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MINERALS IN THIN SECTION: An open-access, interactive website for transmitted-light petrographic microscopy

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Polarized-light microscopy remains an indispensable tool for the mineralogical analysis of geological samples, and in many instances presents the critical step before taking mineral and rock analysis to the next level (such as electron microprobe, XRF, ICP-MS analyses, etc.). Petrographic microscopy not only reveals the precise mineralogical composition of rocks, but also provides critical information on microstructural relationships between minerals (crystallization features, reaction textures, deformation structures). The importance of microscopic mineral and rock analysis is reflected in the variety of books available on the subject that range from pure data compilations to printed atlases of photomicrographs. A drawback of the former is the lack of photographic reference material, and a drawback of the latter is the high cost of colour printing, which limits the scope of any image collection in book form. Furthermore, reference books in optical mineralogy may not be available to everyone when needed, and many students cannot afford them.

The obvious way forward is a web-based approach, with the advantages of easy access from anywhere, availability of large storage space, and, just as importantly, the authors' option to modify the database at any time, to upgrade, add and delete as desired. The desirable features of such a website are (1) being interactive, with simple navigation; (2) aiming at a comprehensive image archive and data coverage; (3) being dynamic, i.e., open to continuous expansion and updating; (4) being open-access (with the provision of continuous funding by sponsors).

The MINERALS IN THIN SECTION website incorporates all these requirements. While a recently published open-access e-book by Raith et al [1] focuses on the methodical-practical approach to thin section microscopy, the new website is essentially an optical-mineralogical database, sorted by minerals and mineral groups, with emphasis on thin section images. The intention is to move from an initially basic set of minerals to a more extensive coverage, including less common minerals.

The website involves the following elements:

- A mineral index (A-Z) with links to datapages or image sets;
- A graphical presentation of crystallographic-morphological properties combined with optical indicatrix geometry;
- A graphical overview of refractive index range in combination with a crystal-plate thickness versus birefringence plot on a modified interference colour chart;
- A condensed listing of optical and morphological mineral properties;
- An extensive archive of photomicrographs which involve multiple image sets for each mineral species. These image sets include plane-polarized-light and crossed-polarizers modes, including extinction positions and lambda-plate overlays.

Furthermore, a search facility is included that allows mineral searches based on own observations and/or self-defined constraints on properties covered by the database.

The target audience includes professionals at teaching and/or research institutions, consulting professionals working in mining and exploration, geoscience students, and anyone interested in rock and mineral microscopy.

References:

[1] Raith, MM et al (2012) *Guide to Thin Section Petrography* (open-access e-book), 127p.

