

## Laser ablation monitoring with OCT

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Cleaning interventions are irreversible and thus call for exceptional attention as regards their monitoring and control. This gets particularly important for laser assisted removal of overlayers from paintings<sup>1,2</sup> given the sensitivity of pigments and paint materials to laser radiation.<sup>3,4</sup> In this respect the development and adjustment of analytical and diagnostic techniques that will reliably monitor and control the laser cleaning process is crucial.<sup>5,6</sup>

Towards this aim the role of OCT as a monitoring and diagnostic tool was investigated and will be herein presented. OCT, allowing sub-surface imaging of translucent or opaque materials, offers important advantages given its sub-micrometer resolution and the ability to obtain 3D information of the surfaces under investigation.<sup>7-9</sup> The synergistic action of OCT and laser ablation were studied on a painted test panel supplied by the National Gallery in London in the framework of the CHARISMA project. The painting surface was investigated with OCT prior its laser ablation treatment and reference data of different areas with various surface morphologies and varnish thicknesses were recorded. A series of laser ablation tests have been then performed aiming to optimize the laser cleaning methodology and these results were applied in larger areas with the objective to achieve different cleaning levels. OCT measurements post ablation allowed to estimate the extent of varnish removal and to evaluate the cleaning process. The results of this synergistic study will be presented and discussed with emphasis to the potential of using OCT as a monitoring and controlling tool in laser ablation of aged varnish layers from paintings.

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