**JEAN-GUILLAUME EON**, Institute of Chemistry, Federal University of Rio de Janeiro - Brazil
*Topology and symmetry of modular compounds from the viewpoint of their labelled quotient graphs*

The combinatorial or bond-topology of a crystal structure is defined as the respective underlying net, which can be represented by a labelled quotient graph with voltages in the translation group of the crystal structure. Thus, in principle, every topological property of crystal structures can be determined from an analysis of their labelled quotient graph. Due to the finiteness of the quotient graph, the substitution is expected to turn the analysis easier. Building-units of crystal structures can be finite or infinite, corresponding to one-, two- or even three-periodic subnets. Decomposing periodic nets into their building-units relies on graph-theoretical methods classified as surgery techniques. Instead, these operations can be performed on their labelled quotient graphs revealing directly topological relationships. Modular compounds constitute a large and important class of materials; in this case, the structure of two-periodic modules, their stacking direction and linking mode can be put into evidence on the labelled quotient graph. The maximum symmetry of a crystal structure is given by the group of automorphisms of the labelled quotient graph that are consistent with net voltages over the respective cycles. In modular compounds the maximum symmetry of the module, i.e. its layer group, can be determined directly from the quotient graph. Partial symmetry operations between non-equivalent modules are associated to automorphisms of the quotient graph that may not be consistent with net voltages over the respective cycles. These operations generate a groupoid structure. The example of the pyroxene family will be considered for illustration.