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### Sommario/riassunto

This book, edited by Qi Shao, Zhenhui Kang, and Mingwang Shao, focuses on the synthesis and catalytic applications of various materials. It explores the synthesis methods, structural properties, and catalytic performance of materials like oxides, metals, and chalcogenides. The authors discuss the theoretical and practical significance of these materials in energy, industry, and environmental applications. The book provides detailed insights into the crystalline structures and metastable phases of materials, emphasizing their thermodynamic instability and potential applications. Aimed at researchers and students in chemistry and materials science, it combines recent research developments with practical methodology, presenting a comprehensive overview of the field.

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