

## Innovations in High Temperature Thermoset Resins and Their Commercial Status

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### Abstract:

Composite parts and structures exposed to high temperatures require a thermoset resin matrix designed to withstand the heat. Common resins include polyimides, benzoxazines, bismaleimides, cyanate esters, advanced epoxies, et al. Their chemistry, commercialization history, markets, industrial applications and challenges will be briefly introduced.

The case study includes: 1) Development and marketing of high temperature polyimides in generation for aerospace; 2) Commercial status of benzoxazines. The synthesis, structure-property relations and characterization of novel polyimides and benzoxazines will be presented in details.

### Bio:

Dr. Yuntao Li obtained his BSc and MS in Chemistry from China. He got his PhD in Materials Science and Engineering at Texas A&M in 2004. After two-year postdoctoral research at Texas A&M on high temperature polyimides funded by AFOSR, he joined Huntsman Advanced Materials in 2006 as a Senior Scientist. Since 2011, Dr. Li worked as a professor at Southwest Petroleum University (SWPU) in ChengDu, China. He is currently the dean of Institute of Energy Saving and Emission Reduction, and the director of New Energy Materials Lab. He is also the co-founder and president of Upendi Technology, LLC. Meanwhile, he serves as the technical manager of resin session for SAMPE (Society for the Advancement of Material and Process Engineering). Dr. Li's research expertise include 1) Synthesis, structure-property relations, process and application of thermoset resins; 2) High performance polymers and their fiber composites; 3) Nanomaterials and polymer nanocomposites.