Special Issue

Modularity and Twinning in Mineral Crystal Structures

Message from the Guest Editor

In 2004, the book Crystallography of Modular Materials by G. Ferraris, E. Makovicky and S. Merlino systematically reviewed theory and examples of mineral crystal structures that can be described as built up by periodic repetition at atomic scale of either one (planar) module (polytypes) or more - m1, m2, ... mn - modules with different composition (polysomes). Whereas a series of polytypes, being based on a same module, shows essentially a constant chemical composition, the members of a polysomatic series have different chemical compositions that depends on the ratio m1/m2.../mn. In a polysomatic series, the physical properties are a function of the chemistry of the modules and of their piling; thus, tailoring of the properties is possible. A special class of polytypes is rationalized by the so-called OD (Order/Disorder) theory. Twinning, i.e., the oriented association of two or more individuals of the same crystalline compound, is considered a modular structure at macroscopic scale. The members of a series of polytypes or of polysomes have usually in common a supercell that, according to the reticular theory of twinning, favours the formation of twins.

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Message from the Editor-in-Chief

Minerals welcomes submissions that report basic and applied research in mineralogy. Research areas of traditional interest are mineral deposits, mining, mineral processing and environmental mineralogy. The journal footprint also includes novel uses of elemental and isotopic analyses of minerals for petrology, geochronology and thermochronology, thermobarometry, ore genesis and sedimentary provenance. Contributions are encouraged in emerging research areas such as applications of quantitative mineralogy to the oil and gas, manufacturing, forensic science, climate change, geohazard and health sectors.

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