Gautam Sen

Petrology

Principles and Practice

This undergraduate textbook provides a solid theoretical foundation of petrology and closely follows the core curriculum adopted by most universities throughout the world. Numerous illustrations, worked-out problems, end-of-chapter exercises, study boxes with advanced material, and case examples give the student a good understanding of the theoretical principles of petrology and how such principles are applied to real rocks in deciphering global earth processes.

The first chapter introduces the student to important developments in our understanding of how the earth works today and how it may have evolved over geological time, followed by four chapters in which the student is given a quantitative understanding of phase diagrams and other geochemistry concepts. Appendices with supplemental information offer the student a more extensive conceptual understanding of the principles.

Later chapters use natural examples to illustrate how petrologic and geochemical tools are applied in various global tectonic environments. Detailed examination of individual field examples and classic geological sites is carried out throughout this book to give the student an understanding of how these petrologic tools are used to solve geological problems on all scales.

As an in-depth source of information, this textbook is also useful for graduate students in petrology and for practitioners in all related fields of earth sciences.

Dr. Gautam Sen is the Vice Provost of Research & Graduate Studies and Professor of Environmental Science at the American University of Sharjah (AUS), United Arab Emirates. Prior to moving to the UAE, Dr. Sen was the Associate Dean of Research at Florida International University (FIU), where he also served as Chair of the Department of Earth Sciences and was the recipient of numerous research awards, including the prestigious Excellence in Service Award. He is presently on a leave of absence from FIU, where he is a tenured Full Professor. Dr. Sen received his PhD in Geosciences from the University of Texas at Dallas, and was a post-doctoral fellow at the University of California at Los Angeles. He has written and edited several books and published papers in highly ranked journals, including Science and Nature. He has served on international committees, given numerous lectures, and chaired technical conferences worldwide.

Dr. Sen has been a member of several US-based national and international committees, including research panels at the National Science Foundation and the National Institutes of Health. He served as a program officer at the National Science Foundation in Washington, DC (later in Arlington, VA) and founded the Florida Center for Analytical Electron Microscopy.

Earth Sciences

ISBN 978-3-642-38799-9

9 783642 387999

▶ springer.com