An atlas of minerals in thin section

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The publication of *Atlas de Asociaciones Minerales en Lamina Delgada* in 1997 marked a major achievement in the annals of teaching of Petrography. Students now have access to up-to-date documentation on over 600 minerals! The publication contains an atlas part, covering the minerals actinolite (p. 451) to zwieselite (p. 1071). The choice of minerals is based on relevance to associations of economic, environmental, or petrological importance. The Mineralogical Association of Canada has undertaken to publish the English edition of the atlas of over 600 minerals in two volumes, the first on nonsilicates and the second on silicates. In both cases, a CD-ROM of all photos will be included. For each mineral, we provide formula, basic data on all the optical properties, and diagnostic properties. In which environment does one find the mineral? Relevant references are provided. We group minerals according to composition. Among nonsilicates, there will be sections on, for example, oxides, fluorides, chlorides, carbonates, borates, and phosphates. In the book on silicates, the groupings will allow the student to exploit common characteristics of related silicates. The books should provide an impetus to petrographic investigations of natural assemblages as a prelude to sophisticated geochemical studies.

Teaching aids for optical mineralogy

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The teaching of optical mineralogy has been in decline in higher education since the late 1970s. Additions to earth science curricula, budgetary concerns, and the allure of modern computer-driven instrumentation have resulted in few, if any, institutions that still offer a full semester class on the subject. The trend has been increasingly toward incorporation of a few weeks of optical instruction into introductory mineralogy or petrology. Of necessity, instruction is limited to cookbook methods, with little time given to theoretical considerations. Accordingly, it becomes increasingly necessary to utilize limited classroom instruction time in a manner that will most efficiently convey ideas and concepts to students. The instructional aids presented below demonstrate a wide range of properties, and are intended to facilitate a three-dimensional understanding of optical concepts. Many such materials, used extensively in earlier years, are now largely forgotten. Those listed below are all presently available commercially or can be manufactured at nominal cost.

Indicatrix: glass models half filled with liquid to demonstrate circular sections; calcite sphere to demonstrate double refraction vs. orientation.

Interference figures: Quirke hemisphere and oriented sections; polariscope and calcite, quartz, or topaz spheres; cavansite grain mount to show optic axis dispersion.

Rotational methods: conoscopic spindle stage to demonstrate movement of isogyres; orthoscopic stage to show retardation and interference color change relative to orientation; lazy susan turntable with cardboard indicatrix to show orientation of the principal planes of vibration relative to crystal rotation on a spindle stage.

Optical concepts: uranium or opalescent glass to demonstrate conoscopic vs. orthoscopic light; glass press to show strain; "pylon" color standard to show the Becke line color at a 589 λ match; layered cellulose tape to show interference colors vs. thickness; fluorapophyllite ⊥–c to show mimetic twinning, and anomalous symmetry and interference figure colors.

Slide preparations: crossed mica after Nörrenberg to demonstrate formation of *3T* micas; amethyst ⊥–c to show effects of phase difference vs. extinction; brookite (or goethite) and continuous monochromatic interference filter to give a dynamic demonstration of crossed axial dispersion; meteorite chondrule for interpretation of melt history vs. texture.