SYNTHESIS AND CHARACTERIZATION OF Ni@Pt/MWCNT CORE-SHELL NANOPARTICLES ASSISTED BY ULTRASOUND

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Metal nanoparticles have been studied because of their unique properties, especially precious metal nanoparticles because they present good catalytic properties. However, due to their high cost and availability, their use has been limited. The development of new nanostructures is important mainly to reduce the use of noble-metals and maintain their catalytic activity. Core-shell structures have presented great results, since they allow the use of a non-noble metal as core and a thin shell of a precious metal [1]. In this work a quick and easy method for the synthesis of core-shell nanoparticles supported on multiwall carbon nanotubes (MWCNT) applying intense ultrasound to improve dispersion is presented. The effect on the particle size and chemical composition of the different parameters involved in synthesis were studied; such factors were concentration of the precursors, amount of reducing agent (sodium borohydride) and stabilizing agent (sodium citrate). Particle size was determined by dynamic light scattering and an average size of 30 nanometers was obtained for both compositions. The chemical composition was obtained by energy-dispersive X-ray spectroscopy (EDS), and composition of \( \text{Ni}_{0.7}\text{Pt}_{0.3} \) were obtained. By the use of X-ray diffraction the characteristic peaks of platinum and palladium were identified, which indicates that the nanoparticles present crystallinity.

**Keywords:** Core-shell, Effect of precursor concentration, Size nanoparticle

**References:**


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