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Analysis of organic matter and mineral phases in bulk chondrites by MIR Reflectance Hyperspectral Imaging

vendredi 12 février 2021 15:15 (15 minutes)

The study of chondrites gives a lot of information about the formation and the evolution of the early solar system. The organic matter contained in those chondrites is particularly interesting. Usually, the organic matter is extracted from the meteorite matrix, what could possibly alter or modify it and inevitably make loose the information of mineral phases. To preserve this precious information and better understand the history of the organic matter, it is necessary to carry out analysis in situ, i.e. directly on the mineral context.
I will present the infrared (IR) reflectance and Raman analysis of slice of different chondrites: two carbonaceous chondrites (Paris: CM2.8 and Cold Bokkeveld: CM2.2) and one ordinary chondrite (Tuxtuac: LL5). The IR imaging spectroscopy allow to characterize and localize the mineral phases and the organic matter without altering them. In addition, I will expose the new hyperspectral data processing I used in order to localize the C-H band of the organic matter inside the mineral matrix in relatively extended surface areas (> 500x500 μm^2). Indeed, the C-H stretching modes give very weak signature in IR reflectance which make the detection of these bands very difficult.

Field

Not in the above

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Disponible : Lundi, Mardi, Jeudi matin, Vendredi

Auteur principal: ARRIBARD, Yann (IAS)

Orateur: ARRIBARD, Yann (IAS)

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