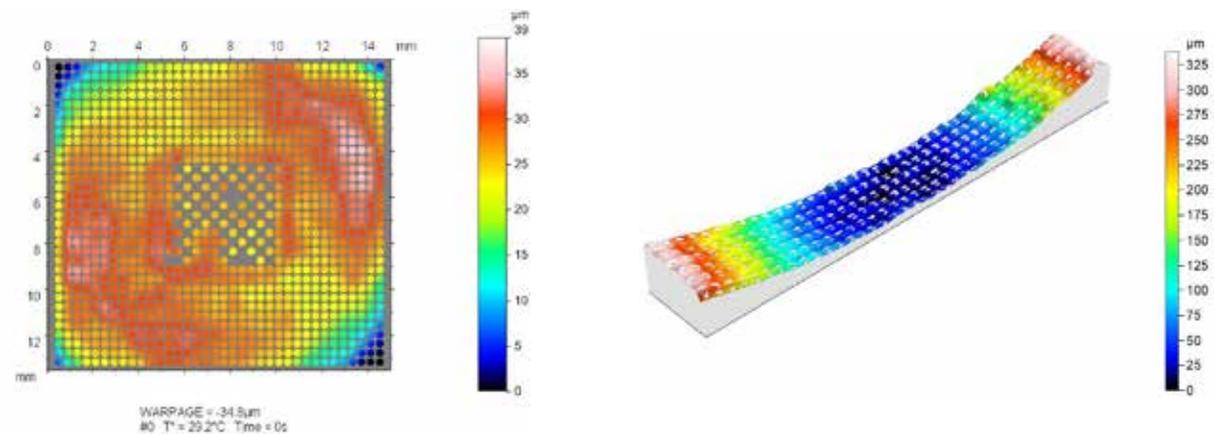


# In-situ warpage & deformation measurements during thermal stresses

- 3D topography measurements over temperature profiles
- Submicron resolution
- Temperature range from -65°C to 400°C using high homogeneity IR and convection sources
- Samples from 0.5x0.5 to 400x500 mm with multiscale FOV
- Able to measure discontinuous surfaces (e.g. multiple components on PCBA)



**Our new service can help at various steps of a product life cycle:**

- R&D
- Process control
- Design of manufacturing
- Quality control
- Failure analysis

**Applications**

- CTE mismatch
- Characterization of complex assemblies
- Reliability of lead-free solder assemblies
- Extreme environment stress
- Coplanarity and flatness
- Thermal mechanical analysis

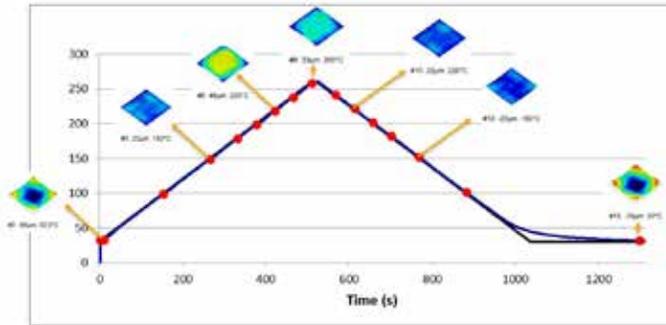
**Samples**

- IC packages (BGA, WLCSP, MCM, PoP, etc.)
- Wafers
- PCBA
- High power devices
- Large, complex assemblies
- Panels, plates, laminates
- Thin film, stacked construction

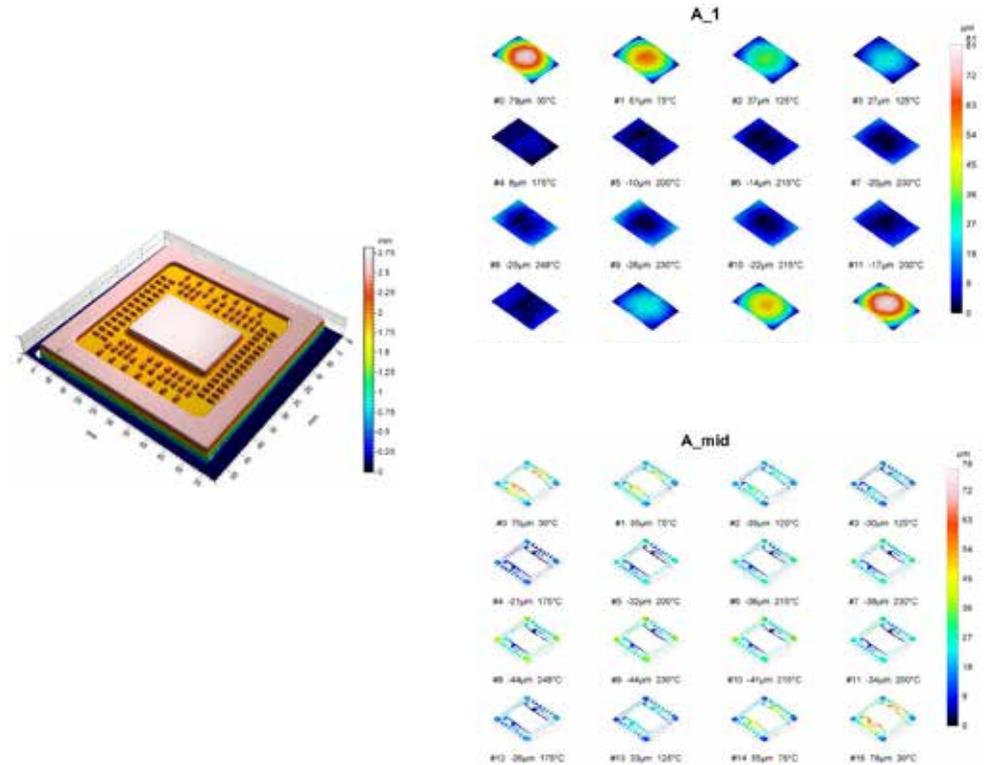
**Industries**

- Semiconductor
- Automotive
- Aerospace/Military/Defense
- Industrial
- Medical device
- Consumer Electronics
- Manufacturing

**3D Measurements over Temperature Profiles**



**Multi-Area Analysis**



**Printed Circuit Board**

