



Journal of Applicable Chemistry

2014, 3 (1): 397-412

(International Peer Reviewed Journal)



An Investigation On: Kinetics of Photo Catalysis, Electrical Property And Biological Activity of Electrochemically Synthesized ZnS And Ru: ZnS Nano Photocatalysts

K.R.Raksha and Sannaiah Ananda*

*Department of Studies in Chemistry, Manasagangotri, University of Mysore, Mysore-570 006, **INDIA**

Email: snananda@yahoo.com

Accepted on 7th January 2014

ABSTRACT

Zinc sulphide is one of the important II-VI semiconducting materials with a direct band gap of 3.8eV which finds applications in electrical conductivity and photocatalysts. This article deals with the novel electrochemical synthesis of ZnS and Ru: ZnS nano particles, their application in photocatalysts and electrical conductance. The synthesized nano particles were characterized by UV-VIS, IR, FE-SEM (EDAX) techniques. X-ray diffraction (XRD) reveals average crystallite size to be 19 nm and 12.7nm respectively. The photo-catalytic decolourization of the dye follows first-order kinetics. The photo-degradation efficiency for the synthesized nano particles was observed to be ~6-8 times greater than commercial ZnS and ZnO, studied with respect to change in COD. Resistivity measurements demonstrate that the electrical properties of the nanoparticles depend significantly on the content. The hydroxyl radical scavenging activity of ZnS and Ru: ZnS nano particle was established by Fenton reaction. The anti-bacterial effect of these particles against *Bacillus subtilis* and *E. coli* was investigated.

Keywords: Photocatalysis, Fenton reaction, Photovoltaic.
