite temperature, *Physica A* **128**, N 3, 427–446 (1984) (Eng) (P.A. **88**:36363).
759. Kobashi, K., and Etters, R. D., Lattice dynamics of solid I_2 under high pressure. In: High pressure in science and technology. Proceedings of the 9th AIRAPT international high pressure conference, Albany, NY, USA, 24–29 July 1983. New York, *USA: North-Holland,* 319–322, pt. 3 (1984) (Eng) (P.A. **88**:38403).
760. Krivenko, T. A., and Sheka, E. F., Phonon interaction in naphthalene crystal, *Fiz. Tverd. Tela* **26**, N 1, 164–171 (1984) (Russ).
761. Lalov, I. J., Vibrational circular dichroism and vibrational optical rotatory dispersion in molecular crystals. 1. Fundamental tones, *J. Chem. Phys.* **80**, N 3, 1069–1077 (1984) (Eng) (P.A. **87**:40408).
762. Lalov I. J., and Kotzev, J. N., Vibrational circular dichroism and vibrational optical rotatory dispersion in molecular crystals. 2. Selection rules, *J. Chem. Phys.* **80**, N 3, 1078–1082 (1984) (Eng) (P.A. **87**:40409).
763. Lalov, I. J., and Svetogorsky, D. A., Vibrational circular dichroism and vibrational optical rotatory dispersion in molecular crystals. 3. Overtones of nondegenerate vibrations, *J. Chem. Phys.* **80**, N 3, 1083–1088 (1984) (Eng) (P.A. **87**:40410).
764. Meier, R. J., Van Albada, M. P., and Lagendijk, A., Solid oxygen at high pressure and low temperature: Raman observation of librons and vibron, *Phys. Rev. Lett.* **52**, N 12, 1045–1047 (1984) (Eng).

765. Miller, J. H., Mallard, W. G., and Smyth, K. C., Intermolecular potential calculations for polycyclic aromatic hydrocarbons, *J. Phys. Chem.* **88**, N 21, 4963–4970 (1984) (Eng).
766. Neto, N., Finite vibrational displacement in the Eckart-Sayvetz basis, *Chem. Phys.* **91**, N 1, 101–112 (1984) (Eng).
767. Neto, N. Tensor formalism in anharmonic calculations, *Chem. Phys.* **91**, N 1, 89–100 (1984) (Eng).
768. Perrin, B., An additive conservation law for phonon collision operator in molecular crystals. In: Phonon scattering in condensed matter. Proceedings of the fourth international conference, Stuttgart, Germany, 22–26 Aug. 1983. Berlin, Germany: *Springer-Verlag*, 371–373 (1984) (Eng) (P.A. **87**:70310).
769. Ranson, P., Ouillon, R., and Califano, S., Vibrational relaxation in molecular crystals. High resolution Raman band profiles of some naphthalene and naphthalene-d_8 phonons at low temperature, *Chem. Phys.* **86**, N 1,2, 115–126 (1984) (Eng).
770. Rashev, S., Relaxation behavior of a system of coupled vibrations, *Chem. Phys. Lett.* **110**, N 6, 659–662 (1984) (Eng).
771. Righini, R., Calculated lifetimes and linewidth temperature dependence (1.5–150 K) of four internal vibrations of naphthalene crystal, *Chem. Phys.* **84**, N 1, 97–104 (1984) (Eng) (P.A. **87**:39413).
772. Sabirov, R. Kh., Coupled vibrations of phonons and quants of dipole plasma in molecular crystals at low temperatures, *Ukr. Fiz. Zh.* **29**, N 7, 1087–1089 (1984) (Russ) (P.A. **87**:104131).
773. Shimizu, H., and Miyahara, N., High-pressure Raman study of liquid and molecular crystal at room temperature. 1,2-dibromoethane, *Chem. Phys. Lett.* **110**, N 6, 615–620 (1984) (Eng).
774. Skrinjar, M. J., Kapor, D. V., Skrbic, Z. M., and Setrajcic, J. P., On the problem of exciton coupling in molecular crystals, *Phys. status solidi (b)* **125**, N 2, K151–K154 (1984) (Eng).
775. Strizhevsky, V. L., and Sugakova, N. A., Broadening of Raman-scattering spectrum in finite molecular crystals, *Opt. and Spektrosk.* **57**, N 2, 260–264 (1984) (Russ).
776. Tse, W. S., Lattice dynamics of solid hydrogen chloride, *Chem. Phys. Lett.* **112**, N 6, 524–528 (1984) (Eng) (P.A. **88**:38400).
777. Van der Avoird, A., Briels, W. J., and Jansen, A. P. J., Ab initio description of large amplitude motions in solid N_2. 2. Librons in the β-phase and the α-β phase transition, *J. Chem. Phys.* **81**, N 8, 3658–3665 (1984) (Eng).
778. Walmsley, S. H., A Hamiltonian describing molecular orientation for use in lattice dynamics of molecular crystals and other problems, *Chem. Phys. Lett.* **110**, N 2, 159–162 (1984) (Eng) (P.A. **88**:2559).
779. Williams, D. E., and Cox, S. R., Nonbonded potentials for azahydrocarbons: the importance of the Coulombic interaction, *Acta crystallogr. B* **40**, N 4, 404–417 (1984) (Eng).
780. Zavorotnev, Yu. D., Ovander, L. N., and Stefanovich, L. I., Effect of biphonon states on Raman scattering in molecular crystals, *Opt. and Spektrosk.* **57**, N 5, 831–836 (1984) (Russ) (P.A. **88**:102479).

7.2. Singlet exciton and cooperative effect

781. Abarenkov, I. V., and Bulatov, V. L., Surface excitons of intermediate radius in one-dimensional crystal, *Vestn. Leningr. Univ. Fiz., Khim. N* 3, 83–85 (1984) (Russ).

782. Agranovich, V. M., and Zakhidov, A. A., Electron-exciton complexes in organic semiconductors: site Hamiltonian and complexes in *CT-crystals*, *Mater. Sci.* **10**, N 1–2, 5–8 (1984) (Eng) (P.A. **88**:21907).
783. Agranovich, V. M., Kravtsov, V. E., Leskova, T. A., Mal'shukov, A. G., Hernandez-Cocoletzi, G., and Maradudin, A. A., Impedance of a thin film in the presence of spatial dispersion and the problem of additional boundary conditions, *Phys. Rev. B* **29**, N 2, 976–982 (1984) (Eng).
784. Andreev, V., and Pope, M., Generation of hot free electrons due to the interaction between charge-transfer excitons and thermalized free electrons in molecular crystals, *Phys. status solidi (b)* **125**, N 2, 573–581 (1984) (Eng).
785. Antonyuk, B. P., Bistability and jump-like change of luminescence quantum efficiency, *Fiz. Tverd. Tela* **26**, N 6, 1901–1903 (1984) (Russ) (P.A. 88:39287).
786. Arutyunyan, G. M., and Nerkararyan, Kh. V., Surface polaritons in periodic structures, *Opt. and Spektrosk.* **56**, N 1, 167–169 (1984) (Russ).
787. Ayukhanov, R. A., Gulyaev, Yu. V., and Shkerdin, G. N., Theory of photoelasticity of piezoelastic crystals in the excition resonance region, *Fiz. and Tekh. Poluprovodn.* **18**, N 9, 1688–1690 (1984) (Russ) (P.A. **88**:55818).
788. Brancus, D. E. N., Polaritons in uniaxial crystals, *Rev. roum. phys.* **29**, N 9, 815–822 (1984) (Eng).
789. Brizhik, L. S., and Davydov, A. S., The nonlinear theory of conductivity in one-dimensional molecular crystals, *Fiz. Nizk. Temp.* **10**, N 4, 358–366 (1984) (Russ).
790. Brizhik, L. S., On the theory of ultracold neutrons scattering by Davydov solitons, *Ukr. Fiz. Zh.* **29**, N 4, 492–498 (1984) (Russ).
791. Bulatov, V. L., Tight-binding approximation for surface excitons in one-dimensional insulator, *Fiz. Tverd. Tela* **26**, N 8, 2480–2486 (1984) (Russ).
792. D'Andrea, A., and Del Sole, R., New insight on exciton-polaritons based on a microscopic approach, *Phys. Rev. B* **29**, N 8, 4782–4785 (1984) (Eng) (P.A. **87**:70667).
793. Davydov, A. S., and Zolotariuk, A. V., Subsonic and supersonic solitons in nonlinear molecular chains, *Phys. Scr.* **30**, N 6, 426–430 (1984) (Eng) (P.A. **88**:38705).
794. Dovgalenko, G. E., and Kukhtarev, N. V., Transformation of energy, polarization and phases with self-diffraction of light waves in gyrotropic crystals, *Ukr. Fiz. Zh.* **29**, N 6, 938–941 (1984) (Russ).
795. Dubinin, N. V., Dipole moments of molecular crystals and aggregates without using Heitler-London approximation, *Opt. and Spektrosk.* **56**, N 3, 537–539 (1984) (Russ) (P.A. **88**:44060).
796. Ekhilevsky, S. G., and Ovander, L. N., Light absorption in a sinusoidally modulated molecular crystal, *Opt. and Spektrosk.* **57**, N 4, 640–642 (1984) (Russ).
797. Ekhilevsky, S. G., and Ovander, L. N., The Rayleigh scattering of light in a sinusoidally modulated molecular crystal, *Ukr. Fiz. Zh.* **29**, N 2, 183–187 (1984) (Russ).
798. Elyutin, P. V., On the kinetics of bimolecular quenching of incoherent excitons, *J. Phys. C: Solid State Phys.* **17**, N 11, 1867–1873 (1984) (Eng) (P.A. **87**:70661).
799. Gadomskaya, I. V., Gadomsky, O. N., Samartsev, V. V., Reversal of exciton jets in crystals of small thickness, *Opt. and Spektrosk.* **57**, N 2, 177–179 (1984) (Russ).
800. Gotthard, L., Theoretical investigation of amplitudes and phases in exciton reflection spectra, *Solid State Communs* **51**, N 12, 975–978 (1984) (Eng) (P.A. **88**:3222).
801. Gu, S. W., and Ban, S. L., The ground state effective hamiltonian of the strong coupling one-dimensional optical exciton, *Phys. status solidi (b)* **122**, N 1, K41–K44 (1984) (Eng).
802. Halevi, P., and Fuchs, R., Generalized additional boundary condition for nonlocal dielectrics. 1. Reflectivity, *J. Phys. C: Solid State Phys.* **17**, N 21, 3869–3888 (1984) (Eng).

803. Halevi, P., and Fuchs, R., Generalized additional boundary condition for nonlocal dielectrics. 2. Surface polaritons, *J. Phys. C: Solid State Phys.* **17**, N 21, 3889–3901 (1984) (Eng).
804. Hitachi, A., Exciton kinetics in condensed rare gases, *J. Chem. Phys.* **80**, N 2, 745–748 (1984) (Eng) (P.A. **87**:34881).
805. Howard, I. A., and Conwell, E. M., Intersoliton hopping transport of electrons in molecular crystals, *Phys. Rev. B* **29**, N 12, 6879–6889 (1984) (Eng).
806. Ito, H., Terai, A., Ono, Y., and Wada, Y., Linear mode analysis around a soliton in trans-polyacetylene (CH), *J. Phys. Soc. Jap.* **53**, N 10, 3520–3531 (1984) (Eng) (P.A. **88**:38412).
807. Jalbert, G., and Brandi, H. S., Absorption of circularly polarized light by solids, *Phys. status solidi (b)* **125**, N 2, 605–611 (1984) (Eng).
808. Kosevich, A. M., Starik, V. P., Nonlinear waves in a molecular crystal with quantized tunnel states, *Zh. Eksp. and Teor. Fiz.* **86**, N 6, 2282–2292 (1984) (Russ) (P.A. **88**:85637).
809. Kruglov, V. I., On the theory of solitary wave excitation in molecular crystals by a coherent electromagnetic field, *Phys. status solidi (b)* **124**, N 1, 127–136 (1984) (Eng).
810. Luty, T., and Eckhardt, C. J., Modulated piezoreflectivity and the photoelasticity of molecular crystals, *J. Chem. Phys.* **81**, N 1, 520–529 (1984) (Eng).
811. Matsushita, M., and Nakayama, M., Theory of resonant light scattering through exciton-polaritons, *Phys. Rev. B* **30**, N 4, 2074–2083 (1984) (Eng) (P.A. **87**:109204).
812. Mattis, D. C., and Gallinar, J.-P., What is the mass of an exciton? *Phys. Rev. Lett.* **53**, N 14, 1391–1393 (1984) (Eng).
813. Munn, R. W., Cross section of quadrupolar traps for charge carriers in molecular crystals, *Chem. Phys.* **85**, N 1, 113–116 (1984) (Eng).
814. Nguyen Van Hieu, and Ha Vinh Tan, Polariton effect in non-linear acousto-optical phenomena, *Phys. status solidi (b)* **125**, N 1, 245–250 (1984) (Eng).
815. Pekar, S. I., and Tsekvava, B. E., Introduction of spatial dispersion in the permittivity of a crystal in the spectral range of randomly vicinal exciton resonances, *Zh. Eksp. and Teor. Fiz.* **87**, N 3, 1046–1057 (1984) (Russ).
816. Petelenz, P., Optical detrapping in molecular crystals. 2. Second conduction band, *Phys. status solidi (b)* **125**, N 2, 765–771 (1984) (Eng).
817. Petelenz, P., Polarization effects in molecular crystals, *Chem. Phys. Lett.* **103**, N 5, 369–372 (1984) (Eng).
818. Reineker, P., and Schmid, B. J., The mixing of Frenkel and charge-transfer excited states. 1. General treatment of singlet and triplet excitations and analytic solutions of simple models, *Phys. status solidi (b)* **124**, N 2, 657–671 (1984) (Eng) (P.A. **87**:108784).
819. Schmid, B. J., and Reineker, P., The mixing of Frenkel and charge-transfer excited states. 2. Numerical treatment of non-symmetric dimers, Phys. status solidi (b) **125**, 593 (1984). Erratum: *Phys. status solidi (b)* **127**, N2, 735 (1985) (Eng).
820. Shen, T. P., Wallis, R. F., and Maradudin, A. A., Interference phenomena in the refraction of a surface polariton by vertical dielectric barriers, *Appl. Opt.* **23**, N 4, 607–611 (1984) (Eng) (P.A. **87**:45646).
821. Stevenson, S. H., Connolly, M., and Small, G. J., Dynamics of coherently generated polaritons in naphthalene, *J. Lumin.* **31/32**, pt. 2, 774–776 (1984) (Eng).
822. Vlasova, R. M., Kapustin, V. A., Semkin, V. N., Sekretarczyk, G., Agroskin, L. S., Papayan, G. V., and Rautian, L. P., Molecular excitons in quasi-one-dimensional conducting crystals (semiconductors and metals), *Phys. status solidi (b)* **122**, N 2, 549–557 (1984) (Eng).
823. Zakharchenya, B. P., Discovery of the exciton: theory and experiment, *Fiz. and Tekh. Poluprovodn.* **18**, N 11, 1940–1943 (1984) (Russ) (P.A. **88**:71878).

824. Zavorotnev, Yu, D., Ovander, L. N., and Stefanovich, L. I., Hyper-Raman light scattering as a method of studying nonpolar exciton and phonon bound states, *Opt. and Spektrosk.* **56**, N 3, 435–440 (1984) (Russ) (P.A. **88**:44719).
825. Zinets, O. S., Kryuchenko, Yu. V., and Sugakov, V. I., Polariton effects in crystals with macroscopic nonuniformities, *Fiz. Tverd. Tela* **26**, N 9, 2587–2592 (1984) (Russ).

7.3. Triplet excitons

826. Akasheh, T. S., Intersystem crossing and radiative transitions in naphthalene triplet mini-excitons, *Mol. Cryst. and Liquid Cryst.* **111**, N 3–4, 215–226 (1984) (Eng) (P.A. **88**:31580).
827. Corvaja, C., and Pasimeni, L., Optical spin polarization in a magnetic field of triplet excitons and triplet traps in charge-transfer molecular crystals, *Mater. Sci.* **10**, N 1–2, 47–49 (1984) (Eng) (P.A. **88**:21909).
828. Reineker, P., and Schmid, B. J., The mixing of Frenkel and charge-transfer excited states. 1. General treatment of singlet and triplet excitations and analytic solutions of simple models, *Phys. status solidi (b)* **124**, N 2, 657–671 (1984) (Eng) (P.A. **87**:108784).
829. Schmidt, J., and Van Kooten, J. F. C., Scattering and trapping of photo-excited triplet excitons in one dimensional molecular crystals, *J. Lumin.* **31/32**, pt. 2, 777–779 (1984) (Eng).

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

830. Brown, R., Pee, Ph., Dupuy, F., and Kottis, Ph., The influence of exciton-phonon coupling on resonant exciton transport in aromatic mixed crystals at very low temperatures, *J. Phys. C: Solid State Phys.* **17**, N 31, 5549–5567 (1984) (Eng) (P.A. **88**:21906).
831. Capek, V., To the interplay of vibrational relaxation and exciton motion, *Phys. status solidi (b)* **125**, N 2, 639–643 (1984) (Eng).
832. Cortes, E., West, B. J., and Lindenberg, K., Dynamics of excitons in molecular crystals (finite T), *J. Lumin.* **31/32**, pt. 2, 606–608 (1984) (Eng).
833. Dissado, L. A., and Walmsley, S. H., Exciton-induced lattice distortion and excimer formation, *Chem. Phys.* **86**, N 3, 375–387 (1984) (Eng) (P.A. **87**:70659).
834. Evesque, P., and Duran, J., Time resolved studies of naphthalene mixed crystals. Fractural and Euclidian behaviors of the migration kinetics, *J. Chem. Phys.* **80**, N 7, 3016–3024 (1984) (Eng).
835. Fugol', I. Ya., and Stepanenko, V. M., The coexistence of zone and self-localized exciton states in vibronic spectra of nitrogen cryocrystals, *Solid State Communs* **49**, N 8, 837–841 (1984) (Eng).
836. Fugol, I. Ya., Stepanenko, V. M., and Shamfarova, O. Ya., A study of the exciton-phonon interaction in solidified nitrogen, *Fiz. Nizk. Temp.* **10**, N 5, 527–535 (1984) (Russ).
837. Hsu, D., and Skinner, J. L., Nonperturbative theory of temperature-dependent optical dephasing in crystals. 1. Acoustic or optical phonons, *J. Chem. Phys.* **81**, N 12, pt. 1, 5471–5479 (1984) (Eng).
838. Ioselevich, A. S., and Rashba, E. I., Temperature dependence of self-trapping rate, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **40**, N 8, 348–351 (1984) (Russ) (P.A. **88**:71552).

839. Knapp, E. W., Lineshapes of molecular aggregates. Exchange narrowing and intersite correlation, *Chem. Phys.* **85**, N 1, 73–82 (1984) (Eng).
840. Kozmidis-Luburic, U. F., Setrajcic, J. P., Skrbic, Z. M., and Tosic, B. S., Exciton-phonon interaction and bounds states, *Phys. status solidi (b)* **125**, N 2, K155–K159 (1984) (Eng).
841. Lagos, R. E., and Friesner, R. A., Cluster generalization of the dynamical coherent-potential approximation: Application to exciton-phonon interactions in molecular crystals, *Phys. Rev. B* **29**, N 5, 3045–3056 (1984) (Eng).
842. Lalov, I. J., Temperature vibronic spectra of molecular crystals, *Phys. status solidi (b)* **125**, N 2, K147–K150 (1984) (Eng).
843. Matsui, A., Mizuno, K., and Nishimura, H., Zero-phonon associated with self-trapped exciton states and exciton dynamics in β-perylene, *J. Phys. Soc. Jap.* **53**, N 8, 2818–2827 (1984) (Eng) (P.A. **87**:108781).
844. Mizuno, K., Matusi, A., and Sloan, G. J., Intermediate exciton-phonon coupling in tetracene, *J. Phys. Soc. Jap.* **53**, N 8, 2799–2806 (1984) (Eng) (P.A. **87**:108780).
845. Munn, R. W., Exciton-phonon coupling in the Frenkel and Wannier limits, *Chem. Phys.* **84**, N 3, 413–420 (1984) (Eng).
846. Roick, E., Gaethke, R., Gürtler, P., and Zimmerer, G., Self-trapping of excitons in rare gas solids, *J. Lumin.* **31/32**, pt. 1, 102–104 (1984) (Eng).
847. Sataric, M., and Zakula, R., The role of Davydov solitons in the molecular chains with cubic anharmonicity in the electron transfer from the donor to the acceptor molecule, *Nuovo Cimento A* **3**, ser. 1, N 6, 1053–1066 (1984) (Eng) (P.A. **87**:108827).
848. Scherer, P. O. J., Knapp, E. W., and Fischer, S. F., Exciton-phonon self-trapping: a continuous transition, *Chem. Phys. Lett.* **106**, N 3, 191–196 (1984) (Eng).
849. Schreiber, M., and Toyozawa, Y., Numerical experiments on the absorption lineshape of the exciton under lattice vibrations. 5. Impurities, *J. Phys. Soc. Jap.* **53**, N 2, 864–872 (1984) (Eng).
850. Sharma, S. R., and Bergersen, B., Localization of normal modes by pinned solitons, *Phys. Rev. B* **30**, N 11, 6586–6591 (1984) (Eng) (P.A. **88**:38411).
851. Singh, J., Mutual influence of the composite exciton-phonon states and impurity states on the spectra of doped molecular crystals, *Phys. Rev. B* **30**, N 12, 7267–7277 (1984) (Eng) (P.A. **88**:43761).
852. Tachibana, A., Yamabe, T., Hori, K., and Asai, Y., Dynamic coupling of electronic motion and molecular vibration, *Chem. Phys. Lett.* **106**, N 1,2, 36–40 (1984) (Eng).
853. Takeno, S., Vibron solitons in one-dimensional molecular crystals, *Progr. Theor. Phys.* **71**, N 2, 395–398 (1984) (Eng).
854. Toyozawa, Y., Optical spectra of exciton in the phonon field, *J. Lumin.* **31/32**, pt. 1, 50–55 (1984) (Eng).
855. Venzl, G., and Fischer, S. F., Excitonic and solitonic states in one-dimensional exciton-phonon systems, *J. Chem. Phys.* **81**, N 12, pt. 2, 6090–6095 (1984) (Eng).

7.5. Excitons in mixed crystals

856. Anacker, L. W., Klymko, P. W., and Kopelman, R., Luminescent fractal reactions: exciton fusion on percolation clusters, *J. Lumin.* **31/32**, pt. 2, 648–650 (1984) (Eng).
857. Argyrakis, P., and Kopelman, R., Fractal energy transport: random walk simulations on long-range percolation clusters, *J. Lumin.* **31/32**, pt. 2, 654–656 (1984) (Eng).
858. Blumen, A., Lemaistre, J. P., and Mathlouthi, I., Localization of exciton states in structurally disordered materials, *J. Chem. Phys.* **81**, N 10, 4610-4613 (1984) (Eng).

859. Brown, R., Pee, Ph., Dupuy, F., and Kottis, Ph., The influence of exciton-phonon coupling on resonant exciton transport in aromatic mixed crystals at very low temperatures, *J. Phys. C: Solid State Phys.* **17**, N 31, 5549–5567 (1984) (Eng) (P.A. **88**:21906).
860. Cohen, M. H., Economou, E. N., and Soukoulis, C. M., Bipolarons in disordered media, *Phys. Rev. B* **29**, N 8, 4500–4504 (1984) (Eng) (P.A. **87**:70680).
861. Ermakov, V. N., Mikityuk, O. Yu., and Nitsovich, V. V., Delocalized surface exciton-impurity states with low binding energy, *Ukr. Fiz. Zh.* **29**, N 4, 599–601 (1984) (Russ).
862. Even, U., Rademann, K., Jortner, J., Manor, N., and Reisfeld, R., Direct electronic energy transfer on fractals, *J. Lumin.* **31/32**, pt. 2, 634–638 (1984) (Eng).
863. Gentry, S. T., and Kopelman, R., Triplet exciton transport in isotopic mixed naphthalene crystals. 1. Kinetic analysis of trapping and fusion, *J. Chem. Phys.* **81**, N 7, 3014–3021 (1984) (Eng).
864. Gentry, S. T., and Kopelman, R., Triplet exciton transport in isotopic mixed naphthalene crystals. 2. Master equation analysis, *J. Chem. Phys.* **81**, N 7, 3022–3030 (1984) (Eng).
865. Harmon, L. A., and Kopelman, R., Fractal-like exciton transport and fusion in disordered naphthalene, *J. Lumin.* **31/32**, pt. 2, 660–662 (1984) (Eng).
866. Hunklinger, S., Low-energy excitations in disordered solids: new aspects. In: Phonon scattering in condensed matter. Proceedings of the fourth international conference, Stuttgart, Germany, 22–26 Aug. 1983. Berlin, Germany: *Springer-Verlag*, 378–385 (1984) (Eng) (P.A. **87**:70324).
867. Parson, R., and Kopelman, R., Exciton transport in disordered crystals: velocity correlation functions, *Chem. Phys.* **89**, N 2, 265–274 (1984) (Eng).
868. Primatarova, M. T., Influence of planar defects and disorder on the energy spectrum of molecular crystals, *Phys. status solidi (b)* **121**, N 1, 357–369 (1984) (Eng) (P.A. **87**:39785).
869. Richert, R., Ries, B., and Bässler, H., Time-dependent non-equilibrium exciton diffusion in an organic glass, *Phil. Mag. B* **49**, N 3, L25–L30 (1984) (Eng).
870. Singh, J., Mutual influence of the composite exciton-phonon states and impurity states on the spectra of doped molecular crystals, *Phys. Rev. B* **30**, N 12, 7267–7277 (1984) (Eng) (P.A. **88**:43761).

7.6. Excitonic mechanism of energy migration

871. Argyrakis, P., and Kopelman, R., Fractal energy transport: random walk simulations on long-range percolation clusters, *J. Lumin.* **31/32**, pt. 2, 654–656 (1984) (Eng).
872. Capek, V., and Szöcs, V., Is the sink model of exciton trapping in molecular condensates satisfactory? *Phys. status solidi (b)* **125**, N 2, K137–K142 (1984) (Eng).
873. Capek, V., To the interplay of vibrational relaxation and exciton motion, *Phys. status solidi (b)* **125**, N 2, 639–643 (1984) (Eng).
874. Fayer, M. D., Excitation transport and dynamics in solid state systems, *J. Lumin.* **31/32**, pt. 2, 525–529 (1984) (Eng).
875. Gaididei, Yu. B., and Vakhnenko, A. A., Nonequilibrium kinetics of exciton wave packets in crystals, *Phys. status solidi (b)* **122**, N 1, 239–247 (1984) (Eng).
876. Godenko, L. P., and Shadchin, E. A., Effect of non-linear migration of energy at low temperatures, *Ukr. Fiz. Zh.* **29**, N 11, 1743–1745 (1984) (Russ) (P.A. **88**:39288).
877. Parson, R., and Kopelman, R., Exciton transport in disordered crystals: velocity correlation functions, *Chem. Phys.* **89**, N 2, 265–274 (1984) (Eng).

878. Parson, R., and Kopelman, R., Nonequilibrium excitation transport in energetically disordered media, *J. Phys. Chem.* **88**, N 14, 2931–2934 (1984) (Eng) (P.A. **88**:21903).
879. Privis, Yu. S., Smirnov, V. A., and Shcherbakov, I. A., Allowance for crystal structure in the model of jump quenching of luminescence, *Zh. Eksp. and Teor. Fiz.* **87**, N 2, 589–595 (1984) (Russ).
880. Sato, I., and Shibata, F., Exciton migration in a fluctuating medium. 1, *Physica A* **128**, N 3, 551–564 (1984) (Eng) (P.A. **88**:38700).
881. Vinetsky, V. L., and Godenko, L. P., The relaxation mechanism of excitation of the system of localized electron levels in the crystal at low temperatures, *Fiz. Nizk. Temp.* **10**, N 1, 90–94 (1984) (Russ).

8. PHOTOCONDUCTIVITY OF MOLECULAR CRYSTALS. PHOTOELECTRONIC EMISSION

882. Achiba, Y., Hiraya, A., and Kimura, K., New aspects of the "channel three" problem in benzene, as revealed by multiphoton ionization photoelectron spectroscopy, *J. Chem. Phys.* **80**, N 12, 6047–6051 (1984) (Eng) (P.A. **87**:87158).
883. Altwegg, L., Fowlkes, Wm. Y., and Pope M., Photoemission from small organic crystals into gases, *Chem. Phys.* **86** N 3, 471–482 (1984) (Eng).
884. Andersen, J. D., Duke, C. B., and Kenkre, V. M., Application of the Silbey-Munn theory to interpret the temperature dependence of the mobilities of injected electrons in naphthalene, *Chem. Phys. Lett.* **110**, N 5, 504–507 (1984) (Eng).
885. Antonov, V. S., Letokhov, V. S., and Shibanov, A. N., Laser resonance photoionization spectroscopy of molecules, *Usp. Fiz. Nauk* **142**, N 2, 177–217 (1984) (Russ).
886. Craig, D. P., and Petelenz, P., An interpretation of anthracene-TCNB photocurrent spectra, *Chem. Phys. Lett.* **105**, N 1, 17–21 (1984) (Eng).
887. Hohlneicher, G., Distler, D., Müller, M., and Freund, H.-J., Identification of shake-up satellites in valence photoelectron spectra of organic compounds by comparison with electronic absorption spectra of radical cations. Case study: octafluoronaphthalene, *Chem. Phys. Lett.* **111**, N 1,2, 151–156 (1984) (Eng).
888. Holroyd, R. A., Preses, J. M., and Böttcher, E. H., and Schmidt, W. F., Photoconductivity induced by single-photon excitation of aromatic molecules in liquid hydrocarbons, *J. Phys. Chem.* **88**, N 4, 744–749 (1984) (Eng) (P.A. **87**:88535).
889. Siebrand, W., Photogeneration of charge carriers in molecular crystals, *Mater. Sci.* **10**, N 3, 397–405 (1984) (Eng) (P.A. **88**:22063).
890. Tyutnev, A. P., Dubenskov, P. I., Saenko, V. S., and Vannikov, A. V., Radiation-induced conductivity of poly-(N-vinyl-carbazole) and poly-(N-expoxypropylcarbazole), *Phys. status solidi (a)* **84**, N 2, 585–596 (1984) (Eng) (P.A. **88**:2950).

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

891. Manzke, G., May, V., and Henneberger, K., Excited states and collective excitations in a dense gas of excitons, *Phys. status solidi (b)* **125**, N 2, 693–704 (1984) (Eng).
892. Setrajcic, J. P., Kapor, D. V., and Mirjanic, D., On the possibility of Bose-Einstein condensation and the superfluidity of Frenkel excitons, *Phys. status solidi (b)* **124**, N 1, 235–239 (1984) (Eng).

10. MOLECULAR CRYSTAL STRUCTURE. THERMODYNAMIC DATA

893. Abdullaev, F. Kh., Effect of fluctuations on the dynamics of solitons in a model of structural phase transitions, *Fiz. Tverd. Tela* **26**, N 9, 2675–2680 (1984) (Russ) (P.A. **88**:54876).
894. Bar, I., and Bernstein, J., Conformational polymorphism. 5. Crystal energetics of an isomorphic system including disorder, *J. Phys. Chem.* **88**, N 2, 243–248 (1984) (Eng).
895. Belosludov, V. R., and Zhdanov, K. R., Calculation of crystal thermodynamical function in harmonic approximation without using frequency spectrum, *Fiz. Tverd. Tela* **26**, N 10, 2919–2926 (1984) (Russ).
896. Belushkin, A. V., Natkaniec, I., Wasicki, J., and Zaleski, T., The phonon density of states near the structural phase transition of solid biphenyl, *Phys. status solidi (b)* **123**, N 2, K115–K118 (1984) (Eng) (P.A. **87**:88251).
897. Bernstein, E. R., Phase transitions in molecular crystals, *Mater. Sci.* **10**, N 3, 315–330 (1984) (Eng) (P.A. **88**:21645).
898. Brock, C. P., and Haller, K. L., Redetermination of the structure of the 3:1 complex of 4,4′-dinitrobiphenyl with 4-hydroxybiphenyl, $3C_{12}H_8N_2O_4 \cdot C_{12}H_{10}O$: Crystal packing, molecular geometry and thermal motion, *Acta crystallogr. C* **40**, N 8, 1387–1390 (1984) (Eng).
899. Brock, C. P., and Haller, K. L., Two crystal modifications of 4-hydroxybiphenyl: The biphenyl structure without an inversion center and a fully ordered structure containing nearly planar molecules, *J. Phys. Chem.* **88**, N 16, 3570–3574 (1984) (Eng).
900. Burns, G., and Dacol, F. H., Raman studies of quenched cyclohexane: a plastic crystal glass, *Solid State Communs* **51**, N 10, 773–775 (1984) (Eng).
901. Chan, T. C., Diffusion of aromatic compounds: An investigation on the effects of molecular shape, mass, and dipole moment, *J. Chem. Phys.* **80**, N 11, 5862–5864 (1984) (Eng).
902. Craig, D. P., Lindsay, R. N., and Mallett, C. P., Mixed-crystal packing calculations. 9-methoxyanthracene in host 9-cyanoanthracene, *Chem. Phys.* **89**, N 2, 187–197 (1984) (Eng).
903. Deus, P., and Frei, V., Estimation of phonon frequencies and force constants by means of the temperature dependence of the specific heat, *Czech. J. Phys. B* **34**, N 7, 680–693 (1984) (Ger).
904. Drück, U., and Kutoglu, A., Experimental difference densities of hexacyanobenzene at 120 K. Refinement of electron density distributions with charge-cloud models. 12. Comparison with results of multipole refinement. 1, *Z. Kristallogr.* **166**, N 3/4, 233–244 (1984) (Eng).
905. Dukova, E. D., and Orlova, A. O., The kinetic and geometric conditions for regular intergrowths of diphenyl crystals, *Kristallografiya* **29**, N 5, 1001–1007 (1984) (Russ).
906. Ecolivet, C., Toudic, B., and Sanquer, M., Brillouin scattering in p-polyphenyls. 3. The improper ferroelastic phase transition of p-terphenyl, *J. Chem. Phys.* **81**, N 2, 599–606 (1984) (Eng).
907. Foss, L. I., Syed, A., Stevens, E. D., and Klein, C. L., Structure of a naphthalene-perfluorobiphenyl complex, $C_{10}H_8 \cdot C_{12}F_{10}$, *Acta crystallogr. C* **40**, N 2, 272–274 (1984) (Eng) (P.A. **87**:45111).
908. Foulon, M., Amoureux, J. P., Sauvajol, J. L., Cavrot, J. P., and Muller, M., Different aspects of an interesting glassy crystal: 1-cyanoadamantane, *J. Phys. C: Solid State Phys.* **17**, N 24, 4213–4229 (1984) (Eng).
909. Gullion, T., and Conradi, M. S., Temperature-jump NMR: Molecular twisting at the phase transition in para-terphenyl, *Phys. Rev. B* **30**, N 3, 1133–1137 (1984) (Eng).

910. Haltiwanger, R. C., Beurskens, P. T., Vankan, J. M. J., and Veeman, W. S., Crystal structure of 1,5-dibromonaphthalene and of disordered 1,8-dibromonaphthalene, *J. Crystallogr. and Spectrosc. Res.* **14**, N 6, 589–597 (1984) (Eng).
911. Iimura, Y., Mada, H., and Kobayashi, S., Measurement of the phase transition of p-heptyl-p′-cyanobiphenylin in the bulk and boundary, *Phys. Lett. A* **103**, N 6,7, 342–344 (1984) (Eng).
912. Jafrain, M., Lacrampe, G., and Martin, G., Polymorphism of 4-cyano-4′-nonylbiphenyl: Raman spectroscopic study of the CH stretching region of the aliphatic chain, *J. phys. Lett.* **45**, N 22, L1103–L1110 (1984) (Fr).
913. Jetten, L. A. M. J., Human, H. J., Bennema, P., and Van der Eerden, J. P., On the observation of the roughening transition of organic crystals, growing from solution, *J. Cryst. Growth* **68**, N 2, 503–516 (1984) (Eng).
914. Karaev, K. Sh., Furmanova, N. G., and Galiulin, R. V., A fragment-implication method for solving the translation problem of molecular crystal structure determination, *Kristallografiya* **29**, N 1, 76–81 (1984) (Russ).
915. Koga, Y., Growth kinetics of polymorphic transitions in some molecular solids, *J. Cryst. Growth* **66**, N 1, 35–44 (1984) (Eng).
916. Kojima, K., Okamoto, K., and Takeuchi, S., The reduction of grown-in dislocation density in anthracene crystals due to heat treatment and growth conditions, *J. Cryst. Growth* **67**, N 2, 149–152 (1984) (Eng).
917. Landa, L. M., Tananaev, I. V., Klyuchnikov, V. A., Landa, K. A., Bolshakov, V. V., and Sechkarev, B. A., Phase polymorphous transition latent heat in noncrystalline (amorphous) solid structures, *Dokl. Akad. Nauk SSSR* **277**, N 6, 1434–1437 (1984) (Russ).
918. Lechner, R. E., Toudic, B., and Cailleau, H., Observation of the effects of critical phenomena in paraterphenyl on quasi-elastic incoherent neutron spectra. 1, *J. Phys. C: Solid State Phys.* **17**, N 3, 405–420 (1984) (Eng).
919. Lubetkin, S. D., and Dunning, W. J., The kinetics of growth of adamantane crystals from the vapour. 1, *J. Cryst. Growth* **67**, N 3, 521–527 (1984) (Eng).
920. Lubetkin, S. D., and Dunning, W. J., The kinetics of growth of adamantane crystals from the vapour. 2, *J. Cryst. Growth* **67**, N 3, 528–540 (1984) (Eng).
921. Luty, T., and Munn, R. W., Theory of phase transitions in charge-transfer complexes: Anthracene-tetracyanobenzene, *J. Chem. Phys.* **80**, N 7, 3321–3327 (1984) (Eng) (P.A. **87**:70367).
922. Mattia, C. A., Mazzarella, L., Vitagliano, V., and Puliti, R., Stacking interactions in the acridine dyes: spectrophotometric data and crystal structure of acridine orange hydroiodide and acridine orange hydrochloride monohydrate, *J. Crystallogr. and Spectrosc. Res.* **14**, N 1, 71–87 (1984) (Eng).
923. Michel, K. H., Phase transitions in strongly anharmonic and orientationally disordered crystals, *Z. Phys. B* **54**, N 2, 129–137 (1984) (Eng) (P.A. **87**:39453).
924. Miniewicz, A., Sworakowski, J., and Williams, D. F., Observation of phase transition in piezoelectric charge transfer complex carbazole: trinitrobenzene, *Ferroelectrics* **55**, N 1–4, 939–942 (1984) (Eng) (P.A. **87**:70364).
925. Nenow, D., Pavlovska, A., and Karl, N., Singularity-nonsingularity surface transitions of vapour-grown highest purity diphenyl crystals, *J. Cryst. Growth* **67**, N 3, 587–594 (1984) (Eng).
926. Pasimeni, L., and Corvaja, C., Linebroadening of the DE-ODMR spectra in the anthracene-1,2,4,5-tetracyanobenzene single crystal near its order-disorder phase transition, *Mater. Sci.* **10**, N 1–2, 197–200 (1984) (Eng) (P.A. **88**:22323).
927. Pershin, V. K., and Gersht, I. S., Virial theorem and structural instability in two-dimensional lattices, *Fiz. Nizk. Temp.* **10**, N 4, 411–419 (1984) (Russ).
928. Sasaki, A., and Iwata, M., Anisotropy of microhardness in anthracene single crystals, *Phys. status solidi (a)* **85**, N 2, K105–K107 (1984) (Eng).
929. Sauvajol, J. L., Lefebvre, J., and Hennion, B., The coherent quasi-elastic neutron scattering function $S(Q,\omega)$ from cyanoadamantane plastic phase, *J. Phys. C: Solid State Phys.* **17**, N 36, 6573–6580 (1984) (Eng).

930. Sauvajol, J. L., Lefebvre, J., Amoureux, J. P., and Muller, M., The elastic coherent neutron scattering function S(**Q**, $\nu=0$) from cyanoadamantane plastic phase, *J. Phys. C: Solid State Phys.* **17**, N 13, 2257–2269 (1984) (Eng).
931. Shiner, C. S., Noordik, J., Fisher, A. M., Eckley, D. M., Bodenhamer, J., and Haltiwanger, R. C., Structure of 1,4,5,8-tetramethylnaphthalene, $C_{14}H_{16}$, *Acta crystallogr. C* **40**, N 3, 540–542 (1984) (Eng).
932. Sidorov, N. V., The investigation of phase transitions in crystals involving conformational unstable molecules on the basis of temperature changes in the Raman spectra, *Zh. Prikl. Spektrosk.* **40**, N 1, 119–124 (1984) (Russ).
933. Sippl, M. J., Nemethy, G., and Scheraga, H. A., Intermolecular potentials from crystal data. 6. Determination of empirical potentials for O–H***O=hydrogen bonds from packing configurations, *J. Phys. Chem.* **88**, N 25, 6231–6233 (1984) (Eng).
934. Thomas, N. W., and Desiraju, G. R., An investigation into the role of chloro-substituents in hydrogen-bonded crystals: the crystal structures of the dichlorophenols, *Chem. Phys. Lett.* **110**, N 1, 99–102 (1984) (Eng).
935. Van Koningsveld, H., Baas, J. M. A., and Van de Graaf, B., The low-temperature structure of cis-cosoid-cis-perhydroanthracene, $C_{14}H_{24}$, *Acta crystallogr. C* **40**, N 8, 1463–1465 (1984) (Eng).
936. Voloshina, I. V., Tsirel'son, V. G., Arutyunov, V. S., and Ozerov, R. P., Realization of methods for accounting the thermal diffuse scattering on diffraction of X-rays and neutrons by a single crystal, *Kristallografiya* **29**, N 5, 864–868 (1984) (Russ).
937. Yakovlev, V. A., and Nenov, D., The vapour-growing of diphenyl crystals by the periodically-changing-oversaturation method, *Kristallografiya* **29**, N 4, 824–826 (1984) (Russ).

11. NEUTRON SPECTROSCOPY OF CRYSTALS

938. Brizhik, L. S., On the theory of ultracold neutrons scattering by Davydov solitons, *Ukr. Fiz. Zh.* **29**, N 4, 492–498 (1984) (Russ).
939. Buchenau, U., Nücker, N., and Dianoux, A. J., Neutron scattering study of the low-frequency vibrations in vitreous silica, *Phys. Rev. Lett.* **53**, N 24, 2316–2319 (1984) (Eng).
940. Bulat, I. A., and Semencheva, O. P., Integral intensities of elastic diffraction reflexes in inelastic slow neutron scattering, *Dokl. Akad. Nauk BSSR* **28**, N 2, 139–143 (1984) (Russ).
941. Chhor, K., Bocquet, J. F., Lucazeau, G., and Dianoux, A. J., Neutron scattering study of the reorientational motions in $Cr(CO)_3(\eta^5C_4H_4S)$, *Chem. Phys.* **91**, N 3, 471–477 (1984) (Eng).
942. Heidemann, A., Lushington, K. J., Morrison, J. A., Neumaier, K., and Press, W., Rotational tunneling in CH_4 at temperatures below 1 K studied by inelastic neutron scattering, *J. Chem. Phys.* **81**, N 12, pt. 1, 5799–5804 (1984) (Eng).
943. Jobic, H., Neutron inelastic scattering from ethylene: an unusual spectrum, *Chem. Phys. Lett.* **106**, N 4, 321–324 (1984) (Eng) (P.A. **87**:70314).
944. Kanaya, T., Kaji, K., Urakawa, H., Kitamaru, R., Akiyoshi, T., Ono, M., Yoshida, F., Yamada, S., Yamaoka, H., Matsuyama, T., and Okamoto, S., Measurements of neutron incoherent inelastic scattering in solid polymers. 2. Normal vibrational frequency distribution in solid polymers, *Bull. Inst. Chem. Res. Kyoto Univ.* **61**, N 3, 214–221 (1983) (Eng) (P.A. **87**:39424).
945. Lauter, H. J., and Jobic, H., High-resolution neutron inelastic scattering from hexamethylenetetramine, *Chem. Phys. Lett.* **108**, N 4, 393–396 (1984) (Eng).

946. Lechner, R. E., Toudic, B., and Cailleau, H., Observation of the effects of critical phenomena in paraterphenyl on quasi-elastic incoherent neutron spectra. 1, *J. Phys. C: Solid State Phys.* **17**, N 3, 405–420 (1984) (Eng).
947. Sauvajol, J. L., Lefebvre, J., and Hennion, B., The coherent quasi-elastic neutron scattering function S(Q,ω)from cyanoadamantane plastic phase, *J. Phys. C: Solid State Phys.* **17**, N 36, 6573–6580 (1984) (Eng).
948. Toudic, B., and Lechner, R. E., Observation of the effects of critical phenomena in paraterphenyl on quasielastic incoherent neutron spectra. 2, *J. Phys. C: Solid State Phys.* **17**, N 31, 5503–5515 (1984) (Eng).