SEM Lab, Inc.

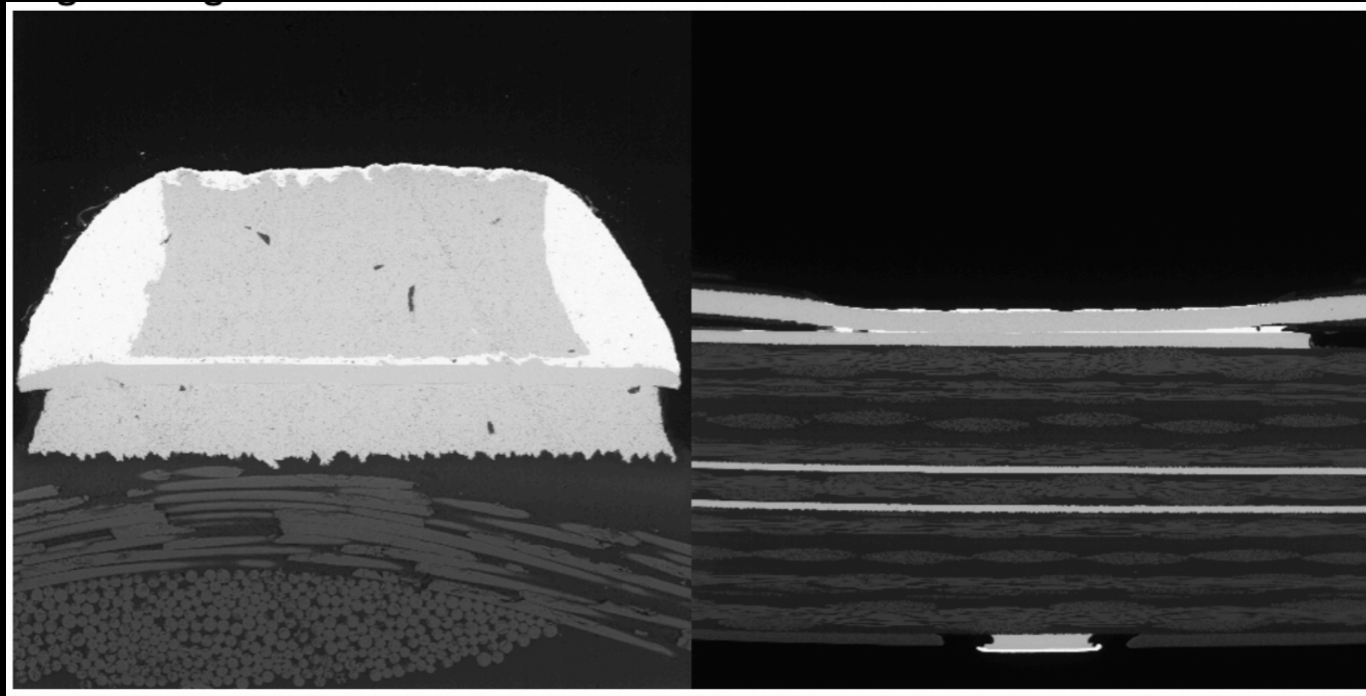
Solder Joint Analysis

Solder Joint Analysis

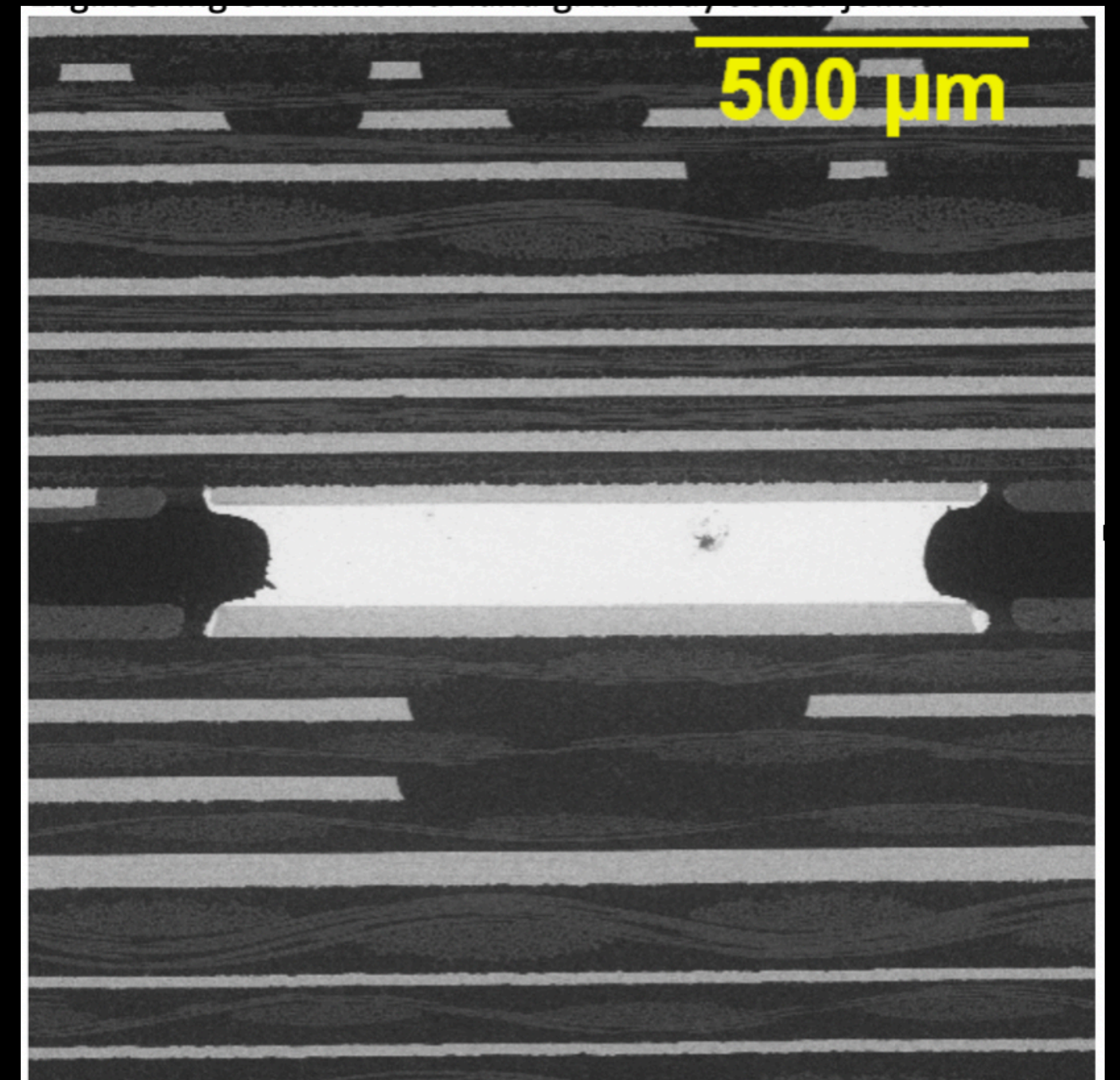
- Design validation
- Reflow process validation
- Failure analysis

Design Validation

Engineering evaluation of flex circuit soldered to rigid PWB

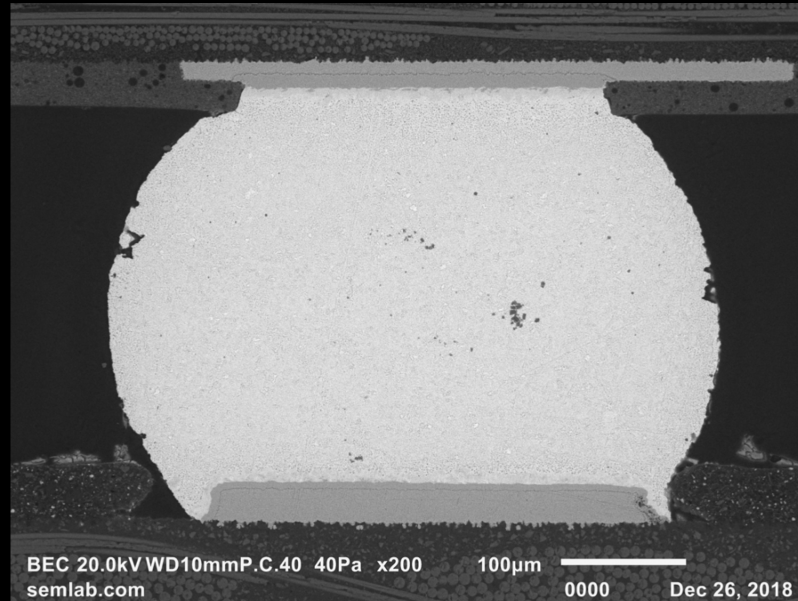


Microsection of land-grid -array solder joints

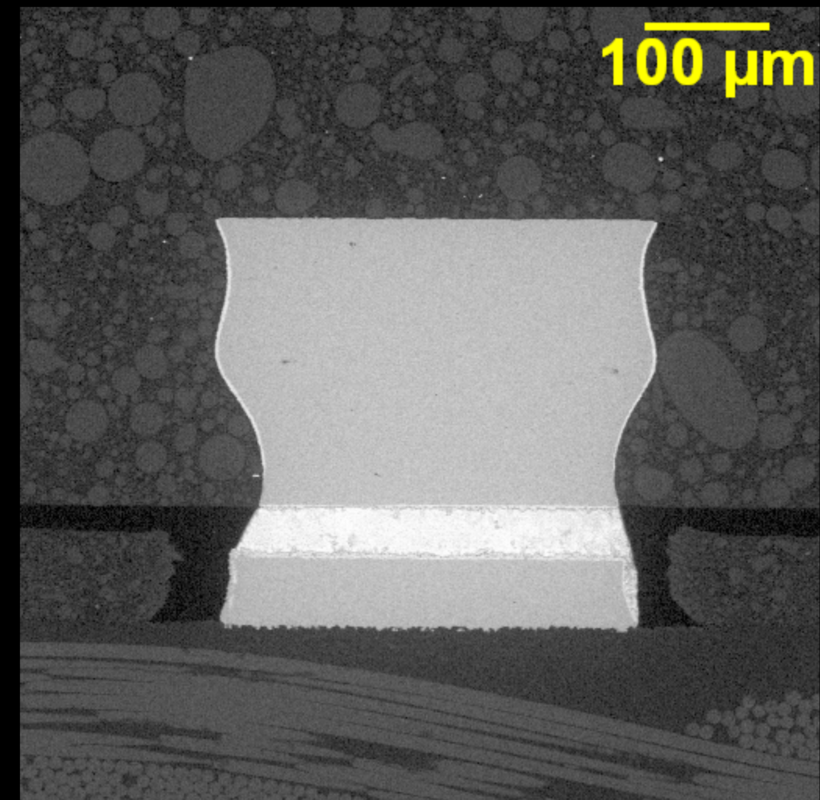


Reflow Process Validation

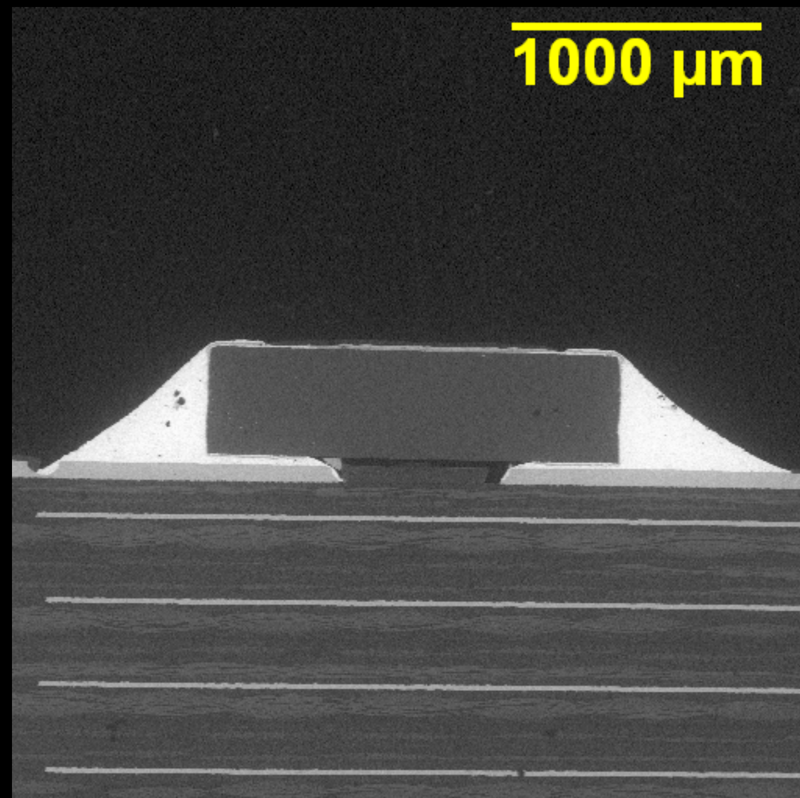
BGA reflow process evaluation



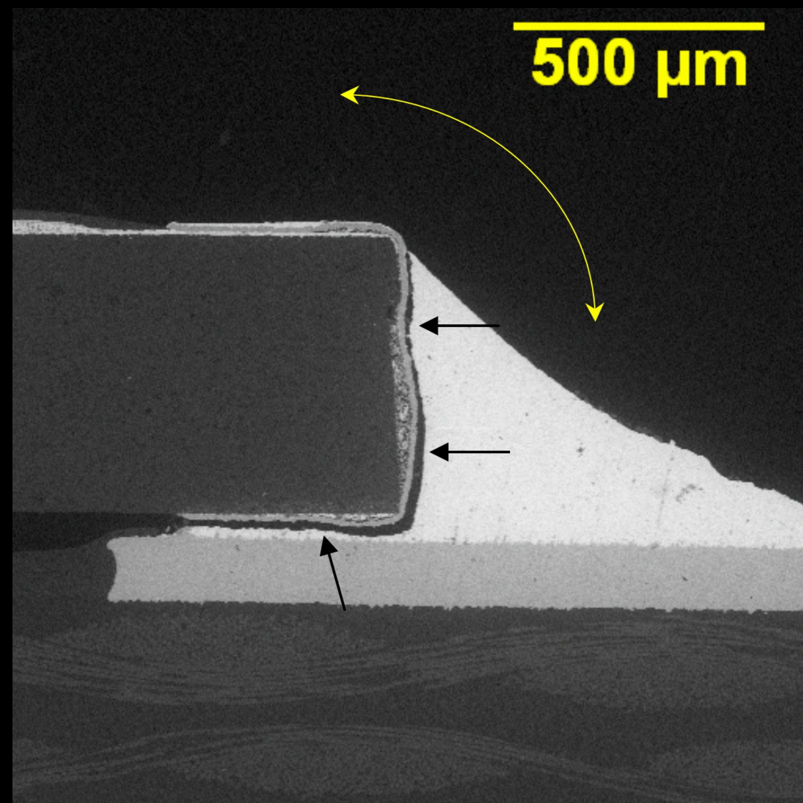
QFN solder joint evaluation



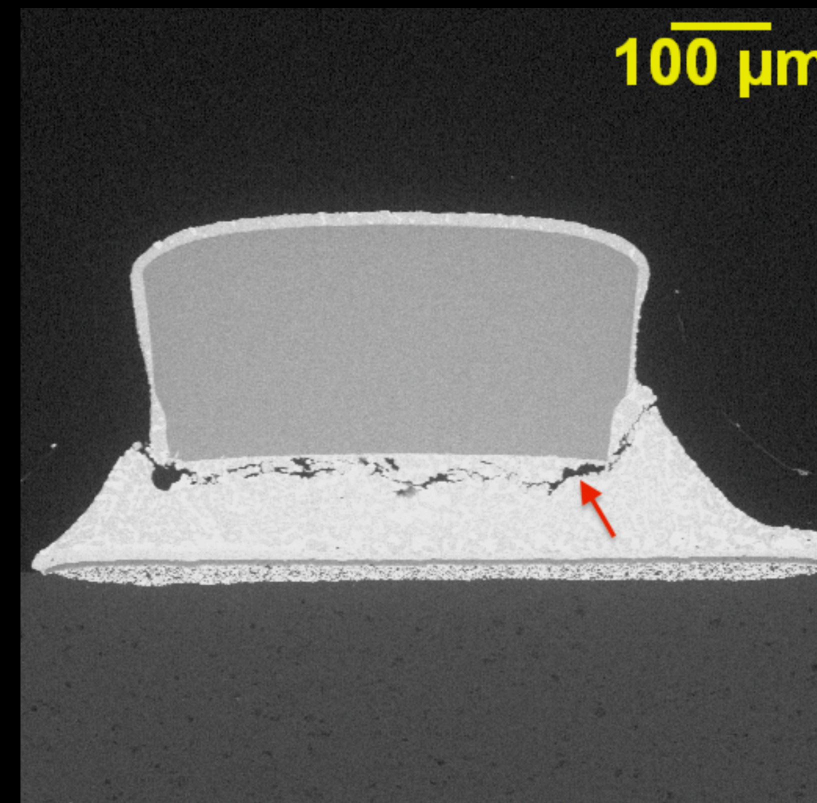
Resistor solder joint evaluation



Failure Analysis

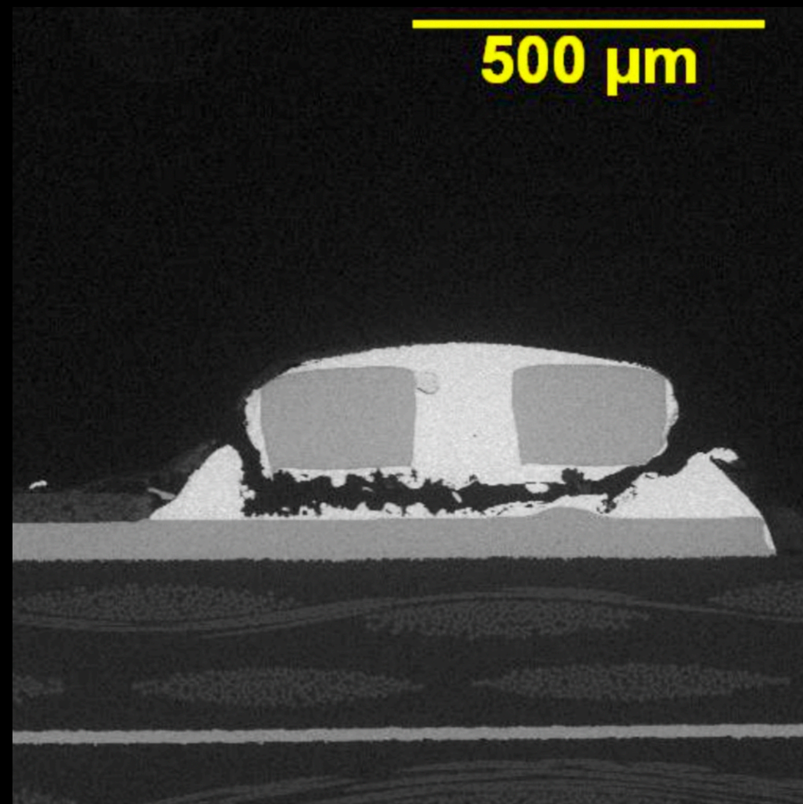


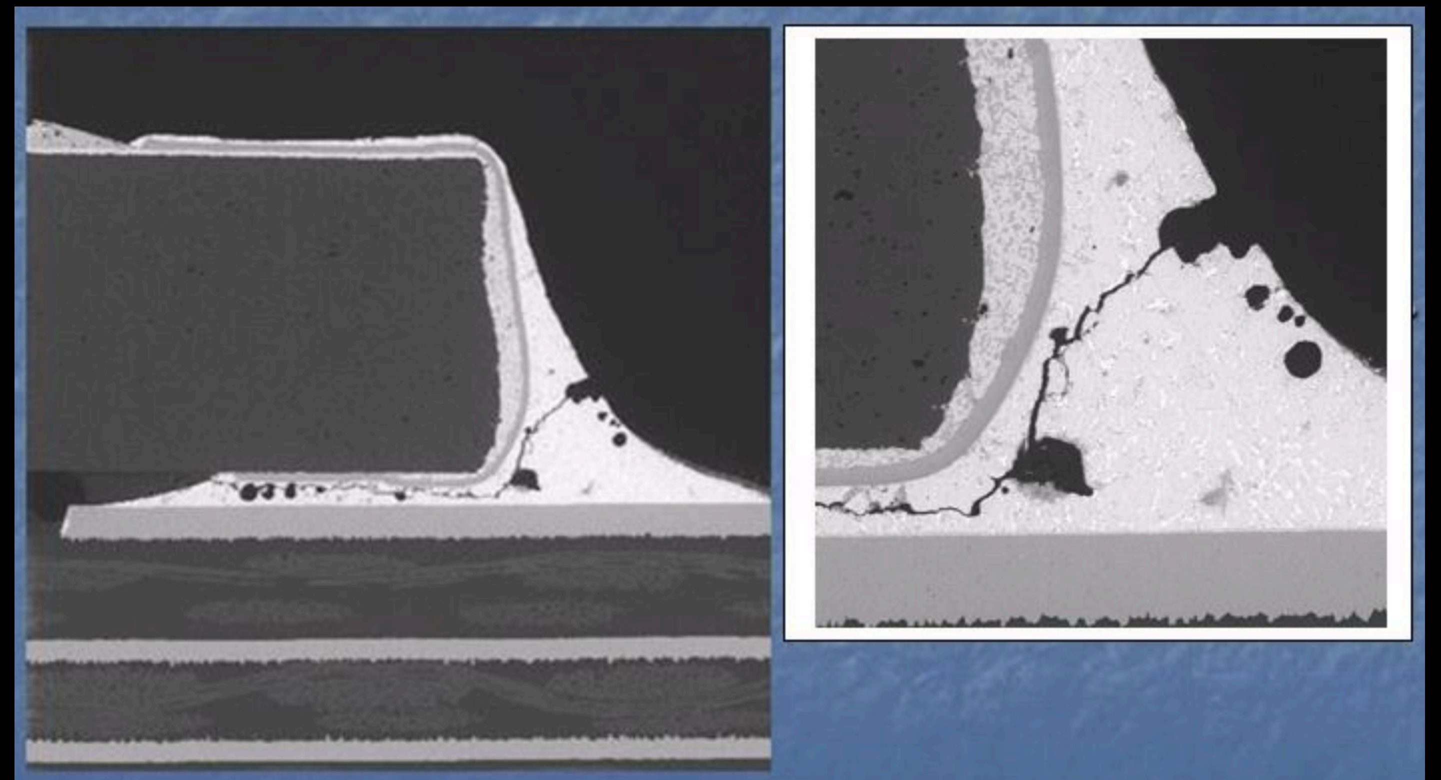
Thick film resistor solder joint that failed in brittle fracture mode at the interface between the solder and the Ni-barrier plating



Thermal fatigue fracture of SN63 of J-lead solder joint, PMIC soldered to an alumina substrate

Failure Analysis





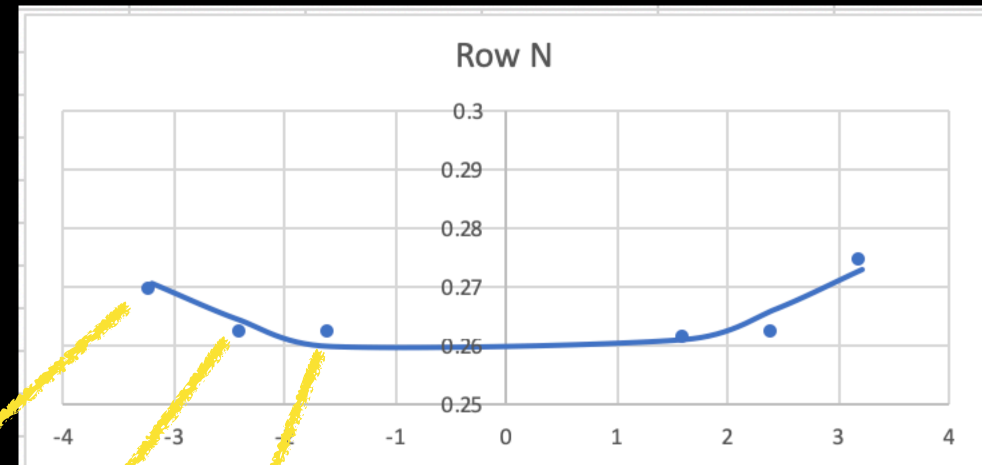
Creep rupture failure of an SMT connector solder joint

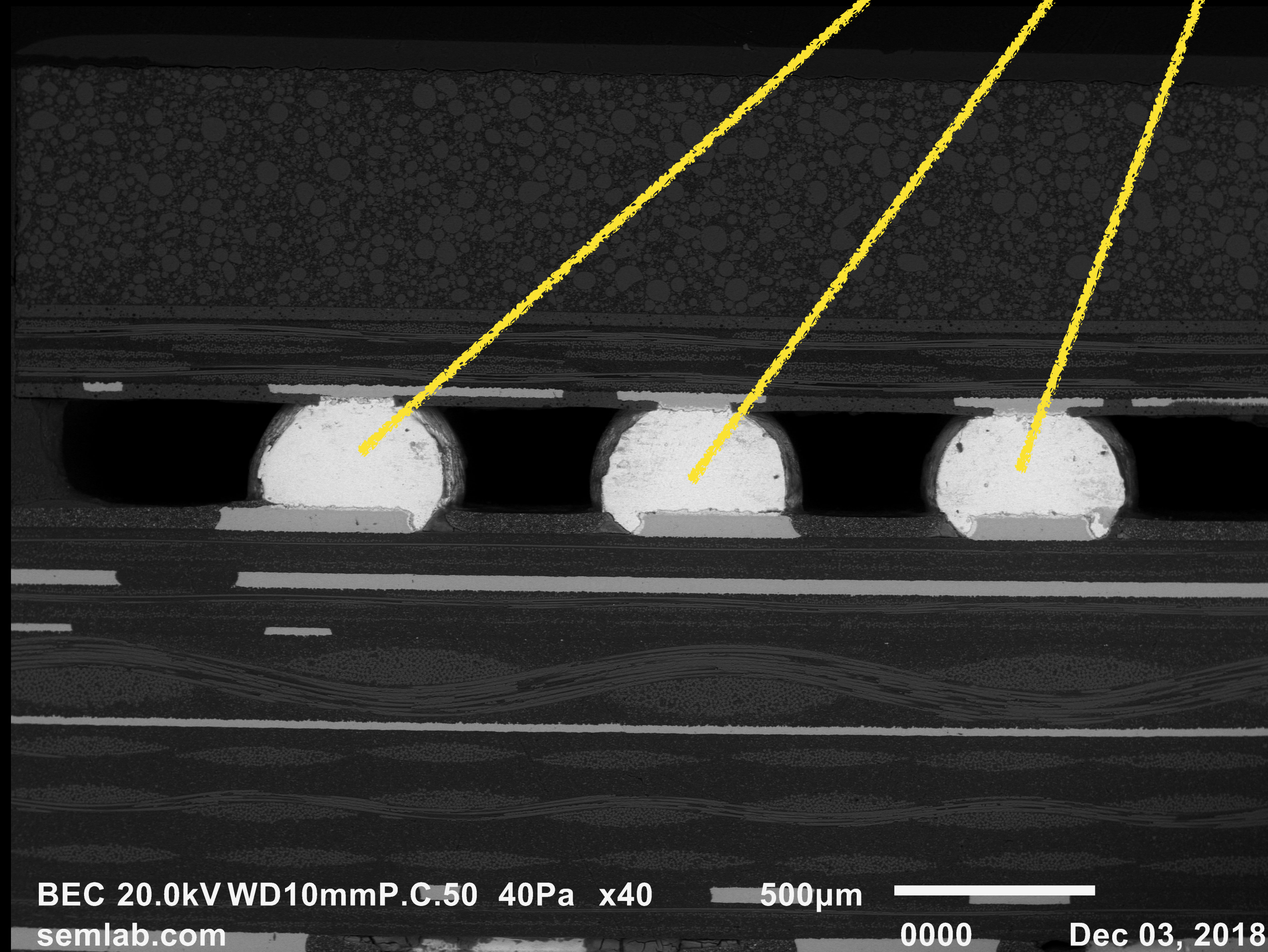
Classic thermal fatigue fracture with solder voids as a contrbuting factor

Specialized Support

- BGA Residual Warpage Measurements
- Gold Embrittlement Analysis
- Intermetallic Compounds

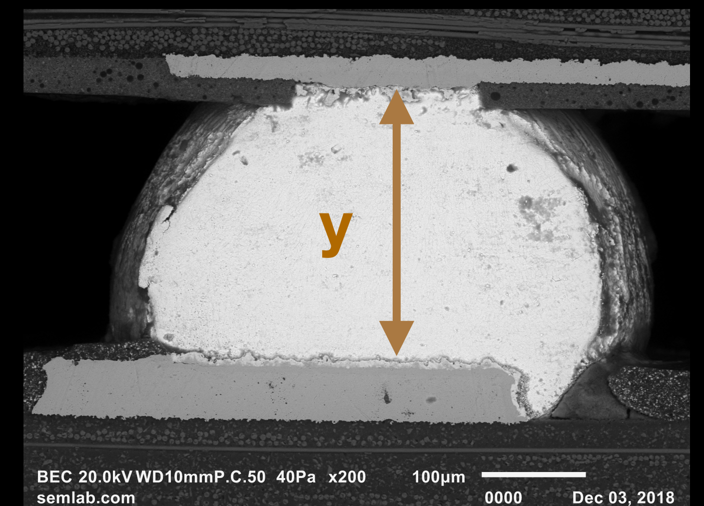
BGA Residual Warpage Measurements



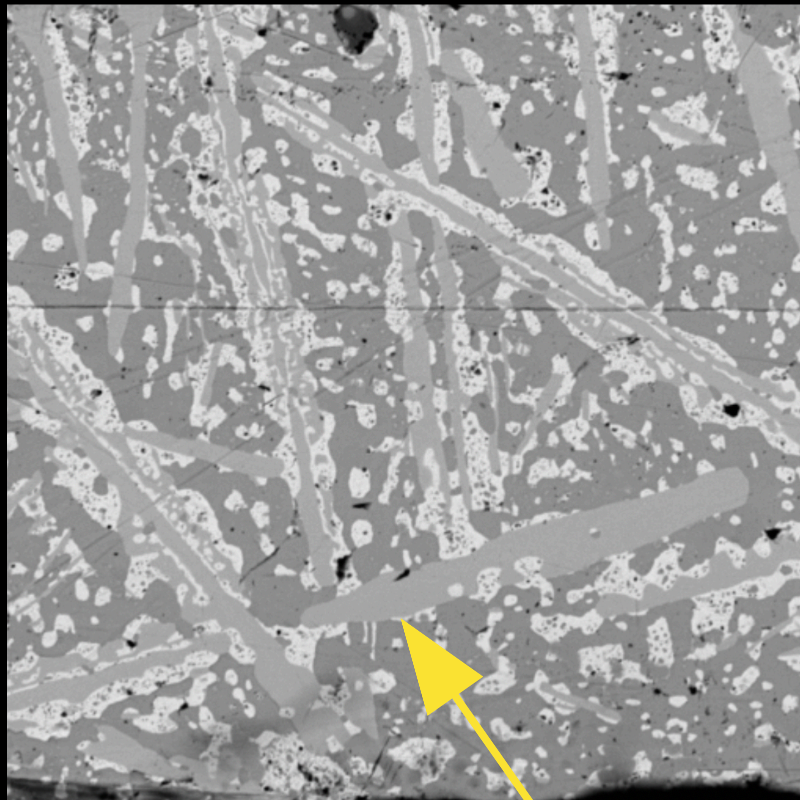


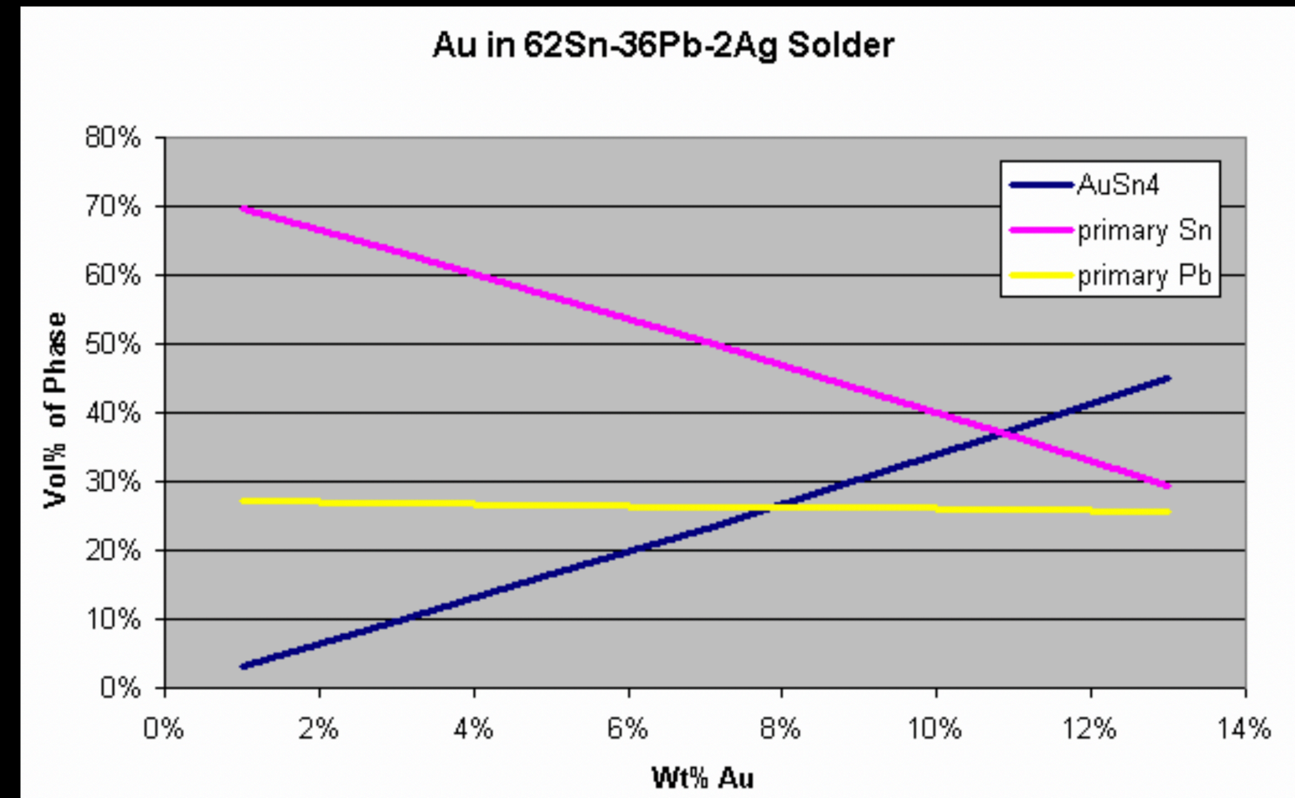
$$(x-a)^2 + (y-b)^2 = r^2$$

r = 340 mm
warpage = 0.0022 mm/mm



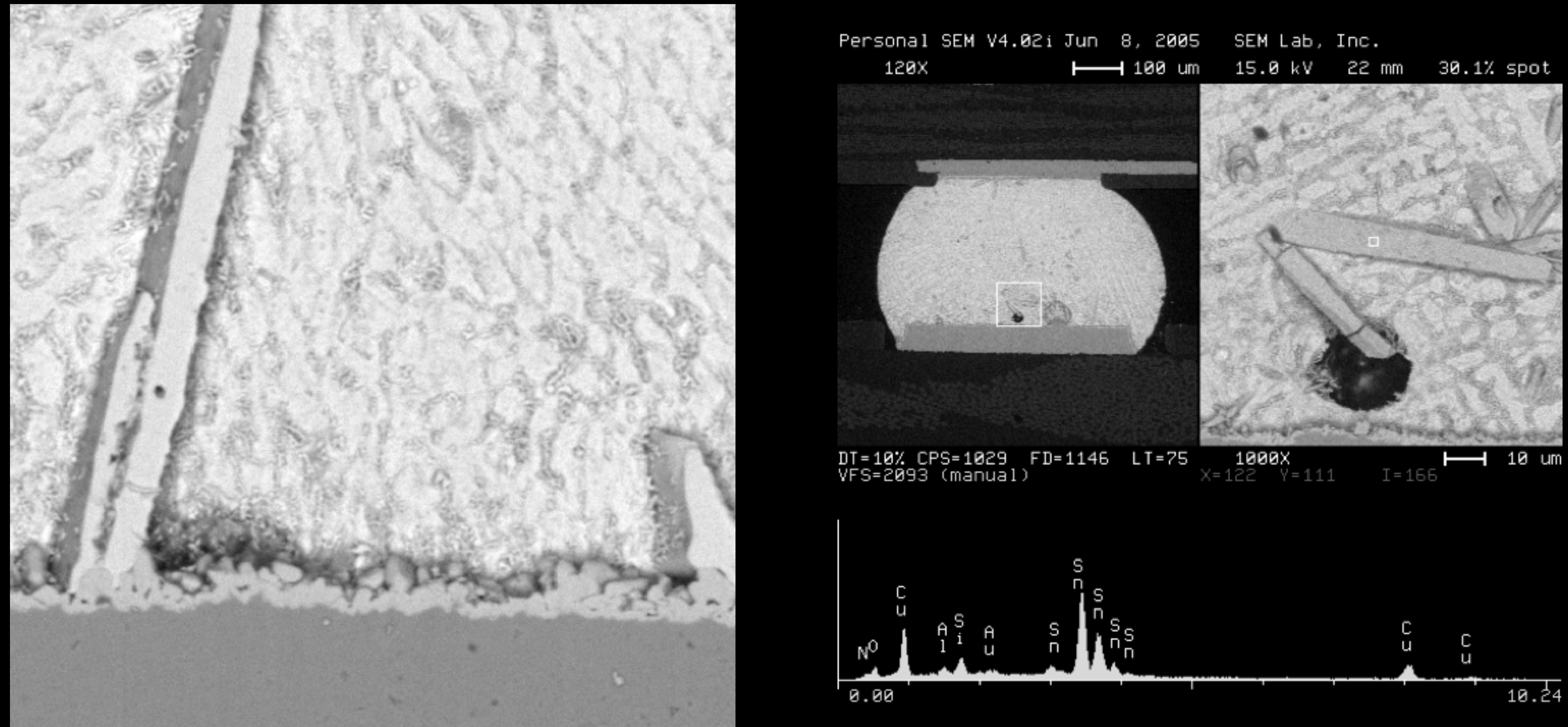
Gold Embrittlement Analysis





AuSn4 intermetallic compound in SN62 solder joint

Analysis of Intermetallic Compounds



Cu6Sn5 intermetallic compound in SAC305 solder joint

Contact Information

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