

P29. PHOTOCATALYTIC REMOVAL OF TOXIC CR(VI) WITH PHTHALOCYANINE IMMOBILIZED TiO₂

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Chromium is one of the metal pollutants which is used in different industrial fields. Because of its toxicity and mobility hexavalent chromium Cr(VI) is trouble matter and remove it from the waste waters is quite difficult. Cr(VI) exposure via inhalation cause carcinogenic effect on the living mechanism. As Cr(VI), a potential carcinogen present in the environment, represents a significant safety concern, it is currently the subject of an EPA health risk assessment. Therefore, sensitive and selective removal of this specie is highly desired. Removal of Cr(VI) in waste waters have been improved physical, chemical, biological procedures and so forth. In recent years, photocatalytic reduction as advanced chemical techniques is a suitable way for effective removal of Cr(VI). This study have been focused on photo reduction of Cr(VI) with dye sensitized TiO₂ under UV-vis light. In this study, phthalocyanine (Pc) compounds are used as dye sensitizer. Pc molecules are also known to have reductive properties and removing it from the aqueous solution after treatment is difficult so they are stabilized on to TiO₂ support surface. For this, 1% (w/w) Pc (two different chemical structures) was immobilized on TiO₂. Pc/TiO₂ derivatives (2g/L) were used for photocatalytic reduction of 10 ppm Cr(VI) as model pollutant. In this process, Cr(VI) solution was exposed with UV source ($\lambda=365$ nm) for 150 minutes. After a certain illumination period remaining unreduced Cr(VI) concentration was measured by spectrophotometric method. Control experiments were carried out with neat Pc and the results were compared with Pc-TiO₂.