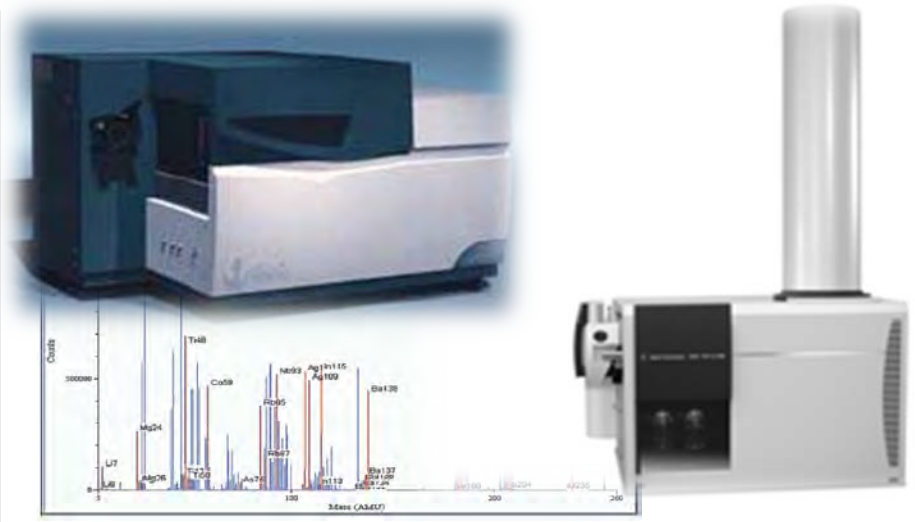
Metallomics Capability

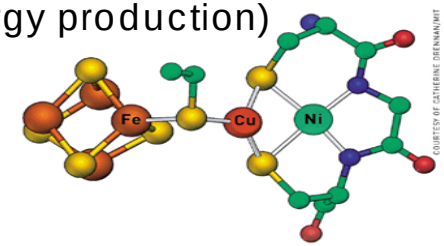
Capability/Need

- Metallomics – study of metals and their interactions and transformations in biological and environmental systems
- Requires capability to acquire simultaneous elemental and molecular chemical-state information
- Unique EMSL metallomics system will combine inductively coupled plasma and electrospray ionization with independent time-of-flight mass spectrometry detection channels



Science/Users

- Metals in biology : ~40% of proteins are metalloproteins or metal-associated proteins
- Metals mediate and catalyze many important biological reactions
- Roles in cell signaling, e^- transfer, energy transduction, biological structures
- Cellular metal availability/homeostatis important in bacterial and plant systems (biofuels, microbial energy production)



COURTESY OF CATHERINE DRENNAN, MIT

EMSL Strategy Alignment; Specifics

- Science themes: Biological Interactions/Dynamics; Geochemistry/Biogeochemistry and Subsurface Science;
- Cross-cutting challenges: Predict Biological Function
- EMSL capability area: Mass Spectrometry
- Anticipated availability: July 2010
- Technical POC's: Lizbeth Alexander, Dave Koppenaal