



Postdoctoral position in Radiation Chemistry and/or Analytical Chemistry

Centre de recherche sur les Ions, les MATériaux et la Photonique (CIMAP), Caen, France, and laboratoire Chimie Organique et Bioorganique, Réactivité et Analyse (COBRA), Rouen, France.

Duration: 24 months starting January 2022. The successful applicant will be hosted mainly at CIMAP, Caen, France, with frequent travels to partner COBRA (Rouen) and occasional travels to partner PIIM (Marseille).

Deadline for application: Applications will be considered as they are received and a decision will be made by the end of November 2021.

Scientific Context: The evolution of organic matter on the surface of Jupiter's icy moons is largely driven by radiation processes, with a heavy bombardment of electrons, protons, and oxygen and sulfur ions. These processes alter the signatures coming up from the interior and also participate in the chemical evolution of the moons. This project consists in preparing ice analogs (water + organic compounds) of the surface of Jovian satellite in dedicated experimental set-ups at CIMAP-GanIL. They will be irradiated with ion beams delivered by GANIL. The chemical evolution of the samples is followed in-situ by FTIR spectroscopy and QMS. The organic matter thus altered is expected to show a considerable diversity and its in-depth characterization will require ultra-high resolution mass spectrometry. The organic samples produced at GANIL will be analyzed at COBRA with UHRMS techniques. PIIM will produce further relevant samples to be analyzed at COBRA.

Expected profile: You hold a Ph.D. in a field related to radiation chemistry and/or analytical chemistry. You have strong background in several of these fields: interpretation of ultra-high resolution mass spectrometry data, FT-IR spectroscopy, Residual Gas Mass Spectrometers; ultra-high vacuum systems and knowledge of accelerator-based irradiation of materials. You are interested in learning the aspects on which you do not currently have experience. The successful candidate will be performing the analog formation and irradiation at CIMAP, using the lines of the "Grand Accélérateur National d'Ions Lourds" (GANIL) with in-situ analysis of the chemical sample evolution with FT-IR spectroscopy and mass spectrometry. This work will be followed by the UHRMS analysis at COBRA, requiring to manipulate large UHRMS datasets. Close collaboration with the PIIM (Aix-Marseille Université) is expected to put the results in a planetary science context.

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