

## Characterization of Epoxy Cure by Dielectric Analysis (DEA)

**Speaker: Yanxi Zhang, PhD** – Netzsch Instruments North America LLC, Burlington, MA 01803

E-Mail: [Yanxi.Zhang@netzsch.com](mailto:Yanxi.Zhang@netzsch.com)

### Abstract

Epoxy resin is widely used in electronic packaging industry. A variety of questions may arise during the curing process. For example, at which temperature, or after how much time, does the resin begin curing? How high is the reactivity? When is curing complete? How can the curing cycle be optimized? Is there any potential for post-curing? The answers to questions such as these can be investigated by using Dielectric Analysis (DEA), not only in the laboratory environment, but also in-process.

Dielectric Analysis (DEA) allows for the measurement of changes in the dielectric properties of a resin during curing. A sinusoidal voltage (excitation) is applied and the resulting current (response) is measured, along with the phase shift between voltage and current. These values are then used to determine the ion mobility (ion conductivity) and the alignment of dipoles. Of primary interest with regard to curing is the ion viscosity. This is the reciprocal value of the ion conductivity, which is proportional to the loss factor. Various application examples are included in the presentation.