

CONTENTS

Preface	xi
<i>Invited Papers</i>	
NUCLEAR RESONANCE	
NUCLEAR MAGNETIC RESONANCE IN ALLOYS L. H. Bennett	3
HYDRIDES EXAMINED BY NUCLEAR MAGNETIC RESONANCE R. G. Barnes	19
NUCLEAR MAGNETIC RESONANCE STUDIES OF TYPE II SUPERCONDUCTORS F. Y. Fradin	31
MAGNETIC RESONANCE AS A PROBE OF ANISOTROPIC CONDUCTORS W. G. Clark	45
NMR TECHNIQUES FOR STUDYING IONIC DIFFUSION IN SOLIDS D. C. Ailion	55
ELECTRON RESONANCE	
ELECTRON PARAMAGNETIC RESONANCE OF MATERIAL PROPERTIES AND PROCESSES K. L. Brower	71
ELECTRON SPIN RESONANCE STUDIES OF AMORPHOUS SILICON D. K. Biegelsen	85
DEFECTS IN III-V SEMICONDUCTORS STUDIED THROUGH EPR T. A. Kennedy	95
ESR STUDIES IN AMORPHOUS INSULATORS D. L. Griscom	103
CATALYSTS EXAMINED BY ELECTRON SPIN RESONANCE-EXAMPLES FROM HYDRODESULFURIZATION CATALYSIS B. G. Silbernagel	117
MOSSBAUER EFFECT	
THE MOSSBAUER EFFECT AND SOME APPLICATIONS IN MATERIALS RESEARCH G. K. Shenoy	133
MOSSBAUER STUDIES OF ION IMPLANTED ALLOYS G. Longworth	143
MOSSBAUER SPECTROSCOPY STUDIES OF AMORPHOUS METALLIC SOLIDS C. L. Chien	157

COAL AND THE MOSSBAUER EFFECT P. A. Montano	171
SPIN PRECESSION	
SOME APPLICATIONS OF SPIN PRECESSION METHODS TO PROBLEMS IN MATERIALS SCIENCE E. N. Kaufmann	187
HYPERFINE INTERACTION INVESTIGATIONS OF HELIUM TRAPPING IN METALS H. De Waard	199
DEFECTS IN METALS — DETECTED BY SPIN PRECESSION METHODS Th. Wichert and E. Recknagel	211
MUONS AS LIGHT HYDROGEN PROBES-DIFFUSION AND TRAPPING D. Richter	233
<i>Contributed Papers</i>	
ENERGY MATERIALS	
<i>Catalysis and Coal</i>	
NMR OF SMALL PLATINUM PARTICLES H. T. Stokes, H. E. Rhodes, P. K. Wang, C. P. Slichter and J. H. Sinfelt	253
SOLID STATE NMR STUDIES OF THE ADSORBED STATES OF FORMIC ACID ON γ ZEOLITES T. M. Duncan and R. W. Vaughan	259
THE NATURE OF FLUORINE MODIFIED OXIDE SURFACES: AN NMR STUDY J. R. Schlup and R. W. Vaughan	265
UTILITY OF THE MOSSBAUER EFFECT IN THE ASSESSMENT OF CHEMICAL TRANSFORMATIONS IN UNSUPPORTED CATALYST SYSTEMS AS A FUNCTION OF THE METAL SALT M. L. Good, M. Akbarnejad, M. D. Patil and J. T. Donner	271
MOSSBAUER STUDY OF IRON AND TIN EXCHANGED INTO VICTORIAN BROWN COAL J. D. Cashion, P. E. Clark, P. S. Cook, F. P. Larkins and M. Marshall	277
<i>Novel Conductors</i>	
NMR STUDY OF SODIUM ION MOBILITY IN A SINGLE CRYSTAL OF Na β' -ALUMINA AND WATER EFFECTS IN POLYCRYSTALLINE SAMPLES C. E. Hayes and D. C. Ailion	283
LOW-LYING EXCITATIONS AND LOCAL MOTIONS IN Na β -ALUMINA M. Villa and J. L. Bjorkstam	289
MIXED ALKALI EFFECTS IN β -ALUMINAS J. L. Bjorkstam, M. Villa, S. Aldrovandi, M. Corti and J. S. Frye	295
SPIN SUSCEPTIBILITY OF INTERCALATED GRAPHITE AND DOPED POLYACETYLENE J. W. Kaufer and S. Ikehata	303

ELECTRONIC STRUCTURE OF IRON SUBSTITUTED LITHIUM INTERCALATED TaS ₂ M. Eibschütz, D. W. Murphy and F. J. DiSalvo	311
MOSSBAUER EFFECT STUDY OF THE ABSENCE OF FE MAGNETISM IN SUPERCONDUCTING Sc ₂ Fe ₃ Si ₅ AND Th ₇ Fe ₃ J. D. Cashion, G. K. Shenoy, D. Niarchos, P. J. Viccaro and C. M. Falco	315
<i>Hydrides</i>	
MICROSCOPIC STUDY OF METAL HYDRIDES USING ELECTRON SPIN RESONANCE E. L. Venturini	321
MOSSBAUER EFFECT INVESTIGATION OF HYDROGEN RICH TERNARY HYDRIDES OF YFe ₂ , DyFe ₂ AND ErFe ₂ P. J. Viccaro, D. Niarchos, G. K. Shenoy and B. D. Dunlap	327
THE ANOMALOUS SPECTRAL DENSITY FUNCTION FOR DIFFUSIVE MOTION OF HYDROGEN IN LaNi ₅ H ₇ H. Chang, I. J. Lowe and R. J. Karlicek, Jr.	331
SEMICONDUCTORS	
PROTON NMR SPIN-LATTICE RELAXATION TIME CHARACTERIZATION OF α -Si(H) STRUCTURE M. E. Lowry, R. G. Barnes, D. R. Torgeson and P. R. Jeffrey	341
PROTON NMR STUDIES OF AMORPHOUS PLASMA-DEPOSITED FILMS J. A. Reimer, R. W. Vaughan and J. C. Knights	347
LASER AND THERMAL ANNEALING OF Co-IMPLANTED Si STUDIED BY MOSSBAUER SPECTROSCOPY G. Langouche, M. de Potter, M. Van Rossum, J. De Bruyn, I. Dezsi and R. Coussement	353
SILICIDE FORMATION AT Fe-Si INTERFACES STUDIED BY MOSSBAUER SPECTROSCOPY AND RUTHERFORD BACKSCATTERING R. L. Cohen, L. C. Feldman, K. W. West and P. J. Silverman	357
LASER ANNEALING OF Te-IMPLANTED III-V SEMICONDUCTORS STUDIED BY MOSSBAUER SPECTROSCOPY M. Van Rossum, I. Dezsi, G. Langouche, J. De Bruyn and R. Coussement	359
NMR IN LIQUID SEMICONDUCTING Se _x Te _{1-x} R. Dupree, D. J. Kirb and J. A. Gardner	365
MOTIONAL CORRELATION TIME OF DILUTE ¹¹¹ Cd IMPURITIES IN Se-RICH LIQUID Se-Te ALLOYS D. K. Gaskill, J. A. Gardner, K. S. Krane, K. Krusch and R. L. Rasera	369
METALS AND ALLOYS	
A MOSSBAUER STUDY OF MICROSTRUCTURAL AND CHEMICAL CHANGES IN FE-9NI STEEL DURING TWO-PHASE TEMPERING B. Fultz and J. W. Morris, Jr.	377

TDPAC STUDIES OF ELECTRIC FIELD GRADIENTS IN AMORPHOUS METALLIC SYSTEMS	385
P. Heubes, D. Korn, G. Schatz and G. Zibold	
LASER-PULSE MELTING OF HAFNIUM-IMPLANTED NICKEL STUDIED WITH TDPAC AND RBS/CHANNELING TECHNIQUES	391
L. Buene, E. N. Kaufmann, M. L. McDonald, J. Kothaus, R. Vianden, K. Freitag and C. W. Draper	
THE ELECTRIC FIELD GRADIENT IN NONCUBIC METALS AND ALLOYS	397
W. Witthuhn, U. De, W. Engel, S. Hoth, R. Keitel, W. Klinger and R. Seeböck	
<i>Defects</i>	
INTERSTITIAL-ATOM TRAPPING AND DEUTERIUM LOCALIZATION AT ^{57}Co IMPURITIES IN Cu	403
C. T. Ma, B. Makowski, M. Marcuso and P. Boolchand	
MUON SPIN DEPOLARIZATION IN METALS WITH DILUTE MAGNETIC IMPURITIES	409
J. A. Brown, R. H. Heffner, R. L. Hutson, S. Kohn, M. Leon, C. E. Olsen, M. E. Schillaci, S. A. Dodds, T. L. Estle, D. A. Vanderwater, P. M. Richards and O. D. McMasters	
STUDY OF INTERNAL INDIUM OXIDATION IN SILVER BY TDPAC	415
A. F. Pasquevich, F. H. Sánchez, A. G. Bibiloni, C. P. Massolo and A. López-García	
DISLOCATION MOTION IN METALS INVESTIGATED BY MEANS OF PULSED NUCLEAR MAGNETIC RESONANCE	421
H. Tamler, H. J. Hackelöer, O. Kanert, W. H. Alsem and J. T. De Hosson	
RADIATION DAMAGE STUDIES OF USn_3	427
T. K. McGuire and R. H. Herber	
GEOMETRICAL STRUCTURE OF LATTICE DEFECT-IMPURITY CONFIGURATIONS DETERMINED BY TDPAC	435
M. Deicher, O. Echt, E. Recknagel and Th. Wichert	
INVESTIGATION OF LATTICE DEFECTS IN HCP METALS	443
R. Keitel, W. Engel, S. Hoth, W. Klinger, R. Seeböck and W. Witthuhn	
<i>Magnetic Materials</i>	
NUCLEAR MAGNETIC RESONANCE ON RARE-EARTH NUCLEI IN RE- Fe_2 INTERMETALLIC COMPOUNDS	449
Y. Berthier, R. A. B. Devine and R. A. Butera	
MOSSBAUER STUDY OF NEW LAVES PHASES RFe_2 COMPOUNDS (R = Pr, Nd, Yb)	455
C. Meyer, F. Hartmann-Boutron and Y. Gros	
A MOSSBAUER STUDY OF THE AMORPHOUS SYSTEM $(\text{Fe}_x\text{Ni}_{1-x})_{75}\text{P}_{16}\text{B}_6\text{Al}_3$	461
S. Bjarman and R. Wäppling	

NMR AND MOSSBAUER EFFECT STUDIES ON DILUTED HEISENBERG FERROMAGNETS AND SPIN-GLASSES: $\text{Eu}_x\text{Sr}_{1-x}\text{S}$ H. Lütgemeier, Ch. Sauer and W. Zinn	467
INSULATORS AND COMPOUNDS	
EPR INVESTIGATIONS OF IMPURITIES IN THE LANTHANIDE ORTHOPHOSPHATES M. M. Abraham, L. A. Boatner and M. Rappaz	475
NUCLEAR SPIN RELAXATION INVESTIGATIONS ON THE INFLUENCE OF IMPURITIES AND TEMPERATURE ON THE MEAN FREE PATH OF MOBILE DISLOCATIONS IN NaCl W. H. Alsem, J. T. De Hosson, H. Tamler, H. J. Hackelöer and O. Kanert	481
μ^+e^- HYPERFINE INTERACTIONS IN QUARTZ CRYSTALS J. H. Brewer, D. G. Fleming and D. P. Spencer	487
^{57}Fe and ^{125}Te MOSSBAUER STUDY OF $\text{LiFeCo}_3\text{TeO}_8$ AND $\text{LiFeNi}_3\text{TeO}_8$ A. Gerard, F. Grandjean and C. Flebus	495
THE MOTIONALLY NARROWED NMR LINE SHAPE OF AMMONIUM SELENATE C. Yao, R. Hallsworth and I. J. Lowe	501
QUADRUPOLE HYPERFINE INTERACTION AND MAGNETIC HYPERFINE FIELD IN FeOCl AND ITS INTERCALATES Y. Maeda and R. H. Herber	509
EPR OF Mn^{2+} IN $\text{Ni}(\text{CH}_3\text{COO})_2 \cdot 4\text{H}_2\text{O}$ AND $\text{K}_2\text{Ni}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$ S. K. Misra and M. Jalochofski	515
TECHNIQUE AND THEORY	
STUDY OF INTERNAL MOTION IN MATERIALS BY MEANS OF DIRECT OBSERVATION OF RELAXATION RESONANCES IN NMR (NMRRR) L. Van Gerven, P. Coppens and P. Van Hecke	521
NEW METHOD FOR THE DETERMINATION OF DIFFUSION CONSTANTS FROM PARTIALLY NARROWED NMR LINES D. Wolf	529
IMPURITY DIFFUSION BY NMR J. R. Beckett, J. Pourquié and D. C. Ailion	535
A METHOD FOR DETERMINING IMPURITY-HOST FORCE-CONSTANT RATIOS B. Kolk	541
ISOTOPE EFFECT ON THE ELECTRONIC STRUCTURE OF HYDROGEN IN METALS P. Jena and C. B. Satterthwaite	547
Author index	553
Subject index	555