

Supporting Information

Oxygen Vacancy Modulation of Two-Dimensional γ -Ga₂O₃ Nanosheets as Efficient Catalyst for Photocatalytic Hydrogen Evolution

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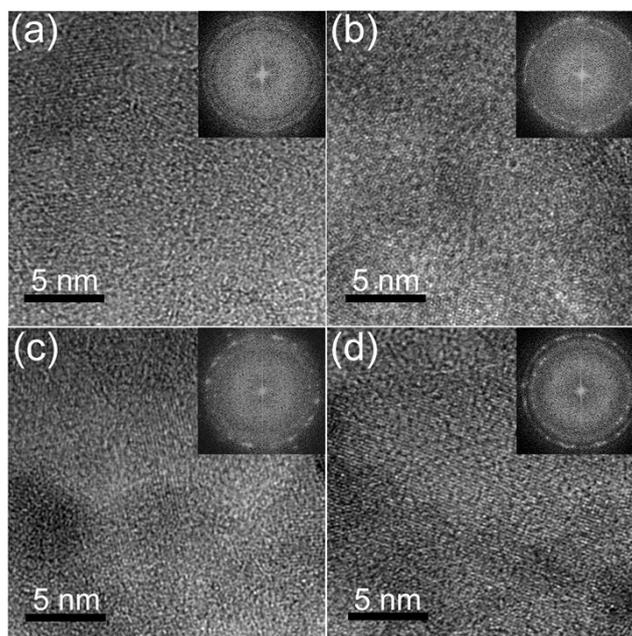


Fig. S1 HRTEM images and corresponding FFT patterns of the γ -Ga₂O₃ samples synthesized at different temperatures, where (a)-(d) represent for γ -80, γ -120, γ -160, and γ -200, respectively.

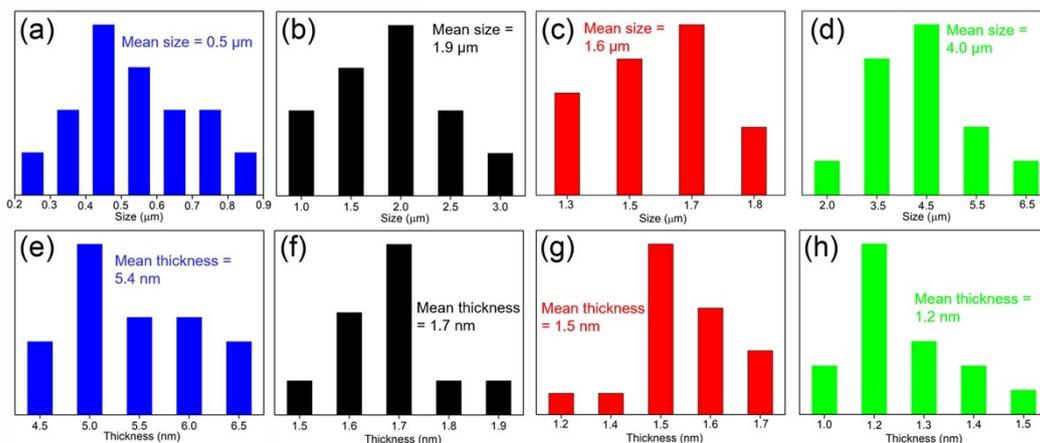


Fig. S2 Thickness and sizes of the samples, where (a, e), (b, f), (c, g) and (d, h) represent the γ - 80, γ -120, γ -160 and γ -200.

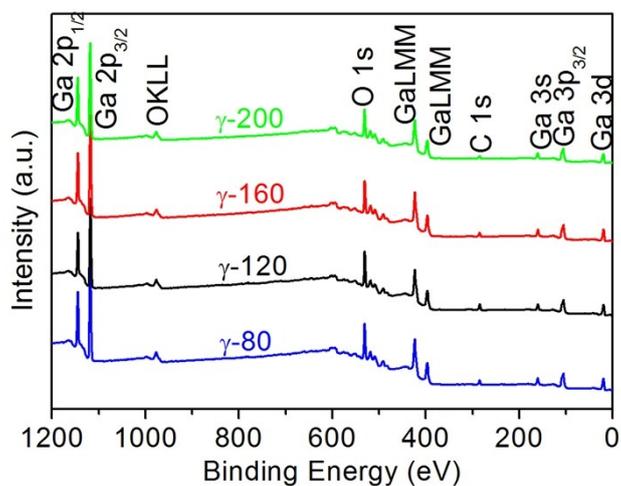


Fig. S3 XPS spectra of fully scanned from 0 to 1200 eV.

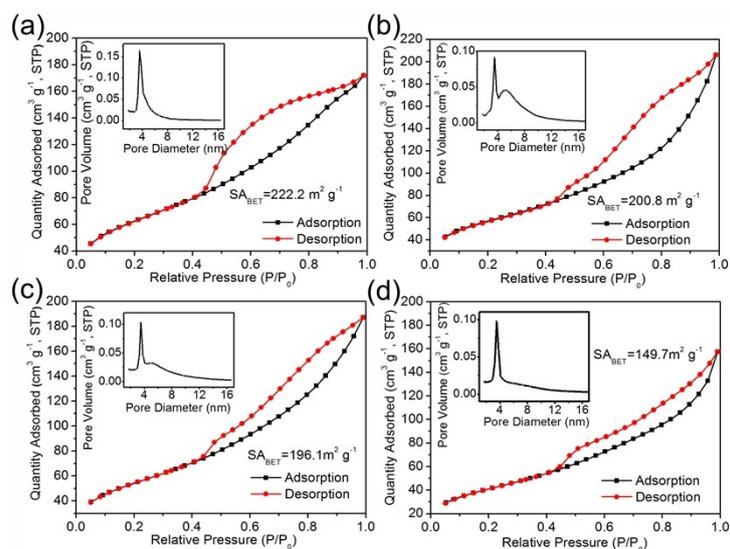


Fig. S4 N₂-adsorption–desorption isotherms of the γ -Ga₂O₃ samples: insets are the pore-size distribution curves of the as-prepared samples. Synthesis temperature from (a)-(d) refers to 80, 120, 160, and 200 °C.

Table 2. Physicochemical properties of the γ -Ga₂O₃ samples prepared at different hydrothermal temperatures

Sample	S _{BET} [m ² g ⁻¹]	Pore volume [cm ³ g ⁻¹]	Average pore size [nm]
γ -80	222.2	0.2414	4.0
γ -120	200.8	0.2783	5.2
γ -160	196.1	0.2554	4.8
γ -200	149.7	0.1956	4.6

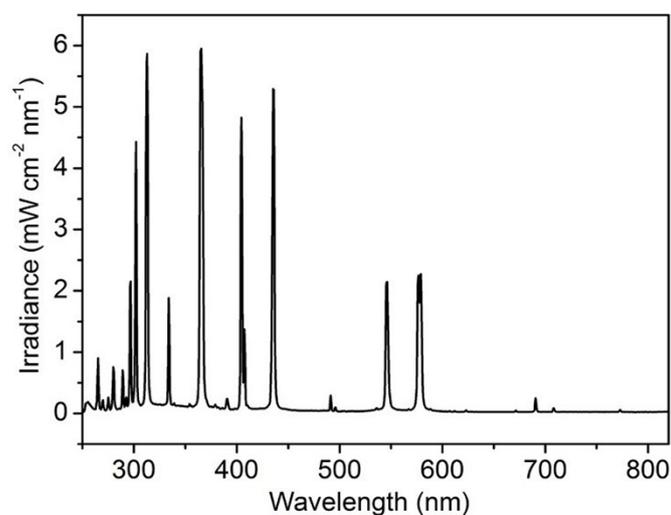


Fig. S5 The irradiance spectrum of the high-voltage mercury lamp with 125W.

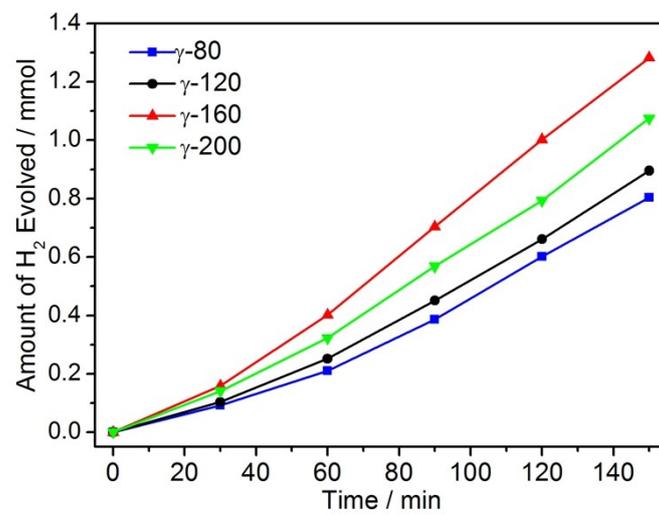


Fig. S6 Photocatalytic hydrogen generation activity of the γ -Ga₂O₃ samples under irradiation of UV light.