

Optical Coherence Tomography for Varnish Ablation Monitoring

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ABSTRACT

Optical Coherence Tomography (OCT) is a new, fast-growing technique for non-contact and non-destructive imaging of semi-transparent objects. It has been recently used for diverse applications in art conservation subject - among others it is very well suited for varnish layer imaging and thus for monitoring of varnish removing process, including the laser ablation. In this study we show how to use the OCT technique to obtain the information required for the optimisation of the laser emission parameters like fluency and working regime, with respect to efficiency and safety of the ablation process. We also demonstrate application of the Spectral Optical Coherence Tomography (SOCT) for *in-situ* monitoring of laser ablation of varnish layer. The frames from OCT tomographic movies demonstrating dynamic processes like melting, resolidification and exfoliation of varnish layer are also presented.

Keywords: art conservation, Er:YAG laser, laser ablation, spectral optical coherence tomography, SOCT, varnish.

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