

The 22nd FIT-ME seminar

2019/08/09 16:00-17:00

@Bld. A 3F Lecture room

Title: Synthetic imogolite nanotubes: a flexible building block with multipurpose applications

**Lectured by: Prof. Erawan PAINEAU
(Université Paris Saclay)**

Abstract: Hollow cylinders with a diameter in the nanometer range are carving out prime positions in nanosciences. Some challenges such as fine diameter and interface control are solved for imogolite nanotubes (INTs). Belonging to clay minerals, imogolite exists in its natural state but widely dispersed in environment, thus limiting its applications. The major breakthrough for using INTs was certainly their synthesis by sol-gel methods under mild conditions. We will first focus here on the recent developments of INT synthesis, particularly in terms of morphological control and surface functionalization. We will show that it is now possible designing innovative INTs with modular interfaces in a predictive way, which has recently led to some progress in the field of imogolite-based functional materials (nanocomposites, stimuli-responsive materials, (photo)catalysis, molecular separation and storage...). It is interesting to note also that most of the applications explored up to now do not fully exploit all properties (controlled morphology, tunable interfaces and colloidal properties) of these peculiar nanostructures. The latest advances in the synthesis of INTs open up new perspectives in particular by combining the well-defined morphology of INTs with their ease to self-organize to produce novel nanocomposites or artificial ion channel devices.

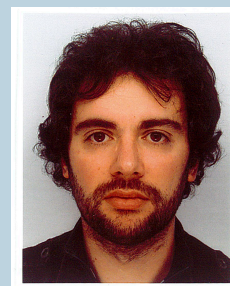
Research career of Prof. Paineau

2013/12 CNRS Research Associate (Chargé de Recherche CRCN), section 05.
Laboratoire de Physique des Solides, Université Paris Sud, Orsay

2012/12 Postdoctoral fellowship. Laboratoire Interdisciplinaire sur l'Organisation
Nanométrique et Supramoléculaire, CEA Saclay. Supervisor: Dr. A. Thill

2011/02 Postdoctoral fellowship. Laboratoire de Physique des Solides, Université Paris
Sud, Orsay. Supervisor: Dr. P. Launois

2011 Ph.D. in Geosciences. Laboratoire Environnement et Minéralurgie,
Université de Lorraine, Nancy. Supervisor: Dr. Laurent Michot.



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