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Preparation and Characterization of Copper-Nanoparticle on Extracted Carrageenan and Its Catalytic Activity for Reducing Aromatic Nitro Group

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Abstract : Copper nanoparticles were successfully synthesized and characterized on green-extracted Carrageenan from seaweed by precipitation method without using any supporter and template with precipitation method. The crystallinity, optical properties, morphology, and composition of products were characterized by X-ray diffraction (XRD), transmission electron microscopy (TEM), and Fourier transforms infrared (FT-IR) spectroscopy. The effects of processing parameters on the size and shape of Cu- nanostructures such as effect of pH were investigated. It is found that the reaction at lower pH values (acidic) could not be completed and pH = 8.00 was the best pH value to prepare very fine nanoparticles. They as synthesized Cu-nanoparticles were used as catalysts for the reduction of aromatic nitro compounds in presence of NaBH4. The results showed that Cu-nanoparticles are very active for reduction of these nitro aromatic compounds.

Keywords : nanoparticles, carrageenan, seaweed, nitro aromatic compound
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