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Nota di contenuto	Colloids in Paints; Contents; Preface; 1 Colloids in Paints; 1.1 The Disperse Particles; 1.2 The Dispersion Medium and Film Formers; 1.3 Deposition of Particles and Their Adhesion to the Substrate; 1.4 Flow Characteristics (Rheology) of Paints; References; 2 Emulsion, Dispersion and Suspension Polymerization: Preparation of Polymer Colloids and Their Stabilization; 2.1 Emulsion Polymerization; 2.1.1 Mechanism of Emulsion Polymerization; 2.1.2 Block Copolymers as Stabilizers in Emulsion Polymerization; 2.1.3 Graft Copolymers as Stabilizers in Emulsion Polymerization 2.2 Polymeric Surfactants for Stabilization of Preformed Latex Dispersions 2.3 Dispersion Polymerization; 2.3.1 Mechanism of Dispersion Polymerization; 2.3.2 Influence of Polymeric Surfactant Concentration and Molecular Weight on Particle Formation; 2.3.3 Effect of Monomer Solubility and Concentration in the Continuous Phase;

2.3.4 Stability/Instability of the Resulting Latex; 2.3.5 Particle Formation in Polar Media; References; 3 Pigment Dispersion; 3.1 Powder Wetting; 3.1.1 Wetting of Substrates; 3.1.2 Adhesion Tension; 3.1.3 Work of Adhesion, W_a ; 3.1.4 The Work of Cohesion 3.1.5 Spreading Coefficient, S 3.1.6 Contact Angle Hysteresis; 3.1.7 Reasons for Hysteresis; 3.1.8 Wenzel's Equation; 3.1.9 Surface Heterogeneity; 3.1.10 Critical Surface Tension of Wetting; 3.1.11 Effect of Surfactant Adsorption; 3.1.12 Wetting of Powders by Liquids; 3.1.13 Rate of Penetration of Liquids. The Rideal-Washburn Equation; 3.1.14 Measurement of Wettability of Powders; 3.1.14.1 Submersion Test - Sinking Time or Immersion Time; 3.1.14.2 Measurement of Contact Angles of Liquids and Surfactant Solutions on Powders; 3.1.15 Wetting Agents for Hydrophobic Pigments 3.1.16 Adsorption and Wetting Dynamics 3.1.17 General Theory of Adsorption Kinetics; 3.1.17.1 Adsorption Kinetics from Micellar Solutions; 3.1.17.2 Experimental Techniques for Studying Adsorption Kinetics; 3.2 Breaking of Aggregates and Agglomerates (Deagglomeration); 3.2.1 Classification of Dispersants; 3.2.2 Assessment and Selection of Dispersants; 3.2.2.1 Adsorption Isotherms; 3.2.3 Measurement of Dispersion and Particle Size Distribution; 3.2.3.1 Optical Microscopy; 3.2.3.2 Electron Microscopy; 3.2.3.3 Confocal Scanning Laser Microscopy (CLSM); 3.2.3.4 Scattering Techniques 3.3 Wet Milling (Comminution) 3.3.1 Bead Mills; 3.3.2 Principle of Operation of Bead Mills; References; 4 Colloid Stabilization of Paint Dispersions; 4.1 Electrostatic Double Layer Repulsion; 4.1.1 Structure of the Solid/Liquid Interface - Origin of Charges on Surfaces; 4.1.2 Structure of the Electrical Double Layer; 4.1.2.1 Diffuse Double layer (Gouy and Chapman); 4.1.2.2 Stern-Grahame Model of the Double Layer; 4.1.3 Electrical Double Layer Repulsion; 4.1.4 Van der Waals Attraction; 4.2 Total Energy of Interaction; 4.2.1 Deryaguin-Landau-Verwey-Overbeek (DLVO) Theory 4.2.2 Flocculation of Electrostatically Stabilized Suspensions

Sommario/riassunto

The first modern approach to relate fundamental research to the applied science of colloids, this series bridges academic research and practical applications, thus providing the information vital to both. Written by the very best scientists in their respective disciplines, this volume describes the role of colloids in paints, highlighting the importance of fundamental research in industrial applications. For surface, polymer and physicochemists, materials scientists, and chemical engineers.
