



Subject proposal for Exchange students in Chemistry

Synthesis and characterization of new oxides integrating multiple poly-anionic entities

In this project, we develop a rationalized approach based on the controlled diversification of poly-anions in inorganic compounds as an alternative method to modify or synthesize new compounds. The development of numerous compounds in our group containing poly-anions in their structure (oxy-phosphates, oxy-vanadates, oxy-arsenates etc...) and exhibiting for several of them particularly interesting properties encouraged us to follow this route by enriching it using a multiple poly-anions approach. The cohabitation of distinct poly-anions with substantial different chemical nature in a chosen system should enable the formation of new exotic topologies associated to interesting properties.

The proposed project will consist in the synthesis by various methods available in the laboratory (hydrothermal synthesis, solid state synthesis, flux growth crystallization, chemical vapor transport...), crystallo-chemistry and characterization of such compounds using X-ray diffraction techniques (on crystals and powder) and transmission electron microscopy.

Level : 3rd year

Prerequisites : basic knowledge in solid state chemistry

Duration : 3 to 12 months (preferably starting either in March or September)

Key words: synthesis, chemical vapor transport, flux growth techniques, solid-state chemistry, X-Ray diffraction

Contacts:

Marie Colmont (Marie.colmont@ensc-lille.fr)

Houria Kabbour (houria.kabbour@univ-lille1.fr)

and

Zahia Turpin (Zahia.Turpin@ensc-lille.fr)