

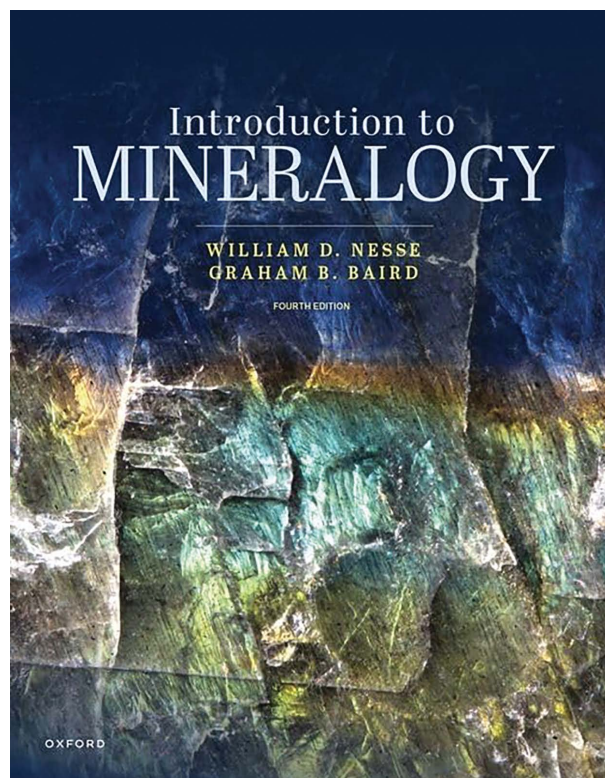
BOOK REVIEW

Book Review: *Introduction to Mineralogy, Fourth Edition.*
(2023) By William Nesse and Graham Baird. Oxford University Press. Paperback ISBN 9780197614600, 560 pages. \$129.99.

I can still vividly recall thumbing through the pages of *Introduction to Mineralogy* (1st ed.) as an undergraduate student. I was so mesmerized by its content that I would sit for hours reading its pages and closely examining its numerous images, figures, and tables. The more I learned, the more fascinated and curious I became with the topic. Before long, I couldn't help but daydream about the possibilities of finding these minerals in nature and studying them myself. More than 20 years later, that fascination and curiosity is still with me, and so is that first edition! (Admittedly, I now own all four editions). So, it is with great pleasure that I can impart that same sense of curiosity, fascination, and passion for mineralogy to my own students by sharing with them the newest edition of *Introduction to Mineralogy* (4th ed., William D. Nesse and Graham B. Baird).

From the novice to the expert, *Introduction to Mineralogy* (4th ed.) continues to be a classic textbook and reference for anyone interested in minerals. Like previous editions, this 560 page book is divided into three parts: (1) crystallography and crystal chemistry; (2) mineral properties, study, and identification; and (3) mineral descriptions. This logical organization makes it easy to navigate and enjoy. With clear, concise text and an abundance of high-quality illustrations, it is an appropriate textbook for teaching undergraduate courses such as an introduction to mineralogy, optical mineralogy, economic geology, and Earth materials. This new edition also contains a wealth of online instructor's resources (e.g., PowerPoint figures, appendices, and test banks). Online access to over 400 high-resolution color images of hand samples and thin sections is also an invaluable teaching resource that makes this book even more accessible. Each thin section image is accompanied by detailed figure captions that outline the mineral's optical properties in plane-polarized light (PPL) and cross-polarized light (XPL). Access to the entire textbook online through the RedShelf eReader is also a welcomed feature that makes it possible to obtain high-resolution versions of the textbook's figures and images for teaching purposes. Despite the accessible format and its many online features, owning a physical hard copy of the textbook is still highly recommended.

Similar to previous editions, the newest edition contains detailed descriptions of over 100 common minerals, providing



an excellent resource and reference. Starting with silicate minerals (chapter 11), these descriptions are organized into chapters based on mineral groups. Each chapter contains a plethora of well-cited information about each mineral's structure, composition, physical properties, optical properties, occurrences, distinguishing characteristics, uses and impact on society, and a list of additional reading suggestions. The appendices are also a particularly helpful resource for students, as they contain tables of ionic radii, determinative tables for mineral identification, and common rock-mineral associations.

While many of the chapters remain relatively unchanged from past editions, this latest edition contains several new updates that help to expand the book's coverage. Specifically, chapters 8 and 9 contain a more in-depth summary of modern analytical instrumentation and techniques used by mineralogists, petrologists, and geochemists. These updates include updated text and figures that emphasize single-crystal diffraction, transmission electron

microscopy (TEM), scanning electron microscope (SEM) detectors, as well as new descriptions for cathodoluminescence and X-ray fluorescence (including handheld XRF). Chapter 10 (“Strategies for Study”) now emphasizes the importance of field research and how it provides the necessary geologic context for mineral identification and further study.

Although this book deserves considerable praise, there are a few minor aspects that I find disappointing compared to previous editions. In particular, the fourth edition is paperback, rather than hardbound. One thing that I have come to appreciate about previous editions is that they all came with a hard cover. Albeit, my copies have become fairly weathered, but the scratches and bent corners testify to how often I have used these books for teaching and as a reference throughout the years. Had it not been for that hard cover, my beloved first edition may not have lasted this long. The fond memories that I have of that book is something that I want for my students, as they look back and reflect on their fourth edition copy. Furthermore, with the exception of the Interference Color Chart (Plate 1), I am saddened to see that the newest edition no longer has any color. The second and third editions highlighted chapter titles, headings, figure numbers, and the occasional inset box with a light

purple color. Although it was used sparingly, the color helped to break up the monotony of black and white text and images that is so pervasive in textbooks. Mineralogy is such a rich and colorful science that it seems only appropriate that some color images be used to introduce and emphasize particular concepts (e.g., pleochroism, dispersion, and interference colors in XPL). Additionally, I appreciate the conscious attempt to describe the impacts of minerals on society throughout the book. However, I am surprised that the authors overlooked the opportunity to more thoroughly discuss the rapidly growing interest in critical minerals that are so necessary for renewable energy technologies, medicine, personal technologies, and transportation. This topic is only given a few short paragraphs. Combining more emphasis on critical minerals along with the future of mineral-based careers would be a welcomed component in the next edition. Despite these minor criticisms, *Introduction to Mineralogy* (4th ed.) is an excellent textbook that has a home on my bookshelf.

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