

Cr(VI) photocatalytic reduction under sunlight followed by Cr(III) extraction from TiO₂ surface

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Abstract: The main objective of this work was the extraction of Cr(III) from TiO₂ surface deposited after Cr(VI) reduction by TiO₂ solar photocatalysis. The results show that the reduction of Cr(VI) to Cr(III) by TiO₂ under natural sunlight is total after 2 h using tartaric acid (A.T) as a hole scavenger under the following conditions: [Cr(VI)]: 20 ppm, [TiO₂]: 2 g/L, [A.T]: 60 ppm and pH: 2.2. The produced Cr(III) is divided between deposited onto TiO₂ surface (39.75%) and in the solution (60.25%). The Cr(III) removal from TiO₂ surface by the sequential extraction after three washing were 90.13% and 42.62% using citric acid and EDTA respectively.

Keywords : Chromium, Reduction, Deposition, Solar light, extraction, TiO₂ surface