

عنوان مقاله:

Electrodeposited Co-Pi Catalyst on α -Fe₂O₃ Photoanode for Water-Splitting Applications

محل انتشار:

ماهنامه بین المللی مهندسی، دوره 31، شماره 12 (سال: 1397)

تعداد صفحات اصل مقاله: 7

نویسندگان:

M. Toghræi - *Material Science and Engineering Department, K. N. Toosi University of Technology, Tehran, Iran*

H. Siadati - *Material Science and Engineering Department, K. N. Toosi University of Technology, Tehran, Iran*

خلاصه مقاله:

Optoelectronic properties of hematite (α -Fe₂O₃) as a photoanode and the required over-potential in photo-assisted water splitting has been improved by presence of Co-Pi on its surface. In order to increase the lifetime of the photogenerated holes and lower the applied bias, cobalt-phosphate (Co-Pi) on nanostructured α -Fe₂O₃ by electrodeposition was deposited. The nanostructure morphology of the α -Fe₂O₃ was confirmed by XRD and SEM. After depositing four different thicknesses of Co-Pi on α -Fe₂O₃, their photo-electrochemical (PEC) property was determined using linear sweep voltammetry (LSV) and chronoamperometry. The SEM and EDX results showed a complete coverage of Co-Pi on α -Fe₂O₃ and that the Co:P ratio was approximately 1:1.9 for the best produced catalyst. The highest performance of about 200 mV decrease in the onset potential was achieved for the 30-minutes electrodeposited sample. The Co-Pi/ α -Fe₂O₃ catalyst showed an enhancement of 100% of photocurrent compared to the bare α -Fe₂O₃.

کلمات کلیدی:

Solar Water Splitting, Photoanode, Hematite, Co-Pi, Electrodeposition

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/962923>

