Magmas Under Pressure

Advances in High-Pressure Experiments on Structure and Properties of Melts

Edited by Yoshio Kono and Chrystèle Sanloup

An up-to-date reference covering the technological advances in and importance of measuring high-pressure magmas

- Includes research and examples of high-pressure technologies for studying the structure and properties of magma
- Summarizes the current knowledge on the structure and properties of high-pressure magma
- Highlights the importance of magma in understanding the evolution of the Earth's interior

Magmas Under Pressure: Advances in High-Pressure Experiments on Structure and Properties of Melts summarizes recent advances in experimental technologies for studying magmas at high pressures and presents the reader with current knowledge, present issues, and future perspectives. In the past decade new developments in high-pressure experiments, particularly with synchrotron X-ray techniques, have advanced the study of magmas under pressure. These new experiments have revealed significant changes of structure and physical properties of magmas under pressure, which significantly improves our understanding of the behavior of magmas in the Earth's interior. *Magmas Under Pressure* is an essential reference for scientists in many fields, including physics, chemistry, material sciences, engineering, and also provides information on industrial applications such as glass formation and metallurgical processing.

Yoshio Kono is a beamline scientist at a synchrotron X-ray facility (HPCAT at the Advanced Photon Source) in the USA. He manages an X-ray experimental station for high-pressure studies of melts. He studies structure and physical properties of not only magmas in Earth science but also liquids and amorphous materials in physics and material sciences. He received a PhD in environmental and natural sciences at Yokohama National University, Japan, in 2006.

Chrystèle Sanloup is a professor of Earth Sciences in Paris (Sorbonne Université), France. Her main interests are the chemical and physical properties of geomaterials at the extreme pressure and temperature conditions found in planetary interiors. She specializes in in situ X-ray synchrotron-based techniques, in particular for the measurement of melts properties. She received a PhD in Universe Sciences at Ecole Normale Superieure de Lyon, France, 2000.

ISBN 978-0-12-811301-1

9 780128 113011

ELSEVIER

elsevier.com/books-and-journals

Contents

PART 2 ADVANCES IN EXPERIMENTAL STUDIES OF MELTS AT HIGH PRESSURES