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Breakage During Mining; 3.6. Breakage During Preparation; 3.6.1. Measurement of Coal Breakage Properties; 3.6.2. Grindability; 3.7. Maceral and Mineral Partitioning During Beneficiation 3.7.1. Maceral Partitioning During Beneficiation 3.7.2. Mineral and Trace Element Partitioning; 3.7.3. Froth Flotation/Column Flotation of Fine Particles; 3.7.4. Oil Agglomeration; 3.7.5. Magnetic Separation; 3.7.6. Triboelectrostatic Separation; Chapter 4: Coal Combustion; 4.1. Introduction; 4.2. Combustion Processes and Technology; 4.3. Coal Behavior in Pulverization; 4.4. Combustion Properties of Coal; 4.4.1. Coal Characteristics for Combustion: Basic Combustion/Maceral Relationships; 4.4.2. Mineral Matter Behavior During Combustion 4.4.3. Fate of Trace Elements in Combustion and Ash Formation 4.4.4. Emissions (Particulates <10 µm, Fly Ash, Dioxins, NO_x, CO₂, SO₂); 4.5. Fly Ash; 4.5.1. Carbon in Fly Ash; 4.5.2. Glass and Minerals in Fly Ash; Chapter 5: Coal Gasification; 5.1. Introduction; 5.2. Processes and Methods for Coal Gasification; 5.2.1. Various Types of Gasifiers and Gasification Processes; 5.3. Main Characteristics and Properties of Coals for Gasification; 5.3.1. Coal Characterization and Behavior During Gasification (Primarily the Organic Component) 5.3.2. Mineral Characterization and Behavior During Gasification 5.3.3. Fate of Trace Elements During Gasification; 5.4. Characterization of Gasification Residues; 5.5. Advanced Gasification (Polygeneration, Cogasification); 5.5.1. Integrated Gasification Combined Cycle (IGCC); 5.5.2. Hydrogen Production via Cogasification; 5.5.3. Air-Blown Gasification Cycle (ABGC); 5.5.4. Underground Coal Gasification (UCG); 5.5.5. Biomass Gasification; 5.5.6. Plasma Gasification; Chapter 6: Direct Coal Liquefaction; 6.1. Introduction; 6.2. Process and Methods for Coal Liquefaction 6.3. Main Characteristics and Properties of Coals for Liquefaction

Sommario/riassunto

This book is an integrated approach towards the applications of coal (organic) petrology and discusses the role of this science in the field of coal and coal-related topics. Coal petrology needs to be seen as a continuum of organic (macerals) and inorganic (minerals and trace elements) contributions to the total coal structure, with the overprint of coal rank. All this influences the behavior of coal in utilization, the coal by-products, the properties of coal as a reservoir for methane or a sequestration site for carbon dioxide, and the relationships of coal utilization with health and e
