INSTITUT NEEL Grenoble

PhD grant

Contribution of the physico-chemical study of coloring materials to the understanding of Neolithic schematic paintings

Context:
This PhD project proposes a physico-chemical analysis of the pictoral matter used to produce Neolithic cave paintings at several sites of Mediterranean France with the aim of revealing traces of both ancient know-how (preparation of the matter) and the origin of the coloring materials used. These results will contribute to a better understanding of the social practices associated with the graphic act and its inclusion in the territories of prehistoric societies.

Objectives and means available:
The methodology used to carry out this project will be based on a non-invasive and non-destructive analysis of the pictorial matter. X-ray diffraction and fluorescence measurements will be carried out with a mobile instrument developed as part of an interdisciplinary project (CDP PATRIMALP, IDEX UGA) and other non-invasive analysis techniques (diffuse reflectance spectroscopy and hyperspectral imaging) will also be used, in particular to allow a global reading of the pictorial materials at the rock scale. The mobile instruments will also help in the selection of representative micro-fragments, when the sampling of material is possible. X-ray diffraction and fluorescence tomography experiments will be carried out at synchrotron in order to obtain elementary and structural images that finely reconstruct the stratigraphy of the micro-samples. These micro-samples can then be prepared in cross-sections for observation under an optical/electronic microscope. This project will initially focus on the study of two major sites: Otello (Saint-Rémy-de-Provence, Bouches-du-Rhône) and les Eissartènes (Le Val, Var), chosen for the abundance of their iconography, their polychromy and the chronological succession of different graphic phases and the presence of coloring geological materials around.

Possible collaboration and networking:
The PhD student will be hosted at the Institut Néel (PLUM department) in the MRS team. He/she will spend approximately half of his/her time in the EDYTEM laboratory (CNRS, Bourget-du-Lac) where he/she will join the "Sociétés" team. Other structures will also support the supervision of this thesis: IPAG (B. Schmitt, diffuse reflectance spectroscopy) and LAPCOS (Ph. Hameau, schematic expression).

Required profile:
Applicants must hold a Master's degree (or be about to earn one) or have a university degree equivalent to a European Master's (5-year duration) in either physics, materials science, chemistry, geosciences or closely related science. A background in physicochemical analysis techniques is desirable. A motivation for prehistory, archaeology or more generally in heritage sciences is obviously expected.

Foreseen start for the grant: September 2022
Amount: 2 135,00 € per month brutto (projet NEOCOLOR, 80PRIME MITI CNRS)
Duration: 36 months
Application via the Portail Emploi du CNRS : https://bit.ly/3KJ22jd

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More information: https://bit.ly/3KJ22jd