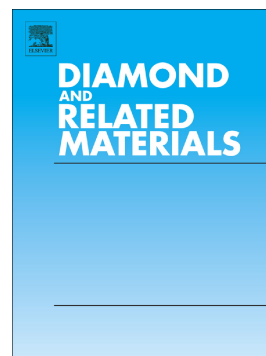


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# Photoelectrochemical Water Splitting with Tailored $\text{TiO}_2/\text{SrTiO}_3@g\text{-C}_3\text{N}_4$ Heterostructure Nanorod in Photoelectrochemical Cell

Robabeh Bashiri<sup>a</sup>, Norani Muti Mohamed <sup>\*a,b</sup>, Nur Amirah Suhaimi<sup>a</sup>, Muhammad Umair

Shahid<sup>a</sup>, Chong Fai Kait<sup>b</sup>, Suriati Sufian<sup>c</sup>, Mehboob Khatani<sup>d</sup>, Asad Mumtaz<sup>a,b</sup>

<sup>a</sup>Centre of Innovative Nanostructures & Nanodevices (COINN), <sup>b</sup>Fundamental and Applied Sciences Department, Chemical Engineering Department, <sup>c</sup>Chemical Engineering Department, Universiti Teknologi PETRONAS, 32610 Bandar Seri Iskandar, Perak, Malaysia, <sup>d</sup>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  $\text{TiO}_2/\text{SrTiO}_3@g\text{-C}_3\text{N}_4$  heterostructure nanorod was synthesized to investigate the photocatalytic hydrogen production under visible light condition in glycerol-based PEC cell. A series of  $\text{TiO}_2$  and  $\text{TiO}_2/\text{SrTiO}_3$  nanorod were grown on F-doped  $\text{SnO}_2$  glass (FTO) substrate by hydrothermal method and then were modified using graphitic carbon nitride  $g\text{-C}_3\text{N}_4$  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  $\text{TiO}_2/\text{SrTiO}_3@g\text{-C}_3\text{N}_4$

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