



STUDY OF PHOTOCATALYTIC FREE AND COMPLEX CYANIDE ELIMINATION PROCESS FROM THE INDUSTRIAL WASTEWATER USING A SELF MADE $\text{Al}_2\text{O}_3/\text{TiO}_2$ CATALYST

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Abstract

In this paper the preparation and some bulk and surface characterizations of a set of Al_2O_3 supported TiO_2 photocatalysts are reported. The powder were home prepared by a wet impregnation method using titanium isopropylate. The impregnation was followed by thermal treatment and this procedure was repeated several times in order to obtain samples with different amounts of TiO_2 . The solids were characterized by X-ray diffraction technique. Moreover, all of them were tested as photocatalysts by using a batch photoreactor and a high pressure Hg lamp. The characterization results indicate that a layer of anatase TiO_2 formed on the surface of Al_2O_3 particles, its extent depending on the number of impregnations. The photoactivity of the powders increased by increasing the number of impregnations up to seven times. Finally, after making the desired catalyst, the elimination process of free and complex cyanide from the industrial wastewater using that catalyst in a batch photoreactors were investigated.

Keywords: photocatalyst, Al_2O_3 supported TiO_2 , cyanide photo-oxidation

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