

Book Review

Celebrating the International Year of Mineralogy – Progress and Landmark Discoveries of the Last Decades.

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The book, *Celebrating the International Year of Mineralogy (Progress and Landmark Discoveries of the Last Decades)*, is a good read that covers a variety of topics and is divided into 13 chapters. This book carefully documents exciting recent mineral discoveries and developments in the science of mineralogy. The chapters are written by experts in each field, giving a comprehensive overview of the subject matter. The book will be enjoyed by all mineral enthusiasts, beginners and those with a more advanced understanding of mineral science.

‘Discovery of Fullerenes and Quasicrystals in Nature’ by Luca Bindi discusses the presence of fullerenes and quasicrystals in nature. The expression and art of storytelling is involved in this scientific essay. The article emphasises that the discovery of fullerenes and quasicrystals in nature have had far-reaching implications for science and technology.

‘The Evolution of Mineral Evolution’ by Robert M. Hazen, Shaunna M. Morrison and Anirudh Prabhu gives a vivid account of mineral evolution. It is a dynamic field that provides insight into how the minerals on Earth have changed over the course of billions of years.

‘Mineral Informatics: Origins’ by Anirudh Prabhu, Shaunna M. Morrison and Robert M. Hazen on mineral informatics represents a new approach in mineralogical studies. This approach makes use of the abundant volume and variety of mineral data that led to discoveries in the field of mineral sciences. The chapter reveals integration of conventional mineralogical knowledge with contemporary data-driven methodologies to gain fresh insights into mineral evolution with time.

‘The Discovery of New Minerals in Modern Mineralogy: Experience, Implications and Perspectives’ by Igor V. Pekov and Dmitry Yu. Pushcharovsky appears to be a comprehensive exploration of the importance of studying new minerals in modern science. It discusses the role of advanced analytical techniques and provides real-world examples from different geological settings to illustrate the significance of these discoveries.

‘Structural and Chemical Complexity of Minerals: The Information-Based Approach’ by Sergey V. Krivovichev provides

an account of the theoretical exploration of complexity in minerals. This work probably advances our knowledge of the evolution of minerals and the measurement of complexity in the field of mineralogy.

‘Predicting HP-HT Earth and Planetary Materials’ by Razvan Caracas, Chris Mohn and Zhi Li provides an overview of current advancements in computational mineralogy and emphasises the critical importance of atomistic computer simulations in deeper understanding of planetary interiors and their evolution, encompassing Earth and other celestial bodies.

‘Structural Mechanisms Stabilizing Hydrous Silicates at Deep-Earth Conditions’ by Mark D. Welch delves into the fascinating world of hydrous mineralogy within the Earth’s mantle, especially in the context of high-pressure conditions, such as those found in subduction zones. It highlights mechanisms by which mineral structures adapt to high pressure, such as cation-site vacancies and protonation, and underscores the importance of these processes in understanding the behaviour of minerals at great depths in the Earth’s interior.

‘Discovering High-Pressure and High-Temperature Minerals’ by Oliver Tschauner and Chi Ma discusses the criteria and categorisation of high-pressure and high-temperature minerals, emphasising the importance of pressure-dependent ionic radii and their relevance in different geological contexts, including the deep Earth and diamonds.

‘Mineralogy of Planetary Cores’ by C. C. Zurkowski and Y. Fei provides a comprehensive understanding of the composition and structure of planetary cores within our solar system. The chapter emphasises the importance of experimental and theoretical research to unravel the mysteries of planetary evolution by studying core chemistry and dynamics under extreme *P-T* conditions.

‘Going Inside a Diamond’ by Fabrizio Nestola, Martha G. Pamato and Davide Novella highlights the exceptional qualities of diamonds, their longevity, and how they advance our knowledge of the Earth’s deep interior and geological history.

‘Mineralogy of Returned Sample from C-Type Near-Earth Asteroid (162173) Ryugu’ by Shogo Tachibana highlights the significance of the Ryugu sample in advancing our understanding of the Solar System’s composition, evolution, and the processes that have occurred over geological time scales.

‘Mineral Discoveries that Changed Everyday Life’ by Giuseppe Cruciani and Alessandro F. Gualtieri provides a comprehensive overview of the significance of mineralogical discoveries throughout history and their influence on science and technology. It emphasises the shift from empirical to systematic approaches and highlights the transformative impact vis-à-vis various aspects of human life.

‘Hydrogen, the Principal Agent of Structural and Chemical Diversity in Minerals’ by Frank C. Hawthorne underlines the importance of hydrogen in mineralogy and its role in shaping the structures and compositions of minerals.

To conclude, the book is a befitting tribute to those who have contributed to the field of mineralogical studies and is an interesting read celebrating the International Year of Mineralogy.