

## **Powder Diffraction in Art and Archaeology**

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Powder diffraction is one of the most common techniques used as a tool for non-destructive investigations of archaeological objects. It enables both the study of small specimen (extracted from easel paintings, cosmetics recipients, walls of prehistoric caves...) and the direct analysis of painted fragments. Part of our activity is to apply relevant crystallographic techniques on ancient powdered materials, particularly using synchrotron X-ray and neutron radiation, supplemented by spectroscopic and microscopic methods: identification of the crystalline phases, quantitative and microstructural analysis, structure determination... Some difficulties, due to the specificity of the samples (rare, precious, multiphased, poorly crystallised, spread on a support...) have to be controlled. We will give some relevant examples showing the applicability of powder diffraction to the study of ancient pigments[1-3]. Recent developments about data analysis routines will be presented.

[1] Walter P., et al., *Nature*, 1999, **397**, 483-484. [2] Martinetto P., et al., *Acta Crystallographica*, 2002, **C58**, i82-i84. [3] Sanchez del Rio M., et al., *Archaeometry*, in press.

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