TEMPO: Time resolved Experiments on Materials with PhotOelectron spectroscopy

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Areas of application, instrumentation and methodologies used
Energy range: 50 – 1500 eV

Time-resolved spectroscopy for magnetism and physical chemistry.
Ultraviolet photoemission spectroscopy (UPS) of valence bands.
Time-resolved photoemission and photo-absorption studies in the soft x-ray range.

Branch A: UHV photoemission - VG SCIENTA spectrometer - 2D detector.
Magnetism - conventional semiconductor and multilayer crystals (graphene, graphite, MoS etc.) samples. Cryostat between 25 K and 40 0K or 50 k and 1,200K for magnetism and semiconductor environments -Argon ion bombardment - furnace for annealing at 2000 °C.
High-repetition-rate pulsed femtosecond laser (Coherent REGA 9040). Synchronization with synchrotron radiation

Branch B: for the use of equipment from outside laboratories:
Near Ambient Pressure Photoemission: (NAP-XPS) (LCP-MR, Paris VI), F. Rochet, J.J.Gallet. XPEEM, L. Néel (Jan Vogel)- NanoEsca, LETI, (O. Renault) - Coherent scattering- gas phase coincidence, LCPMR (F. Penent).

Major disciplines
Surfaces and interfaces, magnetization dynamics - surface reactivity of oxides and semiconductors- 2D-materials and solar cells. Laser+RS for magnetization and excited electronic states.
Temporal changes in the chemical environment of surfaces – catalysis and new materials.
Magnetism: XMCD / Magnetization dynamics in the picosecond and sub-picosecond time scales
Surface science: Chemical analysis and imaging of thin films/ Kinetics of surface alloy formation in real time, semiconductor physics.
Chemistry: Laser-induced photochemistry (ps and sub ps)/ Reaction kinetics/ catalysis
Applied research: analysis and expertise in surface science and time-dependent applications.