

Improvement of the Efficiency for Photo-catalytic activity water oxidation reaction by Inorganic M-O Sensitizer Linked to Titanium Oxide Nanotube

김진수, 우성일^{1,*}, 김창호¹

한국과학기술원; ¹한국과학기술원 생명화학공학과

(siwoo@kaist.ac.kr*)

We prepared water oxidation catalysts under visible light irradiation by use of Titanium oxide nano tube. We synthesized Titanium oxide Nanotubes by hydrothermal method from TiO₂ (P25) to enhance surface area. This type of trititanate nanotube, which is synthesized via the reaction of TiO₂(p25) particles with Sodium hydroxide aqueous solution. It is found that the trititanate nanotubes are multi-walled scroll nanotubes with an inter-shell structure. Also TNT(Titanium oxide Nanotubes) has higher photo-catalytic activity than TiO₂ powder.² We prepared water oxidation catalyst via photochemical decomposition or the Ti-O-Metal (bi-nuclear complexes) sensitizer anchored to the surface of Titanium oxide nano tube in order to have highly photocatalytic activity under visible light irradiation. The modified Titanium Oxides were shown the extended absorption to visible light reigon and were highly enhancing photoactive catalysts as water oxidation. The oxygen evolution rate of TNT/Fe oxide was 0.111 cc/min under visible light in buffer solution of pH 5.4.