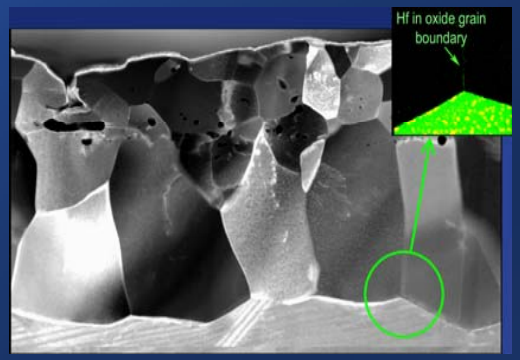
Corrosion Science & Technology

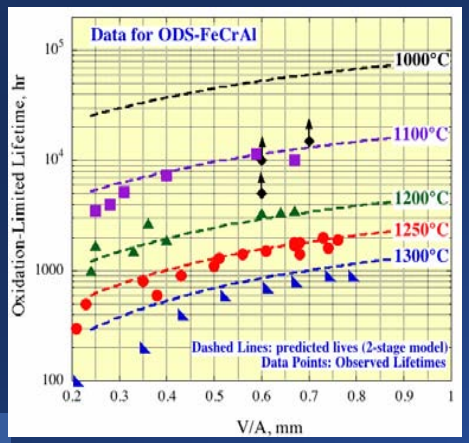
Simulates aggressive environments: molten salts, liquid metals

Evaluates corrosion kinetics in simulated high-temperature/high-pressure environments: air, water vapor, steam, and specific oxidizing, sulfidizing & nitriding gases

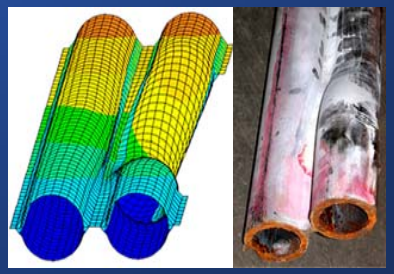
Characterizes scale morphology and chemical composition to predict formation/behavior of protective scales



Develops and experimentally validates corrosion lifetime models



Correlates temperature/stress distribution with observed corrosion effects



CS&T Assesses Materials for Performance in Aggressive Environments

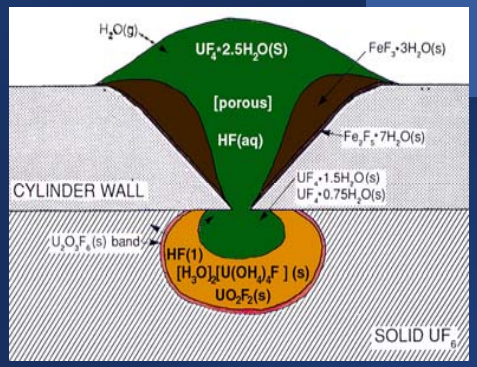
- Utilizes assessed databases, thermochemical modeling, mechanistic understanding
- Interacts with alloying behavior and alloy/coating/system design

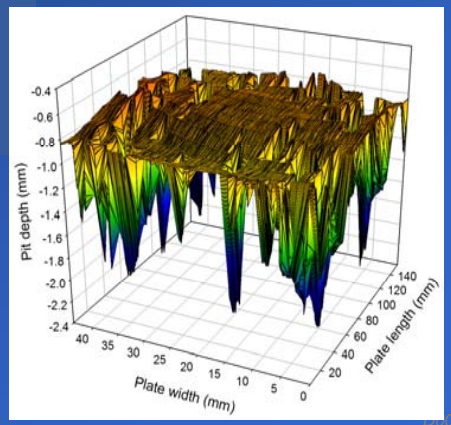
- Performs simulation testing
- Determines kinetics & kinetic regimes
- Evaluates microstructural and morphological evolution and compositional changes
- Performs forensic analyses

- Ascertains corrosion mechanisms
- Predicts lifetime via modeling and experimental data
- Specifies materials, environmental control approaches
- Eliminates/reduces corrosion failures
- Creates long-range plans for national programs

Synthesizes functional layers for systems demanding very low corrosion rate (e.g. fuel cells)

Models corrosion pitting in unique environments



Deploys electrochemical probes for corrosion monitoring and control

Develops techniques for real time measurement of corrosion pitting