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Nota di contenuto	Product Design and Engineering; Contents; List of Contributors; Introduction; What Is Product Design and Engineering?; Why This Book?; References; 1 Rheology of Disperse Systems; 1.1 Introduction; 1.2 Basics of Rheology; 1.3 Experimental Methods of Rheology; 1.3.1 Rotational Rheometry; 1.3.1.1 Concentric Cylinder Measuring System; 1.3.1.2 Parallel-Plate Measuring System; 1.3.1.3 Cone-and-Plate Measuring System; 1.3.2 Capillary Rheometer; 1.4 Rheology of Colloidal Suspensions; 1.4.1 Hard Spheres; 1.4.1.1 Viscosity of Suspensions of Spheres in Newtonian Media; 1.4.1.2 Non-spherical Particles 1.4.2 Influence of Colloidal Interactions on Rheology1.4.2.1 Repulsive Particles; 1.4.2.2 Attractive Particles; 1.4.3 Effect of Particle Size Distribution; 1.4.4 Shear Thickening; 1.5 Rheology of Emulsions; References; 2 Rheology of Cosmetic Emulsions; 2.1 Introduction; 2.2 Chemistry of Cosmetic Emulsions; 2.2.1 Modern Emulsifiers; 2.2.2 Skin Care and Cleansing; 2.2.3 Microemulsions; 2.2.4 Emulsifier-Free Products; 2.2.5 Production of Emulsions; 2.2.6 Processes Occurring

During Emulsification; 2.2.7 Serrated Disc Disperser; 2.3 Rheological Measurements; 2.3.1 Stationary Flow Behavior
2.3.2 Stress Ramp Test2.3.3 Newtonian Flow Behavior; 2.3.4 Creep and Creep Recovery Test; 2.3.5 Ideal Elastic Behavior; 2.3.6 Ideal Viscous Behavior; 2.3.7 Real Viscoelastic Behavior; 2.3.8 Steady Flow Curve; 2.4 Dynamic Mechanical Tests (Oscillation); 2.4.1 Amplitude Dependence; 2.4.2 Structure Breakdown and Build-Up; 2.4.3 Time Dependence; 2.4.4 Frequency Test; 2.4.5 Temperature Dependence; 2.4.6 Combined Temperature-Time Test; References; 3 Rheology Modifiers, Thickeners, and Gels; 3.1 Introduction; 3.2 Classification of Thickeners and Gels; 3.3 Definition of a ""Gel""
3.4 Rheological Behavior of a ""Gel""3.4.1 Stress Relaxation (After Sudden Application of Strain); 3.4.2 Constant Stress (Creep) Measurements; 3.4.3 Dynamic (Oscillatory) Measurements; 3.5 Classification of Gels; 3.5.1 Polymer Gels; 3.5.1.1 Physical Gels Obtained by Chain Overlap; 3.5.1.2 Gels Produced by Associative Thickeners; 3.5.2 Crosslinked Gels (Chemical Gels); 3.6 Particulate Gels; 3.6.1 Aqueous Clay Gels; 3.6.1.1 Organo-clays (Bentones); 3.6.2 Oxide Gels; 3.6.3 Gels Produced Using Particulate Solids and High Molecular Weight Polymers
3.7 Rheology Modifiers Based on Surfactant SystemsReferences; 4 Use of Rheological Measurements for Assessment and Prediction of the Long-Term Assessment of Creaming and Sedimentation; 4.1 Introduction; 4.2 Accelerated Tests and Their Limitations; 4.3 Application of High Gravity (g) Force; 4.4 Rheological Techniques for Prediction of Sedimentation or Creaming; 4.5 Separation of Formulation (""Syneresis""); 4.6 Examples of Correlation of Sedimentation or Creaming with Residual (Zero Shear) Viscosity; 4.6.1 Model Suspensions of Aqueous Polystyrene Latex
4.6.2 Sedimentation in Non-Newtonian Liquids

Sommario/riassunto

Covering the whole value chain - from product requirements and properties via process technologies and equipment to real-world applications - this reference represents a comprehensive overview of the topic. The editors and majority of the authors are members of the European Federation of Chemical Engineering, with backgrounds from academia as well as industry. Therefore, this multifaceted area is highlighted from different angles: essential physico-chemical background, latest measurement and prediction techniques, and numerous applications from cosmetic up to food industry. Recommende