

Synthesis of ZnO Nanoparticles Using Green Tea Powder Extract

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Abstract: The increasing demand for cost-effective, eco-friendly synthesis of nanoparticles has stimulated researchers to investigate the utilization of plant extracts in the synthesis process. This results in non-toxic by-products. No critical condition of temperature and pressure is required in this process. Synthesis of Zinc oxide (ZnO) nanoparticles using green tea powder extract is reported in this communication. Green tea contains polyphenols like catechins, phenolic acid around 30%, and these compounds with anti-oxidant potential, acts as reducing agent on the metal oxides. Moreover, significant presence of proteins (15%), lipids (7%) and amino acids (4%) stabilizes the growth of ZnO nanoparticles and inhibits particle agglomeration. The structural and morphological investigation of said nanoparticles is carried out using X-ray diffraction, Field Emission Scanning Electron Microscopy, UV-Visible spectroscopy. The average particle size of ZnO nanoparticles synthesized using green tea powder extract in sol-gel method is found to be having 30.73 nm.

Key words; nanoparticles, catechins, phenolic acid, sol-gel method