Characterization and Prediction

- **Materials characterization through high-resolution and analytical tools**
  - SEM, TEM, STEM, AFM, XRD, XPS
  - Other sources using UV, light, IR, ...
- **Study of small-scale deformation via nanoindentation**
  - Hardness and modulus, indentation creep, viscoelasticity, thin film intrinsic properties
  - Film adhesion, scratch and wear resistance
  - *In-situ* testing between -10 - 200˚C
- **Mechanical behavior of materials via MTS and Instron**
  - Tensile properties (moduli, strengths, …)
  - Creep and fatigue tests
  - Interfacial adhesion
  - *in-situ* testing between -60 - 275˚C
- **Reliability of electronic packaging materials**
  - Materials issues (metals, polymers, and ceramics)
- **Simulation and modeling**
  - Atomic and continuum-level structure modeling; process modeling; alloy design