

CAMJ Seminar

July 19 2011

## **Resistance Microwelding (RMW) of Crossed Nitinol Wires**

Yongde Huang

### **Abstract**

Nitinol alloys are widely investigated due to their unique properties which include pseudoelasticity and the shape memory effect (SME). However, the general lack of understanding on welding nitinol limits its full potential in practical applications, e.g. effect of bump in displacement, etc. The current study examines the microstructure and mechanical properties of resistance microwelded nitinol joints. Results revealed that preheating with pulse or heat gun was not helpful to improve joint performance due to large heat input which degraded HAZ with recrystallization. The JBF was increased by 150% with solid solution at 800°C for 5mins after welding. The microstructure achieved after heat treatment showed the growth and unification of grains in all regions, and some grains grow across the interface, which healed defects happened in joints without heat treatment.