Synthesis and Preparation of Sn/Ag Nanosolder Paste for Micro/Nano-Electronics Assembly and Packaging

Speaker: **Evan Wernicki** – Univ. of MA Lowell, Lowell, MA

E-mail: Evan_Wernicki@student.uml.edu

Abstract

Solder pastes are widely used in electronics manufacturing processes for joining components to printed circuit boards (PCBs). With smaller component and packaging footprints paving the way, the need for smaller and more reliable materials is increasing. Synthesized using an aqueous chemical reduction method, Sn/Ag nanoparticles were characterized via SEM, TEM, XRD and DSC. Reports have shown that introducing nanomaterials into bulk solders can increase the mechanical strength of the solder joint systems. Here, the synthesized Sn/Ag alloy nanoparticles were introduced into micro-sized solder powders to form a composite solder paste structure. Shear strengths of the reflowed solder pastes were measured to study the effect of the nanoparticle additions. Our preliminary results show that the amount of nanoparticles mixed in solder pastes can increase the mechanical strength of the reflowed solder joints. Wettability and intermetallic compounds formed with the Cu substrate were also studied.