

E2-20 Photocatalytic extraction of lead from aqueous medium using polypropylene films coated with TiO₂

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Rapid growth of vehicular traffic and increased industrialization has increased the concentration of heavy metals in the aquatic environment. It is well known that heavy metal concentrations above a threshold level can cause severe damage to living organisms. Therefore, it is desirable to remove heavy metals from water. Because of appropriate redox potentials, a certain number of metal cations can be reduced by the free electrons created by band gap illumination of common semiconductors. This observation was employed to use heterogeneous photocatalysis as a promising method for heavy metal removal from aqueous medium. In the semiconductor colloidal suspensions photogenerated e⁻ and h⁺ can reach the surface very quickly before they recombine. Though this is the principal advantage of colloidal semiconductors, the main practical obstacle is the separation of metal adsorbed TiO₂ powder dispersed in the solution. As a