Development of High Conductivity Printed Circuit Board Materials

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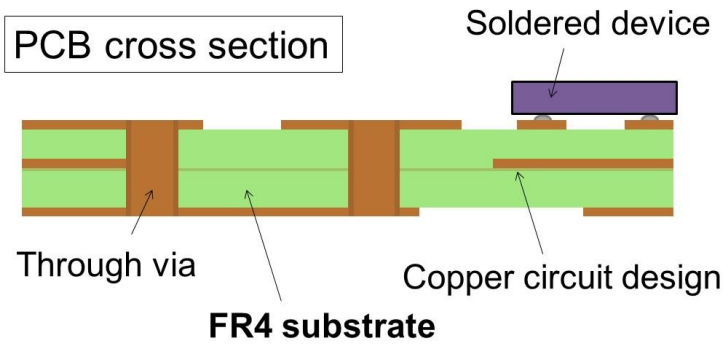
Objective

Increase the thermal conductivity of printed circuit board materials (PCBs) without loss of key material property benchmarks (i.e. mechanical strength, CTE)



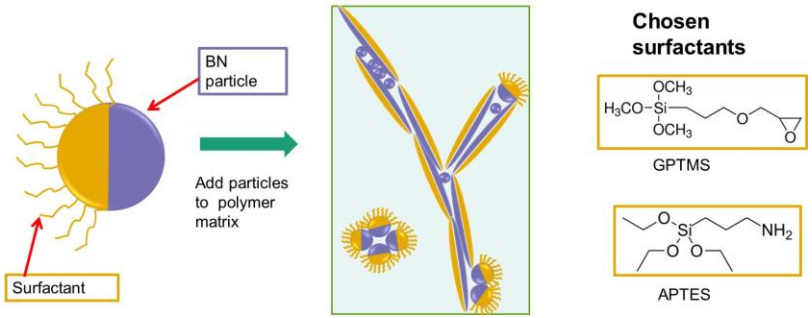
Requirements for substrate: electrically insulating, mechanically strong, low dielectric constant, high dielectric breakdown strength, good manufacturability

Impact

Improve passive thermal management in electronic devices allowing for heat dissipation from electrically insulating materials and components

Approach

- Synthesis of Janus boron nitride (JBN) particles proposed as a novel filler material
- Directed assembly of particles during processing to achieve percolated microstructure



Selected Publications

- A.N. Bruce, H. Avins*, D. Lieber*, I. Hua, J.A. Howarter Rational interface design for structure-property control in polymer-ceramic nanocomposites Materials Science & Technology 2014 (Pittsburgh, PA) October 2014.A. N.
- Bruce, D. Lieber*, I. Hua, J. A. Howarter, Rational interface design of epoxy–organoclay nanocomposites: Role of structure-property relationship for silane modifiers. Journal of Colloid and Interface Science 2014, 419, 73-78.

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