

INTERNATIONAL MEETING ON
ADVANCED NANOMATERIALS AND NANOTECHNOLOGY
NOVEMBER 07-08, 2017 SINGAPORE

Facile synthesis of Ag and Ag-CuO nanoparticles using aqueous extracts of *Mimosa pigra* and their catalytic activities in the degradation of some common pollutants

Elias E Elemike, Damian C Onwudiwe, Doris F Ogeleka and Justina I Mbonu
North West University, South Africa

Biosynthesis of Ag and Ag-CuO nanoparticles using aqueous leaf extracts of *Mimosa pigra* is presented. The nanoparticles were synthesized using different concentration ratios of aqueous leaf extract of *Mimosa pigra* to the silver and copper salts. The nanoparticles were characterized using UV-vis spectroscopy, Fourier transform infra-red (FTIR) spectroscopy, powder X-ray diffraction (PXRD), scanning and transmission electron microscopies. Stable nanoparticles with average particle size of 17.5 nm (Ag) and 49.5 nm (Ag-CuO), which were capped by the plant extracts via the O-H and C=O groups from flavonoids, tannins and other bio compounds were obtained. The UV-vis spectra revealed earlier formation of surface Plasmon bands for silver nanoparticles when the volume of extract was reduced, although with lower intensity. In the spectrum of Ag-CuO nanoparticles, broad bands around 400-500 nm appeared in the region of 365-369 nm. Crystallite size of approximately 50 nm for the Ag-CuO was calculated from XRD results using Scherrer equation and the particles were well dispersed as shown by the TEM images. The photocatalytic activities of the synthesized Ag and Ag-CuO nanoparticles were studied towards the degradation of methylene blue (MB) and hydrogen peroxide (H_2O_2). The results provide eco-friendly reaction toward environmental remediation from common pollutants.

chemphilips@yahoo.com