

IMAGING AND SPECTROMICROSCOPY OF MICRO- AND NANO-MATERIALS

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The complementary capabilities of different microscopy approaches in terms of imaging, spectroscopy, spatial and time resolution are strongly requested by the multi-disciplinary research programs at the synchrotron facilities and have motivated continuous investments in development of instrumentation for imaging with spectroscopic analysis. ELETTRA has very extensive programs in the field of spectromicroscopy, which have significantly contributed to advancing the frontiers of surface, material and life science [1].

The major part of the lecture will be focused on the potential of modern x-ray photoelectron microscopes in chemical imaging and micro-spot photoelectron spectroscopy [2]. Among the selected research topics are (i) addressing the surface properties of the individual C and oxide nanostructures and supported catalyst micro

and nano-particles (ii) mass transport driven self-reorganization processes which can introduce lateral heterogeneity in the composition and reactive properties of surfaces and (iii) identification of degradation processes in organic light devices.

The final part will briefly illustrate the most recent achievements in combining the potential of soft x-ray scanning transmission x-ray microscopy with multiple contrast approaches and fluorescence analysis.

References

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- [2] S. Günther, B. Kaulich, L. Gregoratti, M. Kiskinova, *Prog. Surf. Sci.* **70** (2002) 187.