American Mineralogist, Volume 99, page 556, 2014

Book Review

EARTH MATERIALS: Introduction to Mineralogy and Petrology by Cornelis Klein and Anthony R. Philpotts (2013) Cambridge University Press. 536 pp. ISBN: 978-0-521-14521-3 (paperback) $99 list. (Also available in hard cover and as an e-book.)

In *Earth Materials: Introduction to Mineralogy and Petrology* by Cornelis Klein and Anthony Philpotts, minerals and rocks are presented in the context of their geologic setting. This organization and the many field, hand sample, and thin sections photos (in color) make this book interesting and one that students are more inclined to read. Following an introduction to the formation of the elements and solid Earth processes, the book follows the outline of several mineralogy textbooks; chapters 3–6 discuss the physical properties of minerals, mineral chemistry, crystallography, and optical mineralogy, respectively. The last three chapters deal with economic minerals, resources, and Earth materials and human health. It is in the presentation of minerals and mineral assemblages (over half of the book) where this book is different and makes Earth science students want to learn more about minerals and rocks. Igneous, sedimentary, and metamorphic rocks are each presented with a chapter devoted to the minerals in that rock type followed by a chapter on the processes pertinent to the formation of that rock type (i.e., petrology). For igneous and sedimentary rocks, a chapter on classification and geologic occurrence follows the petrology chapter. Colored photographs and photomicrographs are cleverly used to illustrate rock classifications and textures.

Mineral descriptions are coupled with hand specimen photographs, crystal structure images from CrystalViewer (rotatable images are available online), and pertinent mineral composition diagrams. Although the book does not include identification tables that separate minerals by their physical or optical properties, this proved to be less of a problem than I initially thought. Students knew what minerals to expect so they used reference tables available online or those in other books. For petrography there is a figure that separates minerals by retardation (birefringence assuming 30 micrometers thickness is given) and lists other optical properties. Colored and colorless minerals are in separate side-by-side tables. A discussion of imaging software is presented as a box within the text, and a figure comparing modal abundance in thin section is included.

For crystallographers the brief discussions of space groups and X-ray diffraction will be distressing. Petrographers will want a reference book for the optical properties of minerals, and petrologists will want a more mathematical approach. However, as a readable book for Earth science students this book is hard to beat. The basics are all there to prepare and excite students for more advanced courses in crystallography, petrology, and geotectonics.

The book is meant for a one-semester course in Earth materials, but I use it for two semesters—one on mineralogy and one on petrography/introductory petrology. Maybe as more Earth scientists see how interesting mineral science is and how much minerals can tell us about Earth processes, we won't need to limit our discussion of minerals and rocks to one semester.

Jo Laird
Department of Earth Sciences, UNH
56 College Road
Durham, New Hampshire 03824, U.S.A.

0003-004X/14/0203–556$05.00/DOI: http://dx.doi.org/10.2138/am.2014.630