ABSTRACT

This research thesis includes eco – friendly methods for the production of nanocomposites of Ag and ZnO by using fruit extract of *Ziziphus Jujuba*. Green synthesis is good alternative to chemical method as green synthesis produces no or less toxic products. Here, fruit extract of jujube is used for green synthesis of the nanocomposites. Solution of $AgNO_3$ having molarity 1mM was added to the extract of *Ziziphus Jujuba*. The mixture was heated for 50 min at 80°C. In the mixture of extract and silver nitrate, zinc oxide solution was added which was prepared by adding caustic soda solution in zinc acetate separately. A shift in the color of the solution from brown to black was observed. The characterization of nanocomposites by UV/Vis spectroscopy show two peaks at 272 nm and 429 nm. The FTIR spectrum at 3270, 1735, 1600, 1230 and 750 cm^{-1} shows the presence of various organic compounds in present in the extract. The SEM images shows the presences of silver and zinc oxide nanocomposites in the sample. The photocatalytic activity of silver and ZnO nanocomposites is evaluated against Congo Red dye. Due to attraction of Congo red dye with the nanocomposites the absorbance of light by the composites decreases with the passage of time. The UV graph shows curves which suggests that Ag and Zinc oxide nanocomposites have capability of degrading Congo red dye. The results shows that the efficiency of nanocomposites is 60%. The result suggest that the nanocomposites have promising use in the photo catalysis.

Keywords: Green synthesis, capping agents, Photo-catalysis