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Nota di contenuto	Dispersion of Powders in Liquids and Stabilization of Suspensions; Contents; Preface; 1: General Introduction; 1.1 Fundamental Knowledge Required for Successful Dispersion of Powders into Liquids; 1.1.1 Wetting of Powder into Liquid; 1.1.2 Breaking of Aggregates and Agglomerates into Individual Units; 1.1.3 Wet Milling or Comminution; 1.1.4 Stabilization of the Resulting Dispersion; 1.1.5 Prevention of Ostwald Ripening (Crystal Growth); 1.1.6 Prevention of Sedimentation and Formation of Compact Sediments (Clays); 1.2 Particle Dimensions in Suspensions; 1.3 Concentration Range of Suspensions 1.4 Outline of the Book References; 2: Fundamentals of Wetting and Spreading; 2.1 Introduction; 2.2 The Concept of the Contact Angle; 2.2.1 The Contact Angle; 2.2.2 Wetting Line - Three-Phase Line (Solid/Liquid/Vapor); 2.2.3 Thermodynamic Treatment - Young's Equation; 2.3 Adhesion Tension; 2.4 Work of Adhesion Wa; 2.5 Work of

Cohesion; 2.6 Calculation of Surface Tension and Contact Angle; 2.6.1 Good and Girifalco Approach; 2.6.2 Fowkes Treatment; 2.7 The Spreading of Liquids on Surfaces; 2.7.1 The Spreading Coefficient S; 2.8 Contact Angle Hysteresis; 2.8.1 Reasons for Hysteresis
2.8.2 Wenzel's Equation References; 3: The Critical Surface Tension of Wetting and the Role of Surfactants in Powder Wetting; 3.1 The Critical Surface Tension of Wetting; 3.2 Theoretical Basis of the Critical Surface Tension; 3.3 Effect of Surfactant Adsorption; 3.4 Dynamic Processes of Adsorption and Wetting; 3.4.1 General Theory of Adsorption Kinetics; 3.4.2 Adsorption Kinetics from Micellar Solutions; 3.4.3 Experimental Techniques for Studying Adsorption Kinetics; 3.4.3.1 The Drop Volume Technique; 3.4.3.2 Maximum Bubble Pressure Technique; 3.5 Wetting of Powders by Liquids
3.5.1 Rate of Penetration of Liquids: The Rideal-Washburn Equation
3.5.2 Measurement of Contact Angles of Liquids and Surfactant Solutions on Powders; 3.5.3 Assessment of Wettability of Powders; 3.5.3.1 Sinking Time, Submersion, or Immersion Test; 3.5.3.2 List of Wetting Agents for Hydrophobic Solids in Water; References; 4: Structure of the Solid-Liquid Interface and Electrostatic Stabilization; 4.1 Structure of the Solid-Liquid Interface; 4.1.1 Origin of Charge on Surfaces; 4.1.1.1 Surface Ions; 4.1.1.2 Isomorphic Substitution; 4.2 Structure of the Electrical Double Layer
4.2.1 Diffuse Double Layer (Gouy and Chapman)4.2.2 Stern-Grahame Model of the Double Layer; 4.3 Distinction between Specific and Nonspecific Adsorbed Ions; 4.4 Electrical Double-Layer Repulsion; 4.5 van der Waals Attraction; 4.6 Total Energy of Interaction; 4.6.1 Deryaguin-Landau-Verwey-Overbeek Theory; 4.7 Flocculation of Suspensions; 4.8 Criteria for Stabilization of Dispersions with Double-Layer Interaction; References; 5: Electrokinetic Phenomena and Zeta Potential; 5.1 Stern-Grahame Model of the Double Layer; 5.2 Calculation of Zeta Potential from Particle Mobility
5.2.1 von Smoluchowski (Classical) Treatment

Sommario/riassunto

Teaching the fundamental knowledge required for successful dispersion of powders in a liquid, this book covers a host of topics -- from recent advances to industrial applications. In 15 chapters it supports formulation chemists in preparing a suspension in a more rational way, by applying the principles of colloid and interface science, while at the same time enabling the research scientist to discover new methods for preparing stable suspensions. Essential reading for those working in the pharmaceutical, cosmetic, food, paint, ceramic and agricultural industries.

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