

Enhanced H₂ evolution from water over visible-light-driven SrTiO₃:Rh/Ta photocatalyst prepared by spray pyrolysis

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SrTiO₃:Rh/Ta powder was prepared by spray pyrolysis from polymeric precursor mixture of citric acid and ethylene glycol. The co-doping of Ta on SrTiO₃:Rh was found to be effective to reduce the formation of Rh ions of higher oxidation states than Rh³⁺. The charge compensation due to the substitution of two Ti⁴⁺ in the host material by Rh³⁺ and Ta⁵⁺ appeared to be highly favorable for the enhancement of hydrogen evolution rate by 3.5 times and the reduction of induction period by 50 % compared with those of SrTiO₃:Rh. Intimate mixing of precursor solution of multi-components in spray pyrolysis was responsible for this enhanced performance as photocatalyst for hydrogen generation.