

Synthesis and characterization of bimetallic nanocomposites for conductive coatings

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Metal nanoparticles possess very useful catalytic, magnetic, electronic, optical etc. properties. Investigations have indicated when a metal was associated with another metal in bimetallic or alloy form, the properties of resulting material could be enhanced with respect to those of the pure metals. For example, nickel- based bimetallic particles containing copper exhibit better catalytic activity and selectivity than monometallic nickel. In addition, bimetallic nanoparticles possess very useful multi-functionalities. Nickel core-Silver shell composite nanoparticles possess not only magnetic properties of nickel but also antibacterial properties of silver. Because of many useful novel applications, synthesis of bimetallic nanoparticles has been gaining greater attention. In this study, polyol method has been used to synthesize copper core-silver shell composite nanoparticles. Microwave irradiation was used for heating. The ultimate goal is to incorporate these core-shell bimetallic composite into acrylic-based environment friendly emulsion for shielding from electro magnetic radiation (EMR). Application of this type of conductive coating on touch panels, cell phones etc. makes them function without any interference from EMR. Synthesis, characterization and applications of bimetallic Cu core-Ag shell are discussed.

Key words: Conductive, Core - shell nanocomposites, EMR microwave, emulsion

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