

BOOK REVIEW

The Diamond-Bearing Kokchetav Massif, Kazakhstan: Petrochemistry and Tectonic Evolution of a Unique Ultrahigh-Pressure Metamorphic Terrain. C.D. Parkinson, I. Katayama, J. Liou & S. Maruyama, eds. Frontiers Science Series No. 38, Universal Academy Press Inc., Tokyo, Japan. US\$70. ISBN 4-946443-78-9.

It may surprise many geoscientists that some of the metamorphic rocks comprising parts of the Kokchetav Massif in Kazakhstan are, in terms carats/tonne, the most diamondiferous rocks yet recognized. Unfortunately, although the diamond crystals are abundant, they are exceedingly small, typically 5–25 μm , and the occurrence thus has no commercial value. In contrast, the scientific value of these rocks is enormous, as recrystallization of a supracrustal assemblage within the stability field of diamond at pressures of greater than 4.5 GPa requires burial to depths of at least 120 km, followed by uplift to crustal regimes. Tracing and understanding these processes are of immense significance for an understanding of the evolution of ultra-high pressure metamorphic terranes.

This book presents a compilation of the results of a Japan – U.S. – Kazakhstan cooperative project established in 1997 to study all aspects of the Kokchetav Massif. The scope of the volume encompasses geology, petrology, mineralogy, geochemistry, isotope geochemistry and geochronology of rocks of the massif, together with interpretations of the tectonic evolution. As a consequence of this wide scope, there is something of interest to most geoscientists in this volume, regardless of their particular research interests.

The book contains 30 chapters and is divided into seven sections, each of which is concerned with a specific aspect of the project. These sections are: I Introduction and Overview (4 papers); II Geological & Structural Framework (2 papers); III Diamond and other

Ultrahigh Pressure Minerals (8 papers); IV Petrology of Diamond-bearing and other UHP Metamorphic Rocks (7 papers); V Geochemical Characteristics of Metabasites, Marbles and Associated Rocks (2 papers); VI P–T–Time Paths and Exhumation (3 papers); VII The Kokchetav Massif and other Relics of Deep Continental Subduction: Future Perspectives (4 papers). The text is accompanied by an extensive list of general references and a complete list of those specific to the Kokchetav Massif. The latter includes references to all of the initial Russian work on this region, although none of the Russian geologists who undertook that work are authors or co-authors of papers in this volume.

Overall, the quality of this book is high, and the price is reasonable. The format of each chapter is consistent, and the editors appear to have gone to some lengths to ensure that the English syntax and grammar are correct. The quality and legibility of the line drawings are good. However, many but not all of the half-tone illustrations are fuzzy and lack contrast.

In reviewing this book, I learned a great deal about the Kokchetav Massif and its high-pressure-derived mineralogy. However, the strength of the book lies in the summaries of metamorphic and tectonic processes that lead to ultra-high pressure (UHP) metamorphic terranes. The work is essential reading for anyone concerned with these matters. Although these rocks are of no present economic significance, I recommend the book to all mineralogists interested in the genesis of diamond and high-pressure assemblages of minerals in general.

Roger H. Mitchell
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