

# THERMAL ANALYSIS CAPABILITIES

Lucideon uses state-of-the-art TA thermal analysis instruments to determine the thermal and thermomechanical properties of a wide variety of materials to characterize composition, verify material properties, assess fit for applications, troubleshoot production issues, qualify processing changes, identify the differences between materials and perform failure analysis.

Method	Specimens	Temp. (°C)	Common Applications	
Differential Scanning Calorimetry (DSC)	5 – 50 mg	(-150) to 700	<ul style="list-style-type: none"> <li>- Melting/freezing/crystallization</li> <li>- Glass transition temperature</li> <li>- Percent crystallinity</li> </ul>	<ul style="list-style-type: none"> <li>- Heat of fusion</li> <li>- Specific Heat Capacity</li> <li>- Modulated DSC</li> </ul>
Thermomechanical Analysis	Maximum dimensions:  Cylinder 10 mm (d) x 26 mm (l)  Film/Fiber 26 mm (l) x 4.7 mm (w) x 10 mm (t)	(-150) to 700	<ul style="list-style-type: none"> <li>- Melting/freezing point</li> <li>- Softening/melting behavior</li> <li>- Glass transition temperature</li> <li>- Coefficient of Thermal Expansion</li> <li>- Shrinkage</li> </ul>	<ul style="list-style-type: none"> <li>- Penetration</li> <li>- Deflection/distortion temperatures</li> <li>- Compression/tension</li> <li>- 3 point bend/flexure</li> <li>- Multi-layer film analysis</li> </ul>
<b>Simultaneous DSC-TGA &amp; TGA-DTA</b>				
Differential Thermal Analysis (DTA)	Maximum: 200 mg  Sample pans: 40 µl or 110 µl	200 to 1500	<ul style="list-style-type: none"> <li>- Glass transition temperature</li> <li>- Polymorphic phase transitions</li> <li>- Solidus/liquidus temperatures</li> <li>- Braze/solder melting/crystallization properties</li> <li>- Degradation/decomposition profiles</li> <li>- Oxidation behavior</li> <li>- Characterization of cure reactions</li> <li>- Moisture content</li> </ul>	<ul style="list-style-type: none"> <li>- Melting/freezing/crystallization</li> <li>- Filler/residual content</li> <li>- Volatiles analysis</li> <li>- Quantitative compositional analysis</li> <li>- Effect of additives</li> <li>- Kinetics/activation energy</li> <li>- Enthalpy &amp; Instantaneous weight loss measurements</li> </ul>
Thermogravimetric Analysis (TGA)		RT to 1500		
Differential Scanning Calorimetry (DSC)		RT to 1500		