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Nota di contenuto	Molecular Electronics From Principles to Practice; Contents; Series Preface; Preface; Acknowledgements; Symbols and Abbreviations; 1 Scope of Molecular Electronics; 1.1 INTRODUCTION; 1.2 MOLECULAR MATERIALS FOR ELECTRONICS; 1.3 MOLECULAR-SCALE ELECTRONICS; 1.3.1 Evolution of Microelectronics; 1.3.2 Moore's Laws; 1.3.3 Beyond Moore; 1.4 THE BIOLOGICAL WORLD; 1.5 FUTURE OPPORTUNITIES; 1.6

CONCLUSIONS; BIBLIOGRAPHY; REFERENCES; 2 Materials' Foundations; 2.1 INTRODUCTION; 2.2 ELECTRONIC STRUCTURE; 2.2.1 Atomic Structure; 2.2.2 Electrons in Atoms; 2.2.3 Filling of Orbitals
2.2.4 The Periodic Table2.3 CHEMICAL BONDING; 2.3.1 Bonding Principles; 2.3.2 Ionic Bond; 2.3.3 Covalent Bond; 2.3.4 Metallic Bonding; 2.3.5 Van der Waals Bonding; 2.3.6 Hydrogen Bonding; 2.4 BONDING IN ORGANIC COMPOUNDS; 2.4.1 Hybridized Orbitals; 2.4.2 Isomers; 2.4.3 Double and Triple Bonds; 2.5 CRYSTALLINE AND NONCRYSTALLINE MATERIALS; 2.5.1 States of Matter; 2.5.2 Phase Changes and Thermodynamic Equilibrium; 2.5.3 The Crystal Lattice; 2.5.4 Crystal Systems; 2.5.5 Miller Indices; 2.5.6 Distance Between Crystal Planes; 2.5.7 Defects; 2.5.8 Amorphous Solids; 2.6 POLYMERS
2.6.1 Molecular Weight2.6.2 Polymer Structure; 2.6.3 Polymer Crystallinity; 2.7 SOFT MATTER: EMULSIONS, FOAMS AND GELS; 2.8 DIFFUSION; BIBLIOGRAPHY; REFERENCE; 3 Electrical Conductivity; 3.1 INTRODUCTION; 3.2 CLASSICAL THEORY; 3.2.1 Electrical Conductivity; 3.2.2 Ohm's Law; 3.2.3 Charge Carrier Mobility; 3.2.4 Fermi Energy; 3.3 ENERGY BANDS IN SOLIDS; 3.3.1 Quantum Mechanical Foundations; 3.3.2 Kronig-Penney Model; 3.3.3 Conductors, Semiconductors and Insulators; 3.3.4 Electrons and Holes; 3.3.5 Intrinsic and Extrinsic Conduction; 3.3.6 Quantum Wells; 3.3.7 Disordered Semiconductors
3.3.8 Conductivity in Low-dimensional Solids3.4 ORGANIC COMPOUNDS; 3.4.1 Band Structure; 3.4.2 Doping; 3.4.3 Solitons, Polarons and Bipolarons; 3.4.4 Superconductivity; 3.5 LOW-FREQUENCY CONDUCTIVITY; 3.5.1 Electronic Versus Ionic Conductivity; 3.5.2 Quantum Mechanical Tunnelling; 3.5.3 Variable Range Hopping; 3.5.4 Space-Charge Injection; 3.5.5 Schottky and Poole-Frenkel Effects; 3.6 CONDUCTIVITY AT HIGH FREQUENCIES; 3.6.1 Complex Permittivity; 3.6.2 Impedance Spectroscopy; BIBLIOGRAPHY; REFERENCES; 4 Optical Phenomena; 4.1 INTRODUCTION; 4.2 ELECTROMAGNETIC RADIATION; 4.3 REFRACTIVE INDEX
4.3.1 Permittivity Tensor4.3.2 Linear and Nonlinear Optics; 4.4 INTERACTION OF EM RADIATION WITH ORGANIC MOLECULES; 4.4.1 Absorption Processes; 4.4.2 Aggregate Formation; 4.4.3 Excitons; 4.4.4 Effect of Electric Fields on Absorption; 4.4.5 Emission Processes; 4.4.6 Energy Transfer; 4.5 TRANSMISSION AND REFLECTION FROM INTERFACES; 4.5.1 Laws of Reflection and Refraction; 4.5.2 Fresnel Equations; 4.5.3 Ellipsometry; 4.5.4 Thin Films; 4.6 WAVEGUIDING; 4.7 SURFACE PLASMONS; 4.7.1 The Evanescent Field; 4.7.2 Surface Plasmon Resonance; 4.8 PHOTONIC CRYSTALS; 4.8.1 Subwavelength Optics; BIBLIOGRAPHY
REFERENCES

Sommario/riassunto

This consistent and comprehensive text is unique in providing an informed insight into molecular electronics by contrasting the prospects for molecular scale electronics with the continuing development of the inorganic semiconductor industry. Providing a wealth of information on the subject from background material to possible applications, Molecular Electronics contains all the need to know information in one easily accessible place. Speculation about future developments has also been included to give the whole picture of this increasingly popular and important topic.