



Green Synthesis of Nickel oxide Nanoparticles using *Acalypha Indica* Leaf Extract, Characterization and Study of its Photocatalytic Activity

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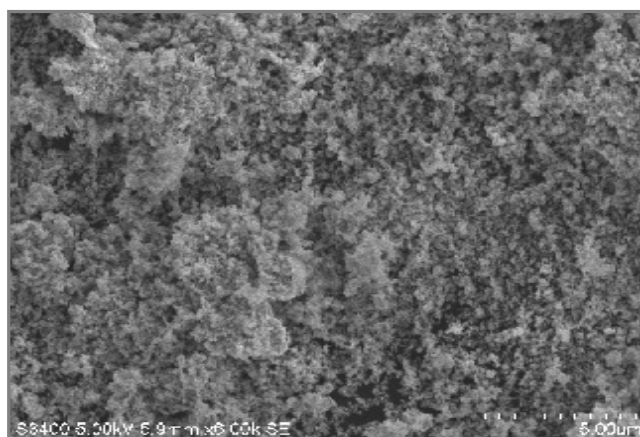
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Accepted on 7th July, 2020

ABSTRACT

Green protocol for the synthesis of nickel oxide nanoparticles has been employed as it is rapid, eco-friendly and cost-effective and better than chemical synthetic methods. The nickel oxide nanoparticles were synthesized by green routes using the leaf extract of *Acalypha Indica* plant. The obtained nanoparticles were characterized by XRD, FE-SEM, UV-Visible and FT-IR techniques. The average crystallite size of the nanoparticles calculated from Debye Scherrer equation using XRD data was found to be 68.3 nm with FCC structure. The maximum absorption of the NiO nanoparticles is 346 nm and band gap calculated from Tauc's plot was found to be 2.95 eV. The photocatalytic activity of prepared nanoparticles was studied by the degradation of textile dye indigo carmine under ultraviolet radiation. The COD measurements were carried out to study the catalytic efficiency of the nanoparticles.

Graphical Abstract



SEM image of NiO nanoparticles.

Keywords: *Acalypha Indica*, NiO nanoparticles, Photodegradation.