

are reviewed. Chapter 5 (*H. Weingärtner*) is on nuclear spin relaxation in liquids and gases. Relaxation time studies which give information about molecular dynamics and molecular distance determination in biological macromolecules are included. Chapter 6 (*R. Dupree*) reviews solid state NMR. The chapter is subdivided into new techniques, theory, experimental, and several sections on different substances and areas of application like silicates, zeolites, ceramics, phase transitions, glasses, organic and inorganic solids, wood and coal. A number of tables efficiently guide the reader through the literature. Chapter 7 (*L. Y. Lian*) is entitled "Multiple Pulse NMR", a terminus technicus from solid state NMR, but deals with multi-dimensional NMR in liquids including the development of special excitation pulses. Chapter 8 (*D. B. Davies* and *H. G. Parkes*) surveys natural macromolecules, excluding biological studies, with many tables in the text. Chapter 9 (*F. Hatley*) reviews synthetic macromolecules, again largely in appealing tabular form. References to reviews are followed by sections on solution NMR studies of polymer structure by 1D and 2D NMR, polymer-polymer interaction in solution and gels, and on bulk polymers. The last section is subdivided into wide-line  $^1\text{H}$  NMR, high resolution NMR, NMR of deuterons and other nuclei, and applications to cellulose polymers. Relaxation and lineshape studies for the investigation of polymer dynamics are included as well as new magic angle spinning and cross-polarization techniques for the investigation of molecular order and polymer morphology. Chapter 10 (*C. Jones*) is dedicated to conformational analysis in liquid state NMR based on the measurement of indirect couplings, distance determination by cross-relaxation, and computer re-


finement. Chapter 11 (*P. G. Morris*) is concerned with NMR of living systems with subsections on NMR imaging and high resolution NMR. Chapter 12 (*K. G. Orrell*) treats NMR of paramagnetic species and Chapter 13 (*A. Khan*) NMR of liquid crystals and micellar solutions. The latter starts with a helpful introduction to the subject, which is missing in many of the other chapters. The smaller part of the material (4 pages) covers thermotropic liquid crystals, where solid state deuterium NMR is increasingly used for investigations of molecular order and mobility. The larger part (17 pages) deals with micellar solutions and lyotropic liquid crystals. Phase diagrams and phase structures in complex amphiphilic systems are investigated as well as multi-component self-diffusion coefficients. Solid state NMR is applied more and more for studies of lipids and protein-lipid interactions.

The readability of the chapters is adequate and the chapters cover the subjects in sufficient depth to gain an understanding of the current state of research. The use of tables in some chapters (1, 6, 8, 9, 12) provides quick and easy access to the information and should be encouraged in future volumes. A list of symbols and an author index are helpful features. For materials science oriented NMR research, chapters 1, 6, 9 and 13 are most relevant. The book is in competition with review papers and computer literature searches on dedicated subjects. Considering also the price, the book is unlikely to be found in every science library.

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## Conference Calendar

The black hand symbol  denotes new entries into the calendar. Send information concerning conferences to the editorial office.

### January 1990

10-14 **Superconductivity**  
Int. Conf.  
Bangalore (India)  
Contact: Prof. S. V. Subramanyam, ICSC, Dept. of Physics, Indian Inst. of Sci., Bangalore 560012, India, Tel. 91-812-344411, Fax 91-812-341683

14-19 **Electro-Optics**  
Conf.  
Los Angeles, CA (USA)  
Contact: SPIE, POB 10, Bellingham, Wa 98227-0010, USA, Tel. 206-676-3290, Fax 206-647-14445

15-18 **Advances in Composite Materials**  
Int. Conf.  
Bombay (India)  
Contact: Prof. P. Ramakrishnan, Indian Inst. of Techn., Dept. of Metallurg. Eng., Poway, Bombay 400076, India

21-24 **Gallium Arsenide**  
Symp.  
Atlanta, GA (USA)  
Contact: K. J. Sieger, Naval Res. Lab., Code 6852, Washington, DC 20375, USA

22-26 **Recrystallization in Metallic Materials**  
Int. Conf.  
Wollongong (Australia)  
Contact: T. Chandra, Dept. of Metallurgy and Materials Eng., Univ. of Wollongong, Wollongong NSW 2500, Australia, Tel. 042-270008, Fax 042-270477

## February 1990

4-7 **Ceramic Powder Processing**  
3rd Int. Conf.  
San Diego, CA (USA)  
Contact: G. L. Messing, Penn-  
sylvania State Univ., Univer-  
sity Park, PA 16802, USA,  
Tel. 814-865-2262,  
Fax 814-865-2917

4-8 **18th Australian Polymer  
Symposium**  
Bendigo, Vic. (Australia)  
Contact: Dr. J. D. Wells,  
Bendigo College of Adv. Edu-  
cation, Bendigo, Victoria 2550,  
Australia

5-6 **High Temperature Corrosion**  
Frankfurt (Fed. Rep. Ger-  
many)  
Contact: Dr. M. Schütze,  
DECHEMA, Theodor-Heuss  
Allee 25, D-6000 Frankfurt 97,  
FRG

19-21 **Advanced Ceramics**  
Conf.  
Rosemont (Italy)  
Contact: Soc. of Manufactur-  
ing Eng., One SMF Dr., POB  
930, Dearborn, MI 48121,  
USA

19-22 **Advanced Metals & Ceramics**  
1990 TMS Annu. Mtg.  
Int. Conf.  
Anaheim, CA (USA)  
Contact: M. Karl, TMS, Meet-  
ings Dept., 420 Commonwealth  
Drive, Warrendale, PA 15086,  
USA, Tel. 412-776-9050, Fax  
412-776-3770

21 **Block-Copolymers**  
Mtg.  
London (UK)  
Contact: Dr. K. Petrak,  
Ciba-Geigy ADDR Unit,  
Wimblehurst Road, Horsham,  
West Sussex RM12 4AB, UK

21-23 **Armed Forces  
Communications and  
Electronics**  
Long Beach, CA (USA)  
Contact: Armed Forces Com-  
munications and Electronics  
Assoc., Headquarters, 4400  
Fair Lakes Court, Fairfax, VA  
22033, USA

21-23 **Composites '90**  
2nd Int. Congr.  
Wiesbaden (Fed. Rep. Ger-  
many) Contact: D. Schnabel,  
Demat Exposition Managing,  
POB 110611, D-6000 Frankfurt  
11, FRG, Tel. 069-234331, Fax  
069-253071

25-2 **Advanced Devices and  
Systems**  
Symp.  
Santa Clara, CA (USA)  
Contact: SPIE, P.O. Box 10,  
Bellingham, WA 98227-0010,  
USA

## March 1990

1-3 **Interphase Reactions and  
Interactions**  
Freiburg (Fed. Rep. Germany.)  
Contact: Prof. Dr. H.-J. Can-  
tow, Hermann-Staudinger-  
Haus, Stefan-Meier-Str. 31,  
D-7800 Freiburg, FRG

4-9 **Microolithography**  
Symp.  
San Jose, CA (USA)  
Contact: Soc. of Photo-Optical  
Instrumentation Eng.,  
Koblenzer Str. 34,  
D-5300 Bonn 2, FRG

12-16 **American Physical Society  
Meeting**  
Anaheim, CA (USA)  
Contact: W. W. Havens, J.,  
Aps, 335 E., 45th St., New  
York, NY 10017, USA

12-16 **Optical Science and  
Engineering**  
3rd Int. Congr.  
The Hague (Netherlands)  
Contact: Europtica Services  
I.C., 16, av. Bugeaud,  
F-75116 Paris, France

14-16 **Photovoltaic Solar Energy**  
5th Int. Symp.  
Staffelstein (Fed. Rep.  
Germany)  
Contact: OTTI, D.-Martin-  
Luther-Str. 10, D-8400 Regens-  
burg, FRG, Tel. 0941-58273/  
74/75, Fax 0941-54854

14-16 **Non-Metals in Metals**  
Münster (Fed. Rep. Germany)  
Contact: VDEh, Chemiker-  
ausschuß, POB 8209, D-4000  
Düsseldorf 1, Tel. 0211-6707-  
441, Fax 0211-6707-310

17-21 **Advances in Semiconductors  
and Superconductors**  
Symp.  
San Diego, CA (USA)  
Contact: Soc. of Photo-Optical  
Instrumentation Eng., Koblen-  
zer Str. 34, D-5300 Bonn 2,  
FRG

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