SRC Colloquium – Heterogeneous Integration of Packaging

Key Conclusions

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Key Conclusions from Panelists (1/2)

- Over-arching consensus — Heterogeneous Integration (HI) primarily using advanced packaging will play an increasingly important role in delivering continued improvements in performance to meet a diverse and aggressive market demand.
- Access of low- to mid-volume supply of advanced HI technology is critical.
- Focus on materials is needed to make SIP possible.
- Need design tools and good library of materials' properties.
- Need to decide on features of next-generation interposer technology.
- Need strategic roadmaps similar to ITRS to drive cohesion in the industry. HI Roadmap is currently providing that function. SEMI drives collaborative efforts.
- Understanding of material property cliffs at low temperatures.
- Deal with interconnect heterogeneity and alignment.

Key Conclusions from Panelists (2/2)

- Networking between integrators/applications:
  - To deal with increased power and increased number of dies.
  - Innovative architectures needed to support memory processing. Deliver in-circuit voltage regulation.
  - System bandwidth (BW)and power limitations are coming. Research needed to prevent them from becoming limiters.
  - Insertion losses and cooling capabilities will limit system BW. Focus on developing solutions that enable low loss, high BW interconnects, and efficient cooling.
  - Improve bump pitches.
- Focus on yield and testability to ensure quality and reliable performance.
- Need to understand thermal interfaces and other issues for electromigration performance.
- Need efficient cooling for miniaturized devices.