

Electrochemical Properties of Dye-Sensitized Titanium Oxide Thin Film prepared by Spray Method

박경희^{1,*}, 김태영¹, 김승재^{2,3}, 조성용^{2,4}

¹전남대학교 공업기술연구소;

²전남대학교 환경공학과; ³환경연구소;

⁴바이오하우징연구사업단

(see0936@chonnam.ac.kr*)

Titanium oxide thin films as photoanode for dye-sensitized solar cell were prepared by spray method onto SnO₂:F coated glass. A dye consisting of cis-dithiocyanato-bis(2,2'-bipyridyl-4,4'-dicarboxylate) ruthenium (II) was incorporated by immersing the films into a solution of the dye in ethanol. The amount of dye incorporation was found to be highly dependent on the microstructure and the thickness of titanium oxide thin films. Surface morphologies were studied with scanning electron microscopy (SEM) and atomic force microscopy (AFM) and the film thickness was determined by surface profilometry using a Tencor Alpha-Step instrument. Incident photon-to-current efficiency (IPCE) was studied as a function of spray parameters such as component of TiO₂ coating sol and spray pressure.