# NEW CONCEPTS OF MODULAR CRYSTALLOGRAPHY DERIVED FROM THE LATEST SULFOSALT

1MAKOVICKY, E., 2TOPA, D. and 1BALI - UNI , T. 1Geological Institute, University of Copenhagen, Denmark; 2Mineralogical Institute, University of Salzburg, Austria.

The crystal structure of type neyite AgCu6Pb27Bi25S68 is composed of kinked (100)PbS layers of two different orientations and thicknesses. These two layer systems form a mesh enclosing portions of kinked triple-octahedral (111)PbS layers. The doubly-noncommensurate modular structure principle in neyite, shared also by pillaite (Orlandi et al. 1998) and Er9La10S27 (Carré & Laruelle 1973), leads to box-work misfit structures with complexity higher than observed in the rod-based or sheared-layer sulfosalts. Cu2Pb6Bi8S19 is a new, second homologue of junoite homologous series from Felbertal, Austria. Its structure is composed of staggered (100)PbS fragments with intervening kinked (111)PbS layers. These are two octahedra thick in Cu2Pb6Bi8S19 but only one octahedron thick in junoite, Cu2Pb3Bi8(S, Se)16 (Mumme 1975). The novel complication is the variable length of the overlap in the kinked portions of octahedral layers which can vary over several octahedral widths, yielding slightly different chemical formulae and demanding new concepts for the choice of an exact 2nd homologue. The crystal structure of Cu1.6Pb1.6Bi6.4S12, a new (aikinite40) derivative of the Bi2S3 - CuPbBiS3 series from Felbertal, with a four-fold superstructure instead of the known 1-, 3- and 5-fold superstructures, changes our ideas about the distribution of superstructures in this series. It occurs both as a pure phase and as an exsolution product. On a modular level, it is a combination of krupkaite and gladite modules in the ratio 1:2, leading to the description of the series by means of modules rather than ribbon types.