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institut de chimie de la matière condensée de bordeaux

Séminaire Permanent

Vendredi 12 mars 2021 à 15h30 – visioconférence

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“ 2D Mixed Anions Networks : Anionic Mobility and Superconductivity”

In October 2019, Kyoto University and the University of Bordeaux concluded a Strategic Partnership Agreement to build on the close academic collaboration that the two institutions have cultivated since 2002. Under the direct leadership of their presidents, the strategic partnership aims to develop interdisciplinary research collaboration and promote human capital mobility in an expanded range of academic fields, with a particular focus on the three fields of energy science, medicine, and African area studies.

Prof Hiroshi Kageyama who spoke at the 4th Kyoto-Bordeaux symposium is the leader of the CoreToCore project, supported by Japanese Society of Promotion of Science (JSPS) and devoted to 'Mixed Anions compounds for Energy Conversion', where ICMCB-CNRS-University of Bordeaux is the leader of the french side, represented by Nantes, Rennes & Lille Universities.

Thus, mixed anions compounds in solid state chemistry for electronics and optics, energy and sustainability represent a great playground and a solid gateway between the scientific community of Kyoto and Bordeaux universities.

The exploration of new Indium-based oxyfluorides with K2NiF4 structure to understand and tune the anionic mobility will be presented in a first part. In a second section, an innovative topotactic fluorination route allows finding a new member of the As/Se-free Fe-based superconductors: non-stoichiometric LaFeSiFx with a maximum Tc= 9 K.

It is the first time that a topochemical fluorination of an intermetallic compound is achieved. Our results open a new path towards the study of unexplored and atypical fluorinated phases, especially in the family of iron-based superconductors. The ability of growing such single crystalline samples, with tunable fluorine content, could also have a wider impact on the study of solid-state physics, quantum matter beyond superconductivity alone.