

Extended X-ray Absorption Fine Structure Spectroscopy (EXAFS)

- Provides details on how x-rays are absorbed by an atom at energies near and above the core-level binding energies of that atom
- Gives the modulation of an atom's x-ray absorption probability due to the chemical and physical state of the atom
- Especially sensitive to the formal oxidation state, coordination chemistry, and the distances, coordination numbers, and species of the atoms immediately surrounding the selected element
- Provides a practical, and relatively simple, way to determine the chemical state and local atomic structure for a selected atomic species
- Used in a variety of systems and bulk physical environment, including biology, environmental science, catalyst research, and materials science

Quick EXAFS (QEXAFS): few tens of ms time scale

- crystallization of nanoparticles
- sulfidation and formation of catalysts
- particle growth
- oxidation reduction
- slow chemical reactions

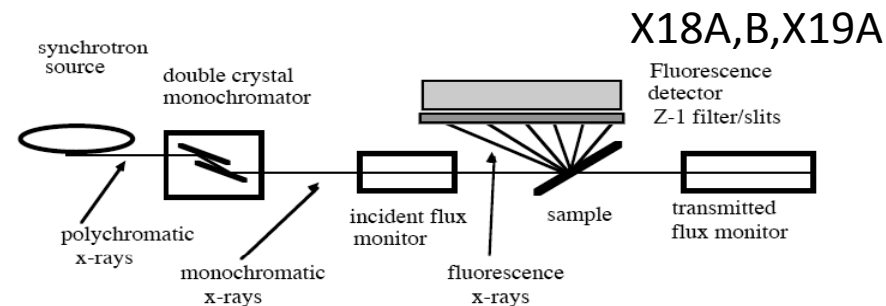


Figure 1 – Schematic XAFS experiment

