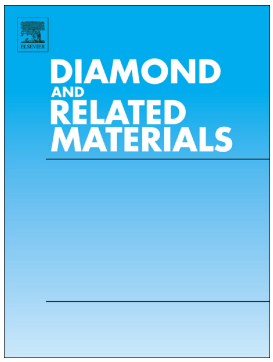

Photoelectrochemical water splitting with tailored TiO2/SrTiO3@g-C3N4 heterostructure nanorod in photoelectrochemical cell

Robabeh Bashiri, Norani Muti Mohamed, Nur Amirah Suhaimi, Muhammad Umair Shahid, Chong Fai Kait, Suriati Sufian, Mehboob Khatani, Asad Mumtaz

PII: S0925-9635(17)30604-0
DOI: doi:10.1016/j.diamond.2018.03.019
Reference: DIAMAT 7059

To appear in: *Diamond & Related Materials*

Received date: 30 October 2017
Revised date: 11 March 2018
Accepted date: 18 March 2018

Please cite this article as: Robabeh Bashiri, Norani Muti Mohamed, Nur Amirah Suhaimi, Muhammad Umair Shahid, Chong Fai Kait, Suriati Sufian, Mehboob Khatani, Asad Mumtaz , Photoelectrochemical water splitting with tailored TiO2/SrTiO3@g-C3N4 heterostructure nanorod in photoelectrochemical cell. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Diamat(2017), doi:10.1016/j.diamond.2018.03.019

Photoelectrochemical Water Splitting with Tailored $TiO_2/SrTiO_3$@g-C_3N_4 Heterostructure Nanorod in Photoelectrochemical Cell

Robabeh Bashiri[a], Norani Muti Mohamed *[a,b], Nur Amirah Suhaimi[a], Muhammad Umair Shahid[a], Chong Fai Kait[b], Suriati Sufian[c], Mehboob Khatani[d] , Asad Mumtaz[a,b]

[a]Centre of Innovative Nanostructures & Nanodevices (COINN), [b]Fundamental and Applied Sciences Department, Chemical Engineering Department, [c]Chemical Engineering Department, Universiti Teknologi PETRONAS, 32610 Bandar Seri Iskandar, Perak, Malaysia, [d]Electrical & Electronic Engineering Department, Universiti Teknologi PETRONAS, 32610 Bandar Seri Iskandar, Perak, Malaysia

*Corresponding author:

E-mail address; noranimuti_mohamed@utp.edu.my

Abstract

Solar hydrogen production through water photosplitting in photoelectrochemical (PEC) cell is one of the most desirable, cost-effective and environmentally friendly processes. However, it is still suffering from the low photoconversion efficiency. A novel tailored $TiO_2/SrTiO_3$@g-C_3N_4 heterostructure nanorod was synthesized to investigate the photocatalytic hydrogen production under visible light condition in glycerol-based PEC cell. A series of TiO_2 and $TiO_2/SrTiO_3$ nanorod were grown on F-doped SnO_2 glass (FTO) substrate by hydrothermal method and then were modified using graphitic carbon nitride g-C_3N_4 via the chemical bath deposition technique. The samples were characterized using x-ray diffraction (XRD), field-emission scanning electron microscopy (FESEM), high-resolution transmission electron microscopy (HRTEM), diffuse reflectance UV-Vis spectroscopy (DR-UV-vis), and Fourier transform infrared (FTIR) to explore the physicochemical properties of the prepared photocatalysts. The prepared $TiO_2/SrTiO_3$@g-