# Informative potential of Fe and Mn K edge X-ray absorption spectroscopy for the distinction of pictorial layers from the wall support of prehistoric decorated caves and rock shelters

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Prehistoric decorated caves and rock shelters still retain many secrets, about their purpose, the authors of the art or their aspect back in prehistoric times. Our knowledge is progressing step by step by answering precise research questions. Physicochemical analysis allows exploring these questions [1-4]. Therefore, colouring matter composing cave art is an important study subject by means of a physicochemical approach. Indeed, the questions of their nature, their alteration processes, and the raw material sourcing provide information on the cave or shelter context and the cultural behaviour of their former occupants [5]. Elemental analysis is a fairly widespread mean to investigate the colouring matter of cave art and rock shelters, and non-destructive in-situ approaches are generally applied because of the necessity to avoid sampling [3, 6-9]. These analyses are limited because Fe-based pigments, which are common in this context, cannot be easily distinguished from the iron naturally present in the wall support [8]. Thus, chemical speciation of Fe- and Mn-based compounds is needed to overcome this difficulty. We think that there is still an unexplored informative potential of synchrotron techniques to get access to improved information on the chemical composition of the colouring matter used in cave art [10]. This presentation aims at sounding a new research hypothesis: the potential of X-ray absorption spectroscopy (XAS) at the Fe and Mn K edge on archaeological micro-samples to allow a better distinction of the pictural layer from the wall support. This would support the better interpretation of in-situ analysis performed in prehistoric decorated caves and rock shelters.

**References**

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