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Nota di contenuto	Front cover; Title page; Copyright page; Dedication; Table of contents; List of Contributors by Country of Residence; Acknowledgements; Contributing Authors; Forward; 1 General Introduction: Clays, Clay Minerals, and Clay Science; Aim and Scope; Clay; Clay Mineral; Distinction between Clay and Clay Mineral; Clay Mineral Properties; Associated Minerals; Associated Phases; Other Solids with Similar Properties; Clay Mineral Particles and Aggregates; Clay Minerals and Environment; Alternative Concepts of Clay Minerals; Clay Science; Concluding Remarks; References 2 Structures and Mineralogy of Clay MineralsGeneral Structural Information; Layer Charge (X); Polytypism; Mixed-Layer Structures; The 1:1 Layer; Dioctahedral 1:1 Minerals: The Kaolin Group; A. Kaolinite; B. Dickite; C. Nacrite; D. Halloysite; E. Hisingerite; Trioctahedral 1:1 Minerals: The Serpentine Group; The 2:1 Layer; Pyrophyllite, Talc, and Related Minerals; True and Brittle Micas; Illite; Smectites; Vermiculite; Chlorite; Illite-Smectite and other Interstratifications between

Dioctahedral Non-Expandable and Expandable 2:1 Layers; Allophane and Imogolite; Palygorskite and Sepiolite
References3 Surface and Interface Chemistry of Clay Minerals; Surface Atoms; Surface Structures and Properties; The Neutral Siloxane Surface; Constant Charge Sites (Siloxane Surface with Permanent Charge); The Hydroxyl Surface; Hydrophobic-Hydrophilic Character of Clay Mineral Surfaces; Clay-Water Interactions; Structure and Properties of Water Sorbed to Clay Mineral Surfaces; Influence of Water on Clay Mineral Structure; Surface Chemistry in Aqueous Dispersions; Preliminary Considerations; Spectroscopy; Monomers, Dimers and Aggregates; Organisation of Clay Mineral Particles and Molecules
Self-AssemblingLangmuir-Blodgett Technique; References; 4 Synthetic Clay Minerals and Purification of Natural Clays; Methodology; Synthesis from Very Dilute Solutions; Solid-State Reactions; Hydrothermal Synthesis; Germination Process; Crystal Growth; Role of temperature; Role of pH; Role of time: crystallization versus crystallinity; Intermediate phases; Characterization of Synthetic Clay Minerals; Synthesis of Specific Clay Minerals; Micas; Smectites; Kaolinite; Sepiolite; Purification of Clays; Purification Procedures; Decomposition of Carbonates; Recommended procedure
Dissolution of (Hydr)oxidesRecommended procedure; Oxidation of Organic Materials; Recommended procedure; Dissolution of Silica; Removal of Remaining Salt by Dialysis and Fractionation; A Simplified 'Gentle' Purification Method; Na+-exchange; Washing; Recommended procedure; A Pilot Purification Technique; Conclusions; References; 5 Colloid Clay Science; Clay Mineral Particles; Particle and Aggregate Structure; Layer and Edge Charges; Clay Minerals in Water; Hydrates of 2:1 Clay Minerals; Structure of the Hydrates; Colloidal Dispersions; Electrokinetic Properties
Preparation of Colloidal Dispersions

Sommario/riassunto

The first general texts on clay mineralogy and the practical applications of clay, written by R.E. Grim, were published some 40-50 years ago. Since then, a vast literature has accumulated but this information is scattered and not always accessible. The Handbook of Clay Science aims at assembling the scattered literature on the varied and diverse aspects that make up the discipline of clay science. The topics covered range from the fundamental structures (including textures) and properties of clays and clay minerals, through their environmental, health and industrial applicati