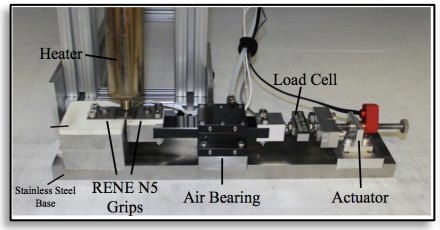
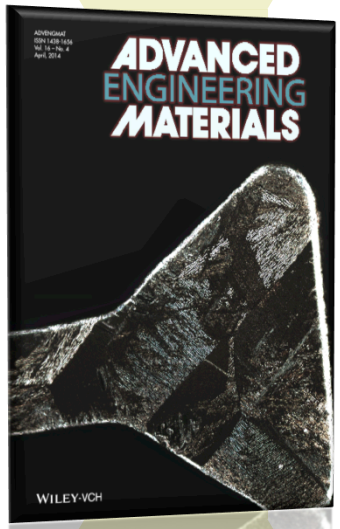
MicroTensile Testing for Local Mechanical Properties

Marc Zupan | mzupan@umbc.edu | 410.455.6822
UMBC- University of Maryland, Baltimore County

Technique

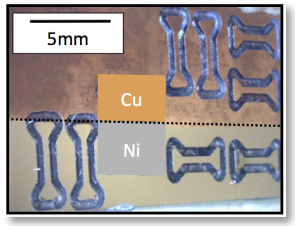
Microtensile testing can accurately and effectively probe the mechanical properties of materials of interest on the local level. Specimens with overall dimensions of 3 mm x 1 mm with ~0.30 mm square gage section can be extracted from microstructural areas of interest. For anisotropic cases, the micro-tensile samples may be extracted with varying orientations to characterize differences in mechanical performance.

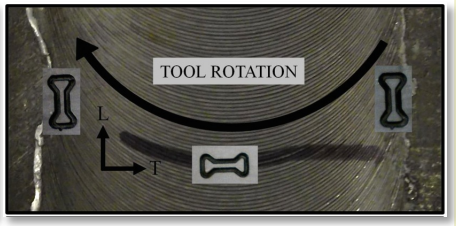




Applications

- Additively Manufactured Parts
- Friction Stir Welds
- Electro-deposited Material
- Castings
- Ti alloys, Steels, Al, Cu, Ni





Capabilities

- Full Stress-Strain Curve
- Failure Surfaces Preserved
  - Defect Determination
- Test Temperatures: RT to 800°C
- Strain Rates: 10^{-4} to 1

References

1. S. Nimer, *Adv. Eng. Mater*, ***2013***, *15*
2. S. Nimer, et al., *Acta Mater.*, vol. 61, no. 8, pp. 3050–3059, May 2013