**The complementarity of in situ and synchrotron-based techniques to study the schematic Holocene rock art.**

*Coline Théron, Pierre Bordet, Emilie Chalmin, Claudia Defrasne, Pauline Martinetto*

Writing and drawing on walls is a human behavior know since prehistory. A specific schematic expression attributed to Neolithic societies, is present over a vast geographical area, from the Iberian Peninsula to Italy, still misunderstood  . Pictorial matter is used here to highlight graphic syntax and social practices. This presentation will discuss the physical and chemical characterization of the pigments of the main schematic rock art  site of southern France, the Otello rock shelter (Saint-Rémy-de-Provence, Bouches-du-Rhône).

This important site represents many challenging for scientists: localization of the sites (30-minutes hike) and the paintings (disposition of the figures on the rock panel) , alterations (open shelter), and sampling difficulties (representativity, cultural heritage protection). The cross-utilization of non-invasive analytical techniques in situ and large instruments on micro-samples is required to investigate matter despite these difficulties.

X-Ray fluorescence (XRF), performed in situ with the portable MobiFlu instrument, is one of the first analytical steps, allowing us to read the rock panel and work on the elemental composition of sampling area or equivalent. We also perform powder X-Ray diffraction (XRD) on micro-samples on two ESRF beamlines to contuct high-resolution (ESRF-ID22) and high-spatial-resolution (ESRF-ID13) acquisitions. Our experiments took place as part of beam time dedicated to historical material Block Allocation Group (BAG) for cultural heritage.

We will present our results on the composition of the coloring matter, alteration, and substrate: understanding of the stratigraphy, precise analyses of the coloring matter composition, quantification by Rietveld refinement, localization of the phases on the rock panel, link with the color geological material.