

# Manual of Optical Mineralogy

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## Manual of Optical Mineralogy

By David Shelley

American Elsevier Publishing Company, Inc., 242 p. 1975.

Hard cover, \$35.00; soft cover, \$26.95

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In his preface, the author states, "In order to cover all those aspects of crystallography, theory, technique, procedure, and systematics used in the practice of optical mineralogy, most teachers find it necessary to recommend several texts. These not only prove expensive to the student but often are too detailed and abstruse for practical work. The prime intention of this book . . . is to provide a handy one-volume reference to all the information normally required in the laboratory." In general, Dr. Shelley is very successful in achieving his goal.

The first part of the book, chapters 1, 2 and 3, deals with background material - a general review of crystallography, the nature of the polarizing microscope, and crystal optics. The necessity for the inclusion of Chapter 1, "An Introduction to Crystallography", is open to question. To this reviewer it appears inconsistent with the lack of any treatment of stereographic projection, which the author justifies by saying that it, "... is not given since most students with a grounding in crystallography and/or structural geology will already be familiar with it." Almost certainly nearly all those using this book will have an understanding of the material covered in Chapter 1. Chapter 2 provides a good description of a polarizing microscope, and Chapter 3, along with portions of the following two chapters, provides a summary of the principles of optical mineralogy that should prove adequate for most persons using a polarizing microscope.

The second part of the book, Chapter 4 on "Laboratory Techniques" and Chapter 5 on "Routine Laboratory Procedures", presents a good summary of material that is not available in most standard texts and that should prove extremely useful to all except the more

experienced users of a polarizing microscope. The principal flaws in this part, which admittedly are minor, are the failure to mention that mineral powders can be readily sized with sieves, and the suggested method of immersing powders in R. I. liquids.

The third, and largest, part of the book consists of determinative tables and of mineral descriptions and compares favorably with similar material in standard texts. However, there are some inconsistencies in the order of listing minerals in some tables. For example, in Table I minerals are listed on the basis of increasing magnitude of the lowest R. I., whereas in Table VII uniaxial negative minerals are listed in order of increasing  $\omega$ . Thus calcite and dolomite are listed in the first instance alongside minerals of relatively low R. I. and in the second of relatively high R. I. Similarly, it would have been most sensible to list biaxial minerals in order of increasing  $\beta$ . The principal criticism of the mineral descriptions is the omission of several minor items (e.g., the common occurrence of epidote as an igneous accessory and the common ability to recognize cordierite by its pinitic alteration) and the failure to relate feldspar terminology and genetic environments to a ternary diagram.

A three and one-half page bibliography at the end of the book is quite comprehensive and up-to-date.

This reviewer has doubts as to whether Dr. Shelley has been successful in providing any significant financial relief to the student of optical mineralogy. A combination of "An Introduction to the Methods of Optical Crystallography" by Bloss (1961) and "An Introduction to the Rock Forming Minerals" by Deer, Howie and Zussman (1966) costs less than \$2 more in hard cover, and about \$6 more if the second work is in soft cover, than Shelley's book. This combination provides a significantly more comprehensive treatment of the material covered in the first and third parts of Shelley's book but lacks much of the material dealt with in Chapters 4 and 5. It would be interesting to know if these two chapters could have been published and sold separately at a greatly reduced price; - to the reviewer, they represent the greatest contribution made by this book.

For those of whom it is important to have all the material covered by this book in a single volume, Dr. Shelley has provided a real service.

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