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Focal Theme:

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SD-MPC EP-15 : Science and Technology for Societal Development

APPLICATION OF CUO NANOPARTICLES IN THE DEGRADATION OF METHYLENE BLUE

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In the present study CuO nanoparticles were synthesized by sonochemical method using Copper acetate as precursor and NaOH as stabilizing agent. The prepared CuO nanoparticles were characterized by PXRD, FTIR, UV-Visible and SEM- EDX. The photocatalytic activity of the CuO nanoparticles was investigated by degradation of Methylene Blue in aqueous medium under direct sunlight using UV-Vis spectrophotometer. The prepared nano CuO is found to be effective in removing water soluble dyes.

SD-MPC EP-16 : Science and Technology for Societal Development

FABRICATION OF NICKEL - GRAPHENE - TITANIUMDIOXIDE / FERRIC OXIDE COMPOSITE CATALYSTS FOR HYDROGEN EVOLUTION REACTION

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The present work deals with the preparation and characterisation of a novel TiO₂ based electro catalysts for hydrogen evolution reaction. Recently many renewable energy research are ongoing, focus on the electrocatalytic water splitting to generate hydrogen. The most efficient electro catalyst used for HER is Pt group metals, but they are very expensive and scarce. So modified noble metal catalyst are preferred. TiO₂ is regarded as widely used electro catalyst for HER due to its high chemical stability, low cost and nontoxic properties. TiO₂ catalysts can be modified using transition metal loading. Modification of electrocatalytic activity of TiO₂ is done by the incorporation of GO and Fe₂O₃ in its frame work. Fe₂O₃ - TiO₂ - GO mixed oxide composite was prepared by thermal decomposition method. Cost - efficient substrate are desirable for hydrogen generation by water electrolysis. So cheap and versatile material like mild steel was used, having the dimension of (3 cm × 1 cm × 0.1 cm), it was mechanically polished to mirror finish and cleaned with distilled water,