CYCLE DE CONFÉRENCES DE CHIMIE

Avec le concours de : Université Clermont Auvergne
INP Clermont Auvergne

Jeudi 28 mars à 16 h

Amphi Rémi (site des Cézeaux)

Chris GREENWELL

Department of Chemistry, Durham University, United-Kingdom

Layered minerals and the origin of life on Earth

Given their likely ubiquitous nature, layered minerals such as the aluminosilicate clay minerals have featured prominently in discussions around the origin of life on Earth. One of the main challenges to address in origins of life theory is how the more complex molecules needed by the first biochemistry could have been assembled. Dilute precursor molecules needed to be concentrated from the early ocean to levels that reactions could occur, reactions promoted, and the resultant products protected from thermal or high energy ultraviolet degradation to enable further assembly. Characteristics such as high surface area, ion exchange capacity, a protective space between the sheets and intrinsic catalytic reactivity of layered minerals underpin their potential role in addressing the assembly of or proto-biomolecules. Over time, other layered minerals, in particular layered double hydroxide (LDH) minerals, have increasingly come to feature in hypotheses for the prebiotic chemistry that ultimately lead to the origin or life. LDH minerals are anion exchangers, with very high concentration power, and have been shown to uptake a range of potentially interesting precursors to biomolecules. As understanding of the properties of layered minerals has improved over the years, the potential for reduction-oxidation chemistry, layer flexibility, regioselective catalysis and dynamics and templating effects have added to the interest in these minerals in prebiotic chemistry studies. This lecture will introduce a range of prebiotic chemistry studies involving layered double hydroxide minerals and demonstrate how both computational and experimental studies have added insight not the structure, dynamics and reactivity of layered minerals through the lens of prebiotic chemistry.

Coordinateurs : Alain DEQUIDT ☎ 33 473 407 194 courriel : alain.dequidt@uca.fr
Kévin LEMOINE ☎ 33 473 407 513 courriel : kevin.lemoine@uca.fr
Institut de Chimie de Clermont-Ferrand (ICCF-UMR 6296)
Université Clermont Auvergne, 24, avenue Blaise Pascal, TSA 80026 63178 AUBIERE cedex-France