

SYNTHESIS AND CHARACTERIZATION OF Ag@TiO₂ CORE-SHELL NANOPARTICLES AND STUDY OF ITS ANTIBACTERIAL ACTIVITY

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ABSTRACT

Core-shell type Ag@TiO₂ nano particles were prepared by one pot simultaneous reduction of AgNO₃ and hydrolysis of Ti(IV) isopropoxide. They were characterized by absorption, XRD, FTIR, TGA, DSC and HR-TEM techniques. XRD patterns show the presence of anatase form of TiO₂ and the noble metal (Ag). High resolution transmission electron microscopic measurements revealed that their size is below 50 nm. The antibacterial properties of Ag@TiO₂ core-shell nanoparticles against *Escherichia coli* (*E.coli*) and *Staphylococcus aureus* (*S.aureus*) were examined by the agar diffusion method .As a result E.Coli and S.aureus were shown to be substantially inhibited by Ag@TiO₂ core-shell nanoparticles. These result demonstrated that TiO₂ supported on the surface of Ag NPs without aggregation was proved to be a good novel antibacterial activity.

KEYWORDS: Core- Shell Nanoparticles, *Escherichia coli*, *Staphylococcus aureus*, Antibacterial Activity