6. Polymers for Advanced Packaging

Course Leader: Jeffrey Gotro –InnoCentrix, LLC

Course Description:

The course has been completely updated to include a detailed discussion of the polymers and polymer-related processing for Fan-Out Wafer Level (FOWLP) packaging as well as Fan-Out Panel Level packaging (FOPLP). The course will provide an overview of the important structure-property-process-performance relationships for polymers used in wafer level packaging. The main learning objectives will be:

1-Gain insights on how polymers are used in Fan Out Packaging, specifically mold compounds and polymer redistribution layers (RDL).
2-Understand the key polymer and process challenges in Fan-Out Wafer-Level Packaging.
3-Learn about polymers and processes used in Fan Out Panel Level Packaging including new materials for mold compounds and a detailed description of the polymers used for RDL in FOPLP.

Course Outline:

1. Overview of Polymers used in Fan-Out Wafer-Level Packaging (FOWLP)
2. Wafer-level Process Flows (Chip-First Versus Chip-Last (RDL first))
3. Epoxy Mold Compounds for Fan-Out packages
4. Photosensitive Polyimides and Polybenzoxazoles for RDL
5. Polymer Reliability Challenges in Fan-Out Wafer-Level Packaging
6. Processes and Materials for Fan-out Panel-level Packaging (FOPLP)
7. Wafer Versus Panel Processing; Polymer Challenges and Solutions
8. Pre-Applied Underfills and Wafer-Level Underfills, Chemistry and Process

Who Should Attend:

Packaging engineers involved in the development, production, and reliability testing of semiconductor packages would benefit from the course. R&D professionals interested in gaining a basic understanding of the structure/property/process/performance relationships in polymers and polymer-based materials used in electronic packaging will also find this course valuable.

Bio: Dr. Jeff Gotro has over forty years' experience in polymers for electronic applications and composites having held scientific and leadership positions at IBM, AlliedSignal, Honeywell, Ablestik Laboratories, and InnoCentrix, LLC. He has published 60 technical papers (including 4 book chapters) in the field of polymeric materials for advanced electronic packaging applications, holds 15 issued US patents, and has 4 patents pending. Jeff is a Fellow of the International Microelectronics Assembly and Packaging Society (IMAPS) and was awarded the IMAPS John A. Wagnon Jr. Technical Achievement Award in 2014 for his numerous technical contributions relating to polymers used in electronic packaging. Jeff was an Adjunct Professor at Syracuse University in the Dept. of Chemical Engineering and Materials Science from 1986-1993. Jeff holds a B.S. in Mechanical Engineering/Materials Science from Marquette University and a Ph.D. in Materials Science from Northwestern University with a specialty in polymer science.