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Book Review


Fluid (and melt) inclusion studies have shown a marked development in the last decades, as indicated by the increasing number of papers and as covered under major themes in specialized meetings (e.g. ECROFI in Europe, PACROFI in America, ACROFI in Asia). However, a basic text book is lacking in current literature, available information being either somewhat outdated (e.g. Roedder, 1984) or scattered in multi-author “short course”, mainly organized by the Mineralogical Societies of Canada, America or Europe. A result is that basic features of fluid inclusion studies, notably its key technique, microthermometry, and recently supplemented by micro Raman of infrared spectroscopy, is rarely taught in most universities, leaving the student alone to discover a field of study which has grown to the dimensions of a major science.

Written by a team of recognized experts of the University of Bratislava (Slovakia) and GeoForschungsZentrum Potsdam (Germany) the book reviewed here fills this gap, and it can be anticipated that it will be well received by geology students and teachers worldwide. The authors have a first-hand knowledge of the extensive literature in countries from the former Soviet Union, while having also directly participated to the impressive developments realized in Western countries in the last thirty years or so. Most examples, treated in great detail in the form of “problems”, are presented from
their own work, covering a wide range of lithologies, from magmatic (including carbonatite) to sedimentary or metamorphic rocks. Understandably, many examples come from Eastern Europe (e.g. siderite-magnetite deposits of Western Carpathians), with the use of some rock names rarely used outside of this part of the world (e.g. pincinite). This might surprise some readers, but it would be very wrong to think that these local names apply to local problems. The pincinite is in fact a peculiar type of ultrahigh-temperature granulite (partly molten orthopyroxene-bearing granodiorite), and as such it addresses the general problem of high temperature metamorphism and magmatism in the lower crust and upper mantle.

The 8 chapters cover the major techniques used for the acquisition and interpretation of fluid (and melt) inclusion data: microthermometry (chapter 3 and 4, relevant phase diagrams being given in chapter 2), fluid thermodynamics, including the calculation of fluid compositions at high P and T and pseudo-sections by PERPLE_X program package (Chapter 6), Raman and infrared spectroscopic analysis (Chapter 7), Stable isotopes (Chapter 9). Most chapters include a rather concise, sometimes dense text, followed by a relatively large number (6 for Chapter 4, 5 of Chapter 5) of worked out problems in which natural examples are treated in great detail. Analytical data including selected equations of state, optical properties of minerals found in inclusions, Raman data or stable isotope fractionation factors are also included. Particularly impressive is the Raman appendix, which lists about 500 Raman-active phases, successively by major Raman band and mineral name. This mode of presentation makes the book very well suited for self-study, especially by PhD- and post-doc students. But it will soon be discovered that the help of an experienced teacher will be quite helpful. The introduction is very short, with only few lines devoted to the most important problem of microscope observation prior to the use of specialized techniques. All are done on single
inclusions, no need to engage in the most elaborate computation if measurements are done on the wrong one. But this kind of information can easily be found in prior literature, and in this respect there is so much to be said (possibly a surprise for those not familiar with inclusion studies) that “classical” information had to be minimal, in order to keep the book (already impressive-, nearly 500 pages) to a decent size. The book is easy to read, figures are relatively small, but of good quality. Many diagrams have been especially redrawn, they will easily support enlargement for practical purpose.

The book ends abruptly with the stable isotope chapter and a conclusion summarizing the impressive amount of results scattered throughout the book would have been welcome. However, this does not eclipse the quality of the book as a milestone in the fluid (and melt) inclusion literature, and as such it may be strongly recommended to all those interested in fluid-rock interaction in different environments, from petroleum or ore deposits to magmatic or low- to high temperature metamorphic fluids.

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