Influence of CuO nanoparticle on palm oil based alkyd resin preparation and its antimicrobial activity

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ABSTRACT

An alkyd resin has been synthesized from palm oil that reacted with glycerol and phthalic anhydride by alcoholysis-polyesterification process and co-catalyzed by CuO nanoparticle. The CuO nanoparticle was pre-prepared in the glycerol via sol gel method, which creates a new reaction condition for resin preparation. The resins were characterized by fourier transform infrared spectroscopy (FTIR), where a new ester linkage bond (C-O-C) was noticed for resin sample. The antimicrobial activity and the curing behaviour of the resin were determined by Kirby-Bauer and differential scanning calorimeter technique. It was found that, the addition of CuO speeded up the reaction rate and played antimicrobial role. Moreover, it shortens the reaction time of alcoholysis and polyesterification process.

KEYWORDS:

Alkyd resins; Copper oxides; Differential scanning calorimetry; Fourier transform infrared spectroscopy