## Metallurgy of Superconducting Niobium contaminated with Hydrogen John Wallace Casting Analysis Corporation Wayers Cave, Virginia 24486

- 1) General Problem and Properties of Hydrogen in the BCC Metals
  - a) Diffusion, solubility & compact tetrahedral site
  - b) Site model for hydrogen
  - c) Impact on superconductivity
- 2) Tools for Monitoring Hydrogen in Niobium
  - a) Particle Beam Tools
  - b) EM Tools
- 3) Surface Oxide Chemical Complexity
  - a) Activity
  - b) Spin structure
- 4) Superconducting Loss Mechanism
  - a) Hydrogen & deuterium
  - b) Trapped flux
  - c) Nuclear spin systems
- 5) Treating the Cavities

## 6) Induction Tools for Analysis of Accelerator Driven Sub Critical Spallation Pools