

Multi-electron storage of photoenergy using Cu₂O–TiO₂ thin film photocatalyst

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Abstract

UV–vis irradiation of thin films of TiO₂ (ITO/TiO₂) and Cu₂O/TiO₂ (ITO/Cu₂O/TiO₂) coated on conducting glasses generate H₂ from H₂O and once the illumination is ceased, the H₂ production was still noticeable under dark for ITO/Cu₂O/TiO₂ at a lesser production rate for up to 2 h. No such dark reactions were observed for ITO/TiO₂ or TiO₂-coated copper metal foil (Cu/TiO₂). It was noticed that the irradiation of ITO/Cu₂O/TiO₂ leads to formation of trapped electrons and this stored energy leads to generate H₂ from H₂O in the dark.

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