

Quantum efficiency of Pd/TiO₂ catalyst for photocatalytic reforming of methanol in ultra violet region

ABSTRACT

The efficiency of Pd/TiO₂ catalyst for photocatalytic reforming of methanol was investigated in ultra violet, UV region by monitoring the volume of H₂ production and the number of incident photon using chemical actinometry method. 2-nitrobenzaldehyde solution was used to evaluate the number of incident photon from solar light by monitoring the rate of photochemical isomerisation to 2-nitrobenzoic acid. The activity of Pd/TiO₂ catalyst varies across UV region with the ability to utilise the incident photon for H₂ gas production is higher in UV-B. The quantum efficiency of the reaction was affected by the amount of catalysts concentration and the number of incident photons.

Keyword: Photocatalysis; Hydrogen; Pd/TiO₂; Quantum efficiency; Chemical actinometry