Matisse Meets IRENI

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The holy grail of chemical imaging is to provide spatially and temporally resolved information about heterogeneous samples on relevant scales. Synchrotron-based Fourier Transform infrared widefield microspectroscopy[1] that has been developed at IRENI combines rapid, non-destructive chemical detection with morphology at the micrometer scale, to provide value added results to standard analytical methods. A label free approach, it inherently evaluates a broad array of wide organic materials, with minimal sample preparation and modification. Several scientific highlights from the previous year will be briefly presented, including 3D chemical imaging using spectro-microtomography[2], and examples ranging from biological *in vivo* cells to materials characterization. I will then concentrate on an example from the cultural heritage setting. Specifically, I will describe a multi-modal evaluation of precious samples from Matisse's "Le Bonhuer de Vivre," focusing on the role of CdS based yellow paints impact on visually distinct degraded areas.

[1] M.J. Nasse, et al. "High resolution Fourier-transform infrared chemical imaging with multiple synchrotron beams", Nature Methods, 8, (2011) 413-416

[2] M.C. Martin, et al. "3D Spectral Imaging with synchrotron Fourier Transform Infrared Spectromicrotomography,", Nature Methods, (2013) DOI: 10.1038/NMETH. 2596

[3] Jennifer Mass, et al. "SR-FTIR imaging of the altered cadmium sulfide yellowpaints in Henri Matisse's Le Bonheur de vivre (1905–6) – examination of visually distinct degradation regions," Analyst (2013) DOI: 10.1039/c3an00892d