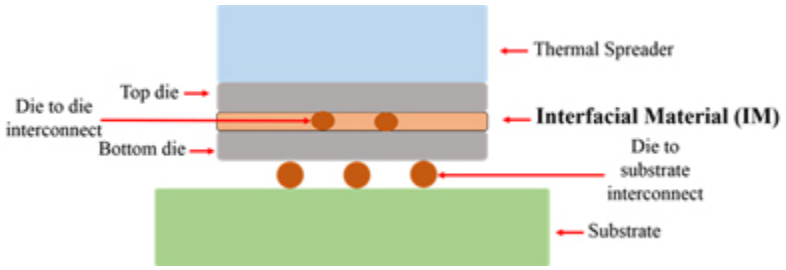
Docket #: S14-386

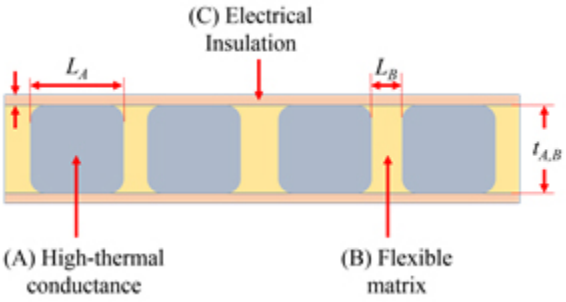
Electronics Packaging Interface for Enhanced Thermal Conduction

Stanford researchers developed a strong, flexible, high heat transfer architecture for electronics packaging interfacial material. The resins currently used in electronics packaging are a thermal management bottleneck.



Schematic diagram of packaging system

The Stanford developed 'spatially-architectured interface materials for packaging electronics' (SIMPEL) can be applied as a tape between dies. The composite interface material contains a high thermal conductor (e.g. Silicon) in a flexible matrix (e.g. Parylene) sandwiched between electrical insulators (e.g. PMMA).



Interface Material Schematic Diagram

This composite interface has an effective thermal conductivity of 26 $Wm^{-1}K^{-1}$, which is 5 fold higher than required by industry.

Stage of Research
Researchers plan to test interface materials and integrate them with packaged chips in the lab.

Applications

- Semiconductor Electronics Packaging

Advantages

- Transfers heat well
- Easily integrated into packaging process

Patents

- Published Application: 20160126159
- Issued: 10,615,111 (USA)

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