Cure Index demonstrates curing of epoxy composites containing silica nanoparticles of variable morphology and porosity

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Highlights

- Synthesis and characterization of nanosilica in different morphology and porosity was performed.

- Non-porous curved-like and spherical and mesoporous spherical nanosilica were added to epoxy.

- Cure Index was used to study the effects of amount of nanoparticles and cure condition on Cure Index.

- Mesoporous-filled system had Good cure regardless of heating rate at intermediate nanoparticle content.

- Cure state of epoxy/non-porous particles (Poor or Good) was additionally dependent on heating rate.

Abstract

An image was taken by Cure Index on curability of epoxy with silica nanoparticles having variable morphology and porosity. Three kinds of silica nanoparticles with non-porous curved-rod, non-porous spherical, and mesoporous spherical morphology were studied.