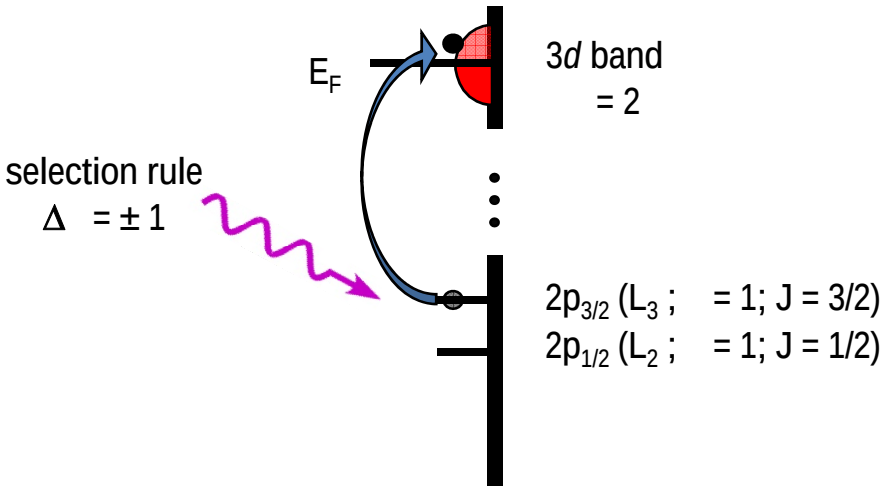
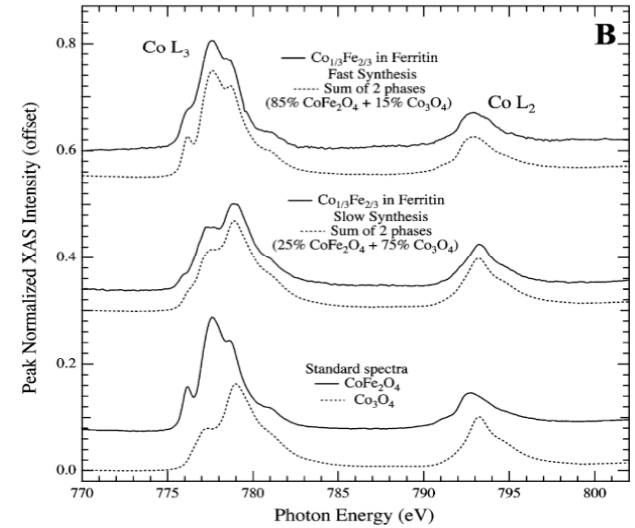
U4B: X-Ray Absorption and Scattering Beamline





M. Klem et al., JACS **129**, 197-201 (2007)

- Circular and linear polarization; energy range: 20 eV → 1350 eV
- Ideal for:
  - 2nd row transition metal and rare earth edges (transitions involving: 2p→3d and 3d→4f levels)
  - K edges of carbon, nitrogen, and oxygen
  - ***Element-specific*** identification of: oxidation state, crystal field parameter, bond orientation
- Spectroscopy:
  - X-Ray Absorption Spectroscopy (XAS)
  - X-ray Magnetic Circular Dichroism (XMCD)
  - Detection methods: total electron yield, partial electron yield, standard and indirect transmission, fluorescence yield
  - Combination of detection methods provides some depth sensitivity
- Scattering:
  - X-ray Resonant Scattering (XRS)
  - Optimized for thin-film, multilayer, and nanostructured samples
  - Identification of chemical-specific interface roughness