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Fruits Extracts Mediated Synthesis of Zinc Oxide Nanoparticles Using *Rubus coreanus* and its Catalytic Activity for Degradation of Industrial Dye

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This study disclosed the aqueous fruits extract of *Rubus coreanus* as a sustainable agent for the synthesis of *Rubus coreanus* zinc oxide nanoparticle (Rc-ZnO Nps) using as a reducing and capping precursor for co-precipitation method. The development of Rc-ZnO was assured by white precipitated powder and analyzed by spectroscopic and analytical instruments. The UV-visible (UV-Vis) studies indicate the maximum absorbance at 357nm which confirmed the formation of ZnO Nps and the purity, functional group and monodispersity were assured by field emission transmission electron microscopy (FE-TEM), Fourier Transform Infrared (FTIR) Spectroscopy and dynamic light scattering (DLS). The X-ray powder diffraction (XRD) data revealed the Nps is 23.16 nm in size, crystalline in nature and possess hexagonal wurtzite structure. The Rc-ZnO Nps were subjected for catalytic studies. The Malachite Green dye was degraded by Rc- ZnO NPs in both dark and light (100 W tungsten) conditions and it degraded about 90% at 4 hours observation in both cases. The biodegradable, low cost Rc-ZnO NPs can be a better weapon for waste water treatment.

Key words: *Rubus Coreanus*, ZnO nanoparticles, Catalytic activity, Malachite green

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