

Contents

CONTRIBUTORS TO VOLUME 38	vii
FOREWORD	ix
PREFACE	xi
SUPPLEMENTS	xiii

High-Pressure Studies of Ionic Conductivity in Solids

G. A. SAMARA

I. Introduction	1
II. Theoretical Background	4
III. Results and Discussion	20
IV. Concluding Remarks	75

Theory of Polaron Mobility

F. M. PEETERS AND J. T. DEVREESE

I. Introduction	82
II. A Boltzmann Equation for the Polaron	85
III. Relaxation-Time Approximation for Linear Conductivity	91
IV. The Drifted Maxwellian Approach for Nonlinear Direct Current Conductivity	97
V. The Polaron Impedance Function for Quantum Frequencies	107
VI. The Polaron Mass and the Polaron Mobility	117
VII. Conclusion	127
Appendix A	129
Appendix B	130
Appendix C	132

Density Functional Methods: Theory and Applications

J. CALLAWAY AND N. H. MARCH

I. Introduction	136
II. The Hohenberg-Kohn Theorem and Its Extensions	143
III. Principles of Computational Procedures	155
IV. Beyond the Local Density Approximation	185
V. Linear Response Theory	195
VI. Some Further Applications	207
VII. Discussion	218

Surface-Enhanced Electromagnetic Processes

ALEXANDER WOKAUN

I. Introduction and Survey	224
II. Surface-Enhanced Raman Scattering: Experimental Observations	226
III. Surface-Enhanced Raman Scattering: Theoretical Models	229
IV. Evidence for the Electromagnetic Model	239
V. Extensions of the Electromagnetic Model	245
VI. Particle Dipolar Interactions	255
VII. Enhanced-Surface Second-Harmonic Generation	269
VIII. Enhanced Absorption by Adsorbed Dyes	275
IX. Contributions to the Enhancement by Other Mechanisms	283
X. Applications of Surface-Enhanced Phenomena: Summary	287

The Dynamics of Excitons

JAI SINGH

I. Introduction	295
II. Theory of Excitons	301
III. Exciton-Phonon Interactions	328
IV. Composite Exciton-Phonon States	336
V. Exciton Reactions	341
AUTHOR INDEX	371
SUBJECT INDEX	380