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Nota di contenuto	Front Cover; Functional Materials; Copyright Page; Contents; Preface; About the Editors; Contributors; 1 Soft Materials - Properties and Applications; 1.1 Introduction to Soft Matter; 1.1.1 Introduction; 1.1.2 Soft Matter: A Viscoelastic Fluid; 1.1.3 Shear Modulus and the Energy Density; 1.2 Intermolecular Interactions in Soft Materials; 1.2.1 Charge-Charge Interaction; 1.2.2 Ion-Dipole Interactions; 1.2.3 Dipole-Dipole Interactions; 1.2.4 Ion-Induced Dipole Interactions; 1.2.5 Dipole-Induced Dipole Interaction; 1.2.6 Induced Dipole-Induced Dipole Interactions; 1.2.7 Hydrogen Bonds 1.2.8 Hydrophobic Interactions1.2.9 Depletion Interactions; 1.3 Colloids; 1.3.1 Interactions Between Colloidal Particles; van der Waals Interaction; Electrostatic Forces Between Surfaces; 1.3.2 DLVO Theory of Colloid Stability; 1.4 Surfactant Assemblies; 1.4.1 Surface Tension and Surface Activity; 1.4.2 Surfactant Aggregation and Hydrophobic Effect; 1.4.3 Thermodynamics of Micelle Formation; 1.4.4 Dynamics of Micelle Formation; 1.4.5 Phase Behaviour of Surfactants; 1.4.6 Packing Parameter and Bending Rigidity; 1.5 Polymer Solutions; 1.5.1

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1.5.3 Size of a Freely Jointed Chain 1.5.4 Size of an Ideal Chain with Fixed Bond Angle; 1.5.5 Flexibility of a Polymer Chain; 1.5.6 Polymer Gels; 1.5.7 Theories of Gelation; Classical Theory or Flory-Stockmayer Model; Percolation Theory; 1.5.8 Polyelectrolytes and Counterion Condensation; Counterion condensation; 1.6 Experimental Techniques in Soft Matter; 1.6.1 Scattering Techniques; Light Scattering; Static Light Scattering; Dynamic Light Scattering; Small-Angle Neutron Scattering; Contrast Factor; Determination of Intraparticle Structure; Polydisperse Particles; Guinier Approximation
Porod Law Determination of Interparticle Structure Factor; Small-Angle X-Ray Scattering; 1.6.2 Microscopy; Cryo-Transmission Electron Microscope; 1.6.3 Rheology; 1.7 Applications of Soft Matter; 1.7.1 Stimuli Responsive Materials; 1.7.2 Soft Materials in Drug Delivery; 1.7.3 Nanotechnology Using Soft Materials; 1.7.4 Oil Field Applications; References; 2 Conducting Polymer Sensors, Actuators and Field-Effect Transistors; 2.1 Introduction; 2.2 Synthesis of Conducting Polymers; 2.2.1 Synthesis of Bulk and Fibre Polyindole; 2.2.2 Synthesis of Crystalline Polyaniline
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2.5.3 Transistor Characteristics of P3HT Active Layer

Sommario/riassunto

Functional materials have assumed a very prominent position in several high-tech areas. Such materials are not being classified on the basis of their origin, nature of bonding or processing techniques but are classified on the basis of the functions they can perform. This is a significant departure from the earlier schemes in which materials were described as metals, alloys, ceramics, polymers, glass materials etc. Several new processing techniques have also evolved in the recent past. Because of the diversity of materials and their functions it has become extremely difficult to obtain info
