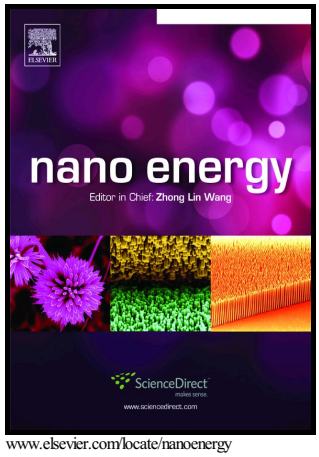

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Anchoring Ultrafine Metallic and Oxidized Pt Nanoclusters on Yolk-Shell TiO_2 for Unprecedentedly High Photocatalytic Hydrogen Production

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Abstract: We demonstrate an alkali modification process to produce highly dispersed ultrafine Pt nanoclusters with metallic Pt^0 and oxidized Pt^{2+} species as co-catalyst anchored on nanosheet-constructed yolk-shell TiO_2 ($NYTiO_2$-Pt) acting as light harvesting reactor for highly efficient photocatalytic H_2 production. Benefiting from the high surface area, highly dispersed ultrafine Pt nanoclusters (~0.6 nm) with Pt^0 and Pt^{2+} species and special nanosheet-constructed yolk-shell structure, this novel light harvesting reactor exhibits excellent performance for photocatalytic H_2 production. The $NYTiO_2$-Pt-0.5 (0.188 wt% Pt)