

PRESENTATION

The field of microporous compounds has progressively widened in these last years, well beyond the field of zeolites sensu stricto, due to investigations in Materials Sciences aimed at preparing and characterizing new types of molecular sieves, distinct from zeolites either in the kind of cations building up the tetrahedral framework (beryllosilicates, phosphosilicates...) or even in the kind of polyhedra building up the scaffolding capable of sorption, exchange, and catalysis.

This second type of compounds, characterized by tetrahedral-octahedral, tetrahedral-pentahedral-octahedral, more in general by heteropolyhedral frameworks, has been widely studied since the nineties of the last century (preparation and characterization of titanosilicates ETS-4, the synthetic analogue of the mineral zorite, and ETS-10) with progressive extension to metals different from titanium and to various distinct structure-types.

As in the 'classic' case of zeolites s.s., the crystal chemical and structural knowledge accumulated in the study of the natural phases proved to be extremely useful in favouring and orienting the investigations of the Materials scientists in the wider field of microporous compounds.

On these grounds, a meeting devoted to 'Micro- and mesoporous mineral phases' was jointly organized in Rome (December 6-7, 2004) by the Italian Accademia Nazionale dei Lincei and the Commission on Inorganic and Mineral Structures of the International Union of Crystallography. The meeting, convened by F. Calderazzo, G. Ferraris, S. Merlino and A. Mottana, was attended by more than 100 researchers from 20 different countries, who contributed with both invited review papers, mainly dealing with heteropolyhedral microporous compounds, and research papers. Whereas the review papers have been published as Volume 57 of the Reviews in Mineralogy and Geochemistry (editors: G. Ferraris and S. Merlino; series editor: J. J. Rosso), selected research papers appear in the present issue of European Journal of Mineralogy. They span over a wide variety of subjects, from: (a) an account of the method for characterization of voids, cavities and channels in structures on the basis of Voronoi-Dirichlet polyhedra, (b) three contributions on natural and synthetic heteropolyhedral frameworks, (c) five contributions devoted to natural and synthetic compounds with the structure-types of cancrinite and sodalite, pointing to the wide flexibility of these structure-types in hosting different tetrahedral cations in the framework and a large variety of components in the cavities and channels and, finally, (d) to the definition and structural study of the new natural species farneseite, the 14-layer member of the cancrinite group.

All papers have been carefully refereed before publication by combining the requirements of the journal and those pertinent to the meeting. Thus, thanks are due not only to the authors but also to the referees for the good result of this thematic issue.

Stefano Merlino
Guest Editor