

Project Proposal

SYNTHESIS AND CHARACTERIZATION OF Zn DOPED CuO NANOPARTICLES FOR NOVEL APPLICATIONS

In my M.Sc. project we have successfully synthesised CuO nanoparticles and analysed their structural, optical, vibrational properties using X-ray diffraction (XRD), Ultra Violet - Visible (UV – Vis) and Fourier Transform Infrared spectroscopy (FTIR) analysis respectively. The crystallite size of the synthesized material was analysed from the obtained XRD data using Debye – Scherrer formula and that also corroborated the synthesized material is in nano form. From the UV-Vis spectroscopy analysis band gap energy for CuO material was calculated and which confirms the material has semi-conducting property. Internal stretching vibration of CuO nanoparticles were analysed by FTIR analysis which supports the stability of the nanomaterials.

In future, it is proposed to analyse the important applications of CuO nanoparticles like catalytic, gas sensor, antimicrobial, and drug delivery etc (1). From the literature, the Zn doped copper oxide nanoparticles will enhance the optical and biological properties because of its stability and wide band gap value (2). It will be alternate solution for antimicrobial cotton bandage industry, gas sensor and novel drug delivery system (3).

Reference

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