Georges Dénès

Associate Professor

BSc University of Rennes I France
MSc University of Rennes 1
PhD University of Rennes 1

gdenes@alcor.concordia.ca

Solid State Inorganic Chemistry

Research Interests

Solid state chemistry is a branch of inorganic chemistry specifically interested in the study of materials that are solid. In contrast with molecular chemistry in the gas phase or the liquid phase, where most properties can be explained by the study of a single molecule, for solids, intermolecular/interionic interactions over long distances are determining factors in explaining the properties of solid materials. Our group has focussed its interest more particularly on tin-containing materials and their study by combined diffraction techniques and Mössbauer spectroscopy. Other techniques at Concordia University and elsewhere are used when appropriate, and other kinds of materials are also studied, in smaller projects. We have been particularly successful at preparing new materials with unusual properties, and at designing new applications for combined diffraction/Mössbauer studies.

It has resulted particularly interesting studies of low-dimensionality materials and of the stabilization of the +2 oxidation state of tin in highly unexpected situations, in materials designed in our laboratory. Collaboration with foreign laboratories is vibrant.

Selected Publications

M. Aljarrah, M. Medraj, X. Wang, E. Essadiqi, A. Muntasar and G. Dénès, “Experimental investigation of the ternary Mg-Al-Ca system”, Journal of Alloys and Compounds 436, 131-141 (2007).

G. Dénès, J. Hantash, G. Dénès, A. Muntasar, P. Oldfield and A. Bartlett, “Variations of BaSnF4 fast ion conductor with the method of preparation and temperature”, Hyperfine Interactions 170, 145-158 (2006).

G. Dénès and A. Muntasar, S. Boufas and H. Merazig, “Search for the stannous ion in a chloride/fluoride matrix: cases of Ba1-xSnxCl1+yF1-y and of Ba2SnCl6”, Hyperf. Interact. 166, 345-349 (2006).

J. Hantash, A. Bartlett, G. Dénès and A. Muntasar and P. Oldfield, “BaSnF4 fast ion conductor: variations versus the method of preparation and anomalous temperature variation of the quadrupole splitting”, Hyperf. Interact. 166, 373-378 (2006).

J. Kochuparampil, G. Dénès and A. Muntasar, “Phase transition of the doubly disordered Ba1−xSnxCl1+yF1-y solid solution at high temperature”, Hyperf. Interact. 166, 379-384 (2006).

G. Dénès, E. Laou, M. C. Madamba and A. Muntasar, “The study of surface oxidation of tin(II) fluoride and chloride fluoride materials by Mössbauer spectroscopy: To oxidize or not to oxidize, that is the question”, High Performance Structures and Materials 3, 301-310 (2006).