Pb-free Solder Alloys for Heterogeneous Integration in Microelectronics Packaging

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With the increasing miniaturization and shift to heterogeneous integration in electronic packaging, a lot of attention is being paid to lower temperature solder alloys. In this talk, I will discuss the microstructure evolution of Sn-Bi and Sn-In low temperature solder alloys. The evolution of the bulk solder microstructure as well as the Cu_6Sn_5 intermetallic layer during thermal aging and electromigration was studied. Coarsening of the microstructures was studied by correlative microscopy techniques, including x-ray micro and nanotomography, EBSD, and scanning electron microscopy. Mechanisms for coarsening, microstructure evolution, and their effect on electrical and mechanical properties were elucidated and will be discussed.