Séminaire

CONFÉRENCIER INVITÉ

Vendredi 09 Mars 2018 à 11h

Salle des séminaires

Institut de biologie structurale - 71 avenue des Martyrs CS 10090 38044 Grenoble Cedex 9 - T.+33 (0)4 57 42 85 00

www.ibs.fr

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Searching for life from the nm to the light year scale

Using the non-destructive, penetrative and high-resolution properties of the ESRF X-ray beams we have developed a highly sensitive, hyperspectral methodology of analysis of solid samples on which we can identify present or past life traces. Our methodology associates fluorescence, tomography and speciation – and a brush-up of these techniques will be presented. We have designed and patented a quarantine extraterrestrial sample holder, aimed at analyzing Samples from Returned Missions, such as Hayabusa 2, Osiris Rex and Mars 2025. This was tested on several meteorites which contain potential life traces, and on bio-mineral analogs at the micron scale. Graduating to the current nanosized beams enforced a “measurement revolution”, implicating a re-evaluation of the sample preparation by revized FIB techniques for sectioning and polishing both samples and standards necessary for quantitative calibrations. The enhanced resolution/trace element goal was reached by analyzing samples down to several tens of nanometers, and quantifying intermediate Z (atomic number) elements in low Z (bio) matrices to the ultratrace levels (few tens of ppm). This is the level at which life appears on minerals and to identify it we will search for 100 nm to few µm closed-contour morphologies, encased in selectively permeable kerogenuous membranes protecting them from the medium and controlling their fluid exchanges. Speciation of these intermediate Z key elements, “camouflaged” in low Z matrices, will indicate the nature of local exchange chemistry, pinpointing the specific minuscule chemical actors finally converging to…LIFE.

Origin of Life
Univ. Grenoble Alpes

Hôte : Juan Fontecilla (IBS/Groupe Métalloprotéines)

L’accès au campus EPN nécessite un avis de rendez-vous

Contactez O. Cavoret (au moins 48h à l’avance) - T. 04 57 42 87 04 - email : ibs.seminaires@ibs.fr