

Combination of X-ray and infrared micro-analyses at the ID21 beamline, ESRF: applications to the study of ancient and artistic materials

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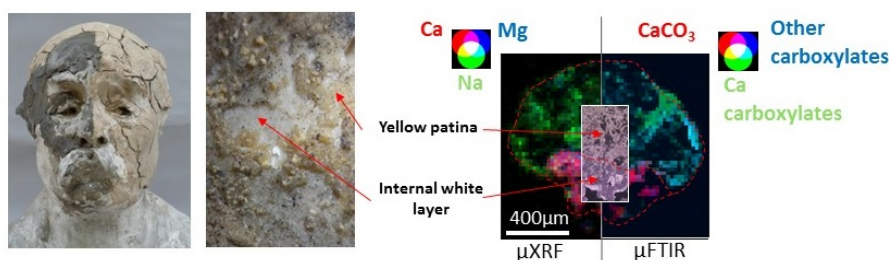
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The synchrotron radiation μ FTIR end-station at the ID21 ESRF beamline has been in operation for 13 years. The specificity of this end-station is its integration in a synchrotron X-ray microscopy platform where all the instruments are operated by a single team.[1] This instrument layout, in a single location and its mode of operation render the combination of infrared and X-ray techniques easier and more efficient. The user communities benefitting from this unique platform come primarily from the fields of Life Sciences, Biomedicine and Cultural Heritage. This presentation will review the main discoveries for the study of ancient and artistic materials, through different highlights: e.g. the combined μ FTIR/ μ XRF/ μ XRD analysis of binders, pigments and degradation products in Buddhist wall paintings from Bamiyan [2], the identification of modern modelling materials in sculptures by Auguste Rodin [3] (Figure 1), or more recently the μ FTIR/ μ XRF/ μ XANES analyses of pioneered color photography [4]. Through these examples, specific methodological developments will be presented and discussed such as sample preparation [5] and data processing [6].



μ FTIR and μ XRF analysis of degraded modern modeling material in a portrait by A. Rodin [3]

References

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