

Electronic Supplementary Information (ESI)

Modification of TaON with ZrO₂ to improve photocatalytic
hydrogen evolution activity under visible light: influence of
preparation conditions on activity

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Electronic Supplementary Information (ESI)

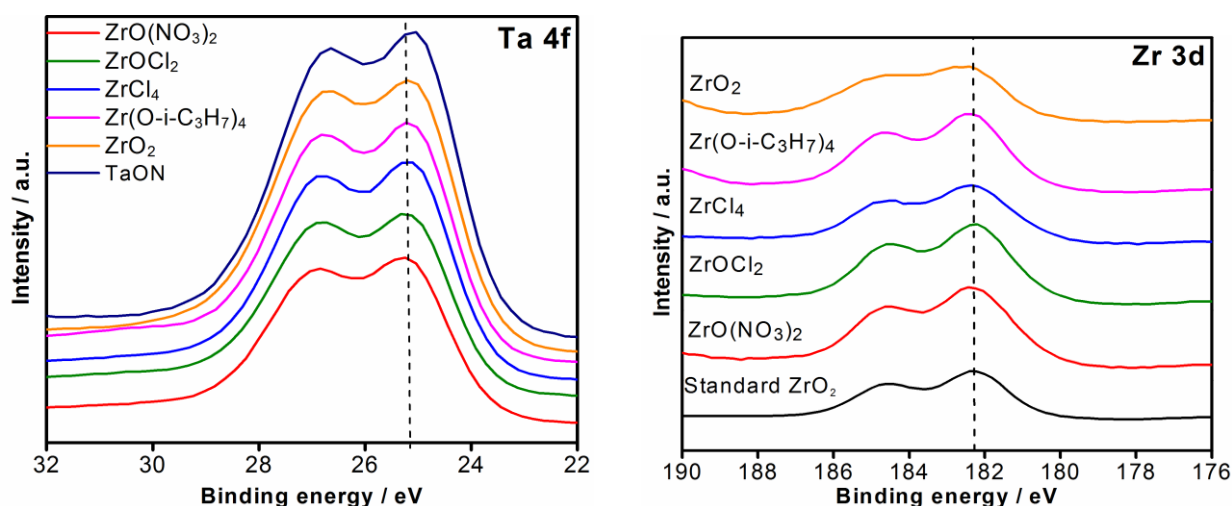


Fig. S1 XPS spectra for Ta 4f and Zr 3d in ZrO_2/TaON catalysts synthesized from different Zr precursors with a common nitridation time of 15 h.

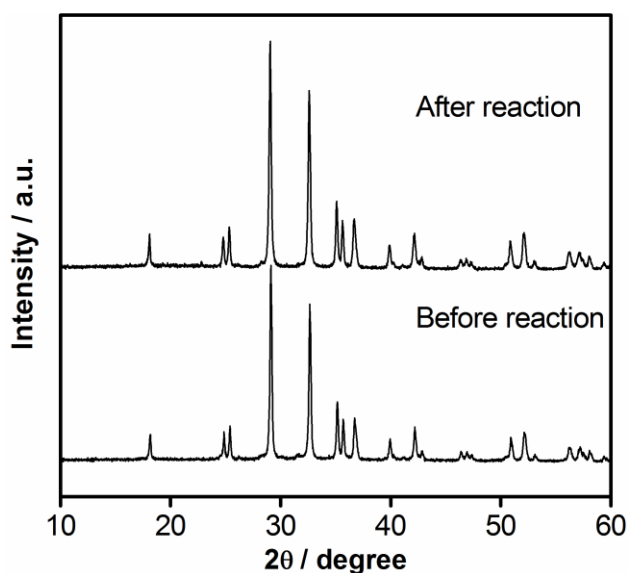


Fig. S2 XRD patterns of 0.5 wt% Pt-loaded ZrO_2/TaON catalysts (synthesized from $\text{ZrO}(\text{NO}_3)_2 \cdot 2\text{H}_2\text{O}$ precursor with 15 h of nitridation) before and after H_2 evolution reaction (UV irradiation, 18 h).

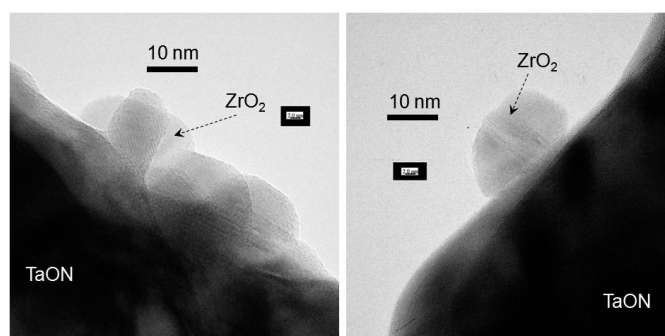


Fig. S3 TEM images of ZrO_2/TaON catalyst synthesized from ZrCl_4 with a common nitridation time of 15 h.

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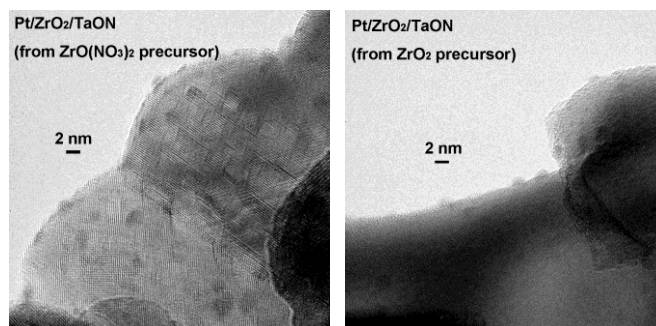


Fig. S4 HR-TEM images of 0.5 wt% Pt-loaded ZrO_2/TaON samples.

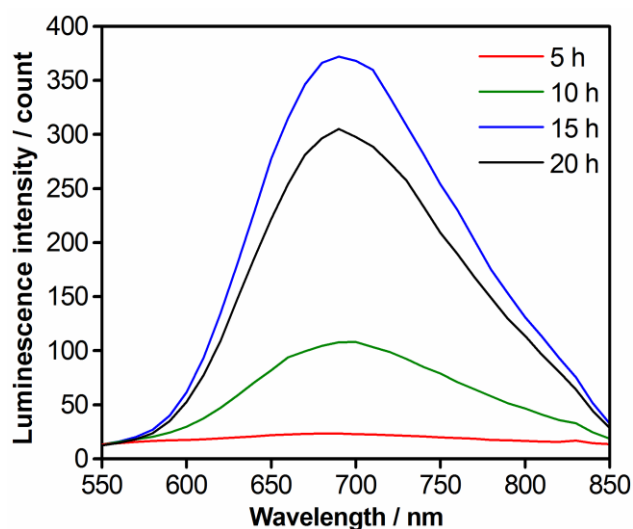


Fig. S5 Photoluminescence spectra measured at liquid nitrogen temperature (77 K) for ZrO_2/TaON catalysts synthesized from $\text{ZrO}(\text{NO}_3)_2 \cdot 2\text{H}_2\text{O}$ precursor with different nitridation time. Excitation wavelength, 420 nm.

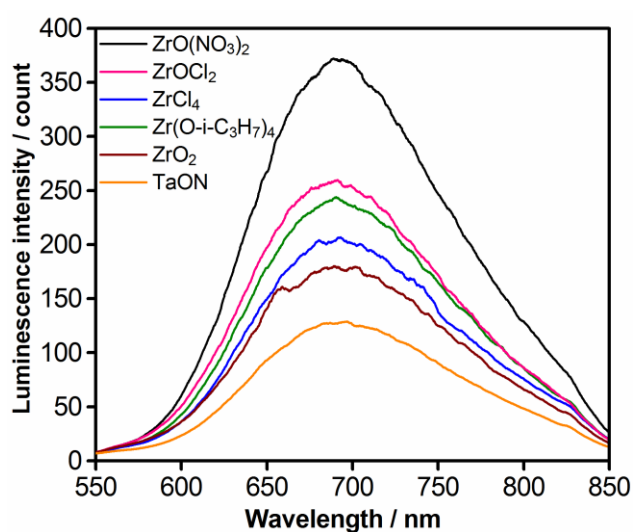


Fig. S6 Photoluminescence spectra measured at liquid nitrogen temperature (77 K) for ZrO_2/TaON catalysts synthesized from different Zr precursors with a common nitridation time of 15 h. Excitation wavelength, 420 nm.