Textured Composite Seal Materials

**Objectives:**
- Low Operating Temperature
  - 600°C<T < 800°C
- Flexible Configuration
  - Compatible with SECA Stack Designs and Materials
- Thermally and Mechanically Robust
  - Able to Withstand Thermal Cycling
- Composite Approach
  - Tailoring Thermo-mechanical Properties
  - Chemical Compatibility

**Technical Approach:**
- Tape Cast Seal Manufacturing
  - Tailored Seal Geometry
  - Easily Shaped
  - Conformable Precursor Tape

**Phase I Seal Testing**
- Pressure Vessel
- Inconel 600 Tube
- Film Fired at 1350°C
- YSZ Support

Based on Decay Time and Tube Circumference, the Leak Rate/cm was calculated.

Electrolyte Deposition via Aerosol Spray

**Objectives:**
- Prepare Co-Sintered Electrolyte SOFCs
- Interfacial Layer to Allow High Temperature Sintering
- Tailored Sinterability of Electrolyte Layer
- Demonstrate Electrolyte and Interfacial Layers
- Tailor Coating and Substrate Shrinkage
- Tailor Interfacial Layer
- Porosity, Phase Distribution

**Co-sintered Electrolyte Deposited on Cathode Supports**

**Co-sintered Electrolyte Deposited on Planar Electrodes**