

Microscopy with Synchrotron Radiation: chemical and magnetic imaging by photoemission techniques

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The strong interest in nanostructured materials has prompted the development of synchrotron-based microscopic analytical methods providing chemical, magnetic and electronic structure sensitivity. Modern x-ray spectromicroscopes make use of conventional spectroscopy, such as x-ray absorption or photoemission, but offer lateral resolution approaching ten nm at the state of the art. In my lecture, I will review the current capabilities of photoemission spectromicroscopy that implements the scanning (scanning photoelectron microscopy, or SPEM) or the parallel imaging approach (x-ray photoemission electron microscopy, or XPEEM). Applications will be illustrated by fundamental and applied studies in surface and materials sciences, but also in fields such as biology and geology.