Deep Raman methods for Cultural Heritage

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The lecture will present an overview of the rapidly evolving field of Deep Raman and its impact on Heritage Science. Conventional Raman techniques typically rely on a backscattering configuration. When dealing with opaque materials, such as those commonly found in cultural heritage, this approach is largely restricted to surface analysis due to photon diffusion from deeper layers of the material.

Over the past twenty years, the development of Raman methods in the time and spatial domains has opened new possibilities for the non-invasive investigation of opaque materials, with significant implications across several areas of high societal relevance. Within this framework, Micro-Spatially Offset Raman Spectroscopy (micro-SORS) will be introduced as a technique specifically designed for the non-invasive probing of the internal regions of cultural heritage materials, and its principles and potential applications in the field of art will be discussed.