

An Integrated Isoconversional Curing Kinetic Analysis of Thin Glass Fiber Prepreg with Highly-loaded Silica Bead under Isothermal and Dynamic-heating Conditions

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Advanced integral isoconversional method called as model-free kinetic method was applied to data for dynamic-heating curing reaction of the ultra-thin glass fiber prepreg with highly-loaded silica filler. The activation energy was determined by this method as a function of the conversion of curing reactions. The dependence of the activation energy was used to identify the curing behavior and predict the isothermal kinetics. The dependence derived from the dynamic-heating data allowed reliable predictions of the isothermal kinetic behaviors. The advanced integral isoconversional method was demonstrated as an excellent way of obtaining consistent kinetic information of the ultra-thin glass fiber prepreg with highly-loaded silica bead from isothermal and dynamic-heating rate.