

Jiaxiong Li

Email: jxli@gatech.edu Telephone: 470-343-5415

Education

Georgia Institute of Technology GPA: 4.0/4.0

Advisor: Dr. CP Wong

Doctor of Philosophy in Materials Science & Engineering (expected in 07/22)

Master of Science in Materials Science & Engineering

Atlanta, GA

08/19-

09/17- 07/19

University of Science and Technology Beijing GPA: 3.61/4.0

Bachelor of Science in Metallurgical Engineering

Beijing/China

09/13-06/17

Research experience

High performance epoxy molding compound for high thermal/power encapsulation

06/18-present

- ♦ To develop epoxy-based molding compound with high temperature stability and high dielectric strength to package high performance wide-bandgap semiconductor power devices.
- ♦ Integrated cyanate ester/ epoxy chemistry with thermally stable aromatic structure and high functionality. Investigated effects of epoxy formulation on curing behavior (DSC), chemical structure (FTIR) and thermal mechanical properties (TGA, TMA, DMA). Monitored long-term high temperature aging degradation on physical and chemical properties.
- ♦ Innovated novel hybrid filler design technology to construct thermal conduction network through boron nitride and silica assembly utilizing surface chemistry control. Investigate the rheology behavior as well as the thermal conductivity results with different filler loading.
- ♦ Coordinated research in high voltage transistor packaging design project under Georgia Tech Packaging Research Center. Lead the team in encapsulant materials design and highly thermally conductive filler development. Presented to industry partners through semi-annual IAB meetings. Compiled reports on a quarterly basis. Presented poster on 69th ECTC, Las Vegas, 2019.

Electrical Property of Conductive Fillers Incorporated Polysulfide Sealant

08/17-06/18

- ♦ To enhance electrical conductivity of a polysulfide sealant by compounding Ag fillers.
- ♦ Performed conductivity measurement and chemical (XPS, Raman), thermal (TGA, TMA, DSC) and morphological (SEM) characterizations on the polysulfide/Ag composite to probe the strong Ag-S interaction as well as to illustrate the effects of thermal treatments. Proposed mechanisms of high resistivity at room temperature and the conductivity recovery with thermal input. Explored surface modification of Ag using sacrificial thiol treatment on conductivity gain. Presented work on 69th ECTC, Las Vegas, 2019 as speaker.

Simulation study on optimization of flow field in 10-strand billet tundish

02/17-06/17

- ♦ To design and select proper flow control devices for a unique billet continuous casting tundish.
- ♦ Conducted water model experiments to simulate flow conditions inside the tundish. Stimulus-response experiments and flow field display experiments were employed to evaluate flow conditions in prototype tundish and in optimized designs. Optimized solution on flow control was given based on flow field examination.

Publications

[1] J. Li*, C. Ren, K. Moon, C. Wong, "Systematic Evaluation of Cyanate Ester/ Epoxidized Cresol Novolac Copolymer Resin System for High Temperature Power Electronic Packaging Applications," *Polymer*, vol. 195, 122454, 2020.

[2] J. Li, C. Ren, K. Moon, C. Wong, "Epoxy/Triazine Copolymer Resin System for High Temperature Encapsulant Applications," *2019 IEEE 69th Electronic Components and Technology Conference (ECTC)*, pp. 2296-2301, 2019.

[3] B. Song, J. Li, F. Wu, S. Patel, J. Hah, X. Wang, *et al.*, "Processing and characterization of silver-filled conductive polysulfide sealants for aerospace applications," *Soft matter*, vol. 14, pp. 9036-9043, 2018.

Skills

Materials preparation skills: Solution reactions, three roll-mill mixing, curing schedule design, annealing.

Materials characterization skills: Thermal/mechanical analysis: DSC, TGA, TMA, DMA, Rheometer, Hot Disk Measurement.

Chemical characterization: Raman, FTIR, XPS. Microscopic characterization: OM, SEM.

Programming skills and Software: C, Matlab; Office, AutoCAD, Adobe Photoshop, Adobe Premiere.