

**X-TIP JOINING X-RAY SPECTROSCOPIES TO LOCAL PROBE ANALYSIS: A NEW TOOL FOR NANOSCIENCE.** Dhez Olivier(1), Comin Fabio(2), Felici Roberto(1), Chevrier Joel(3), Rocca Francesco(4); Rodrigues Mario(2)(3), Besana Daniela(1), Pailharey Daniel(5), Purans Juris(6), Sammelselg Vaino(7).

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Local probe Microscopies are leading actors in the nanotechnology development areas. They provide key functionalities like provision of surface morphology, manipulation and modification of nanosamples, local characterisation of a number of physical properties. They provide then a detail insight on a local scale that can go down to the atomic scale. The radiation provided by installations like the ESRF, can, on the other end, provide a much deeper insight on the chemical characteristic of the sample by being able to determine chemical composition, chemical state, bond lengths and dynamical properties of atomic species at surface, but presents important limitations in lateral resolution due to intrinsic diffraction limit of X-ray optics. On top, the possibility of "touching, feeling and mechanically interacting" with samples of nanometric dimension is a feature that synchrotron radiation does not have despite its importance as characterization tool in the nanoworld. We have then two ranges of techniques that provide complementary possibilities and specificities and it appears extremely tempting to merge them in order to get a deeper understanding of physical and chemical properties in nanoscience. X-Tip is and EU STREP FP6 project aimed to provide instrumentation for merging Synchrotron Radiation and local probe techniques in a unique characterisation tool. The program involves different work-packages that deal with the different possibilities: SNOM detection of low energy photons, electron detection of photoemitted atoms, capacitance measurements and mechanical interaction with surfaces. The contribution aims to present the possibilities, limitations, actual advance and first results of the project.