

Innovative Strategies for the use of in-situ and SR-based X-ray Techniques to Reveal Artistic Technology and Relight History

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Within the field of Cultural Heritage, numerous studies combining in-situ, and SR-based instruments arose over the last 20 years. The challenges related to the study of an artwork, e.g. limited access and mobility of the object, limited amount of material sampled, and the high complexity and heterogeneity of the artefact at multiple scale, supported the development of a joint methodological approach. While in-situ and SR X-Ray imaging techniques have become common methods to uncover ancient artistic manufacturing processes [1] and/or understand alteration phenomena, new opportunities to expand their analytical capabilities are explored.

More particularly, with the increasing use of intense X-Ray sources, strategies to prevent radiation damage of sensitive compounds are proposed [2]. Similarly new sampling pattern and detection schemes, coupled with machine learning algorithms, are investigated to adapt the classical raster scanning collection to large and complex samples [3, 4]. By reducing scanning time, and associated exposure, the use of adaptive sampling and full-field imaging allow analyzing entire collection of objects, offering new opportunities to answer conservation and art historical questions. Finally, dedicated data processing investigates data fusion from complementary modalities, i.e. UV/visible reflectance imaging, to provide enhanced specificity, resolution and sensitivity of the chemical imaging results [5].

References

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