

Supporting information

**Improving the photocatalytic hydrogen production of SrTiO₃ by in-situ loading
ethylene glycol as co-catalyst**

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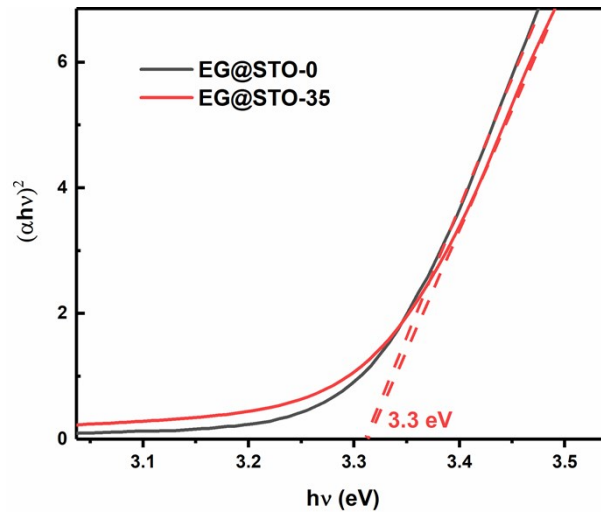


Figure S1. The relationship between $(\alpha h\nu)^2$ and photon energy.

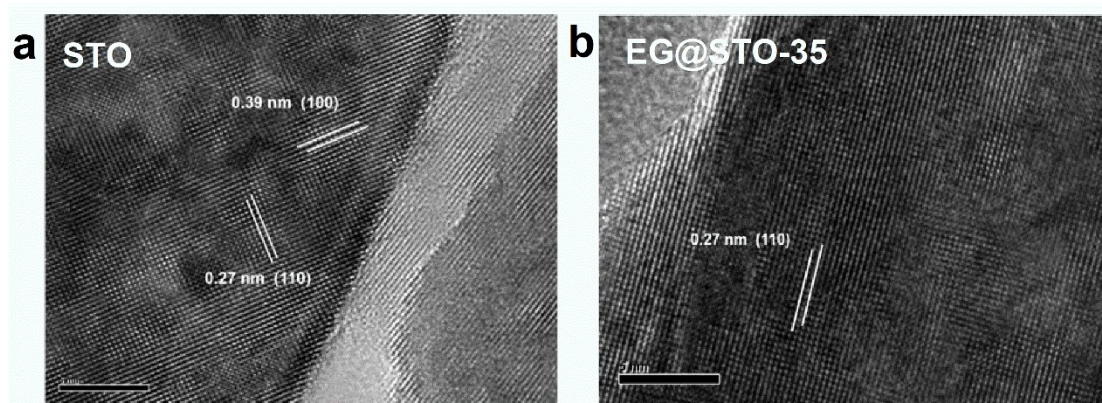


Figure S2. The HRTEM of pure STO and EG@STO-35.

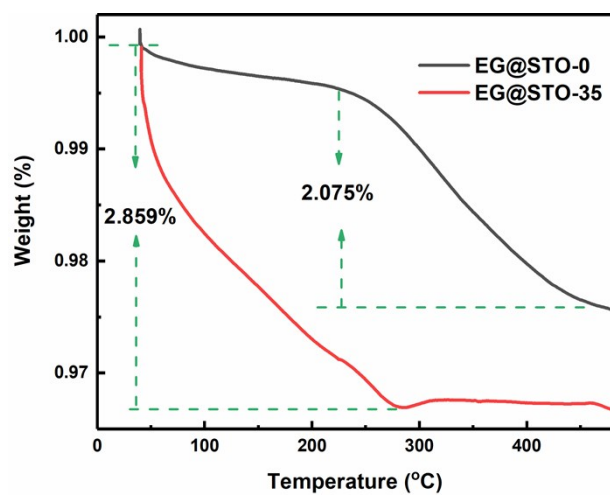


Figure S3. TG curve of the EG@STO-0 and EG@STO-35.

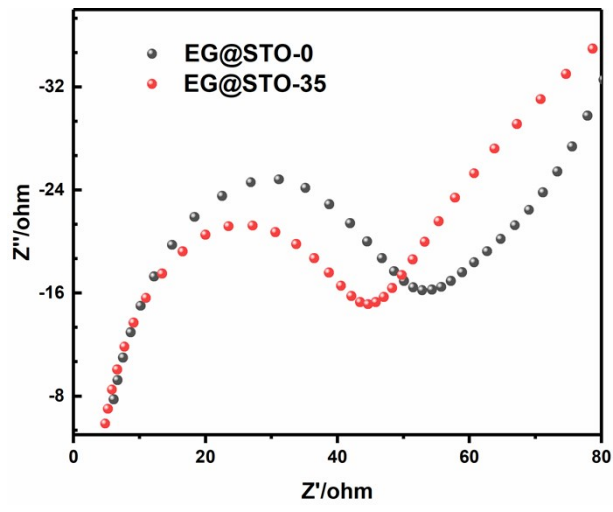


Figure S4. The EIS of EG@STO-0 and EG@STO-35.

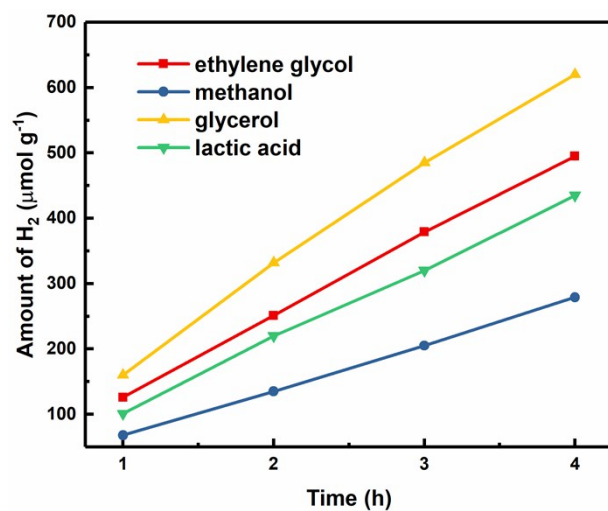


Figure S5. The hydrogen production effect of EG@STO-35 under different sacrificial agents.

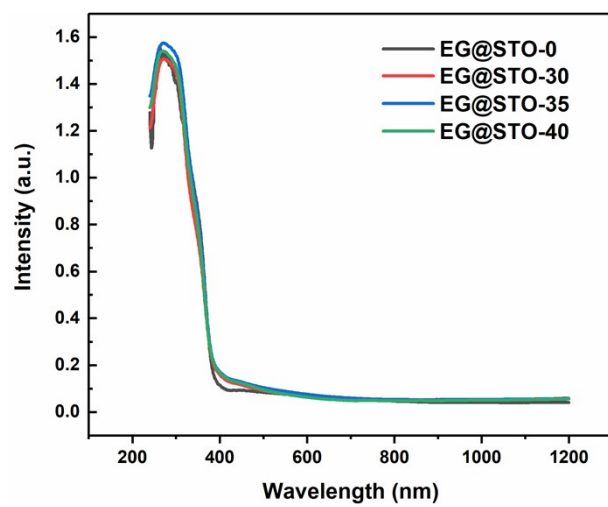


Figure S6. UV-vis absorbance spectra of EG@STO-x.

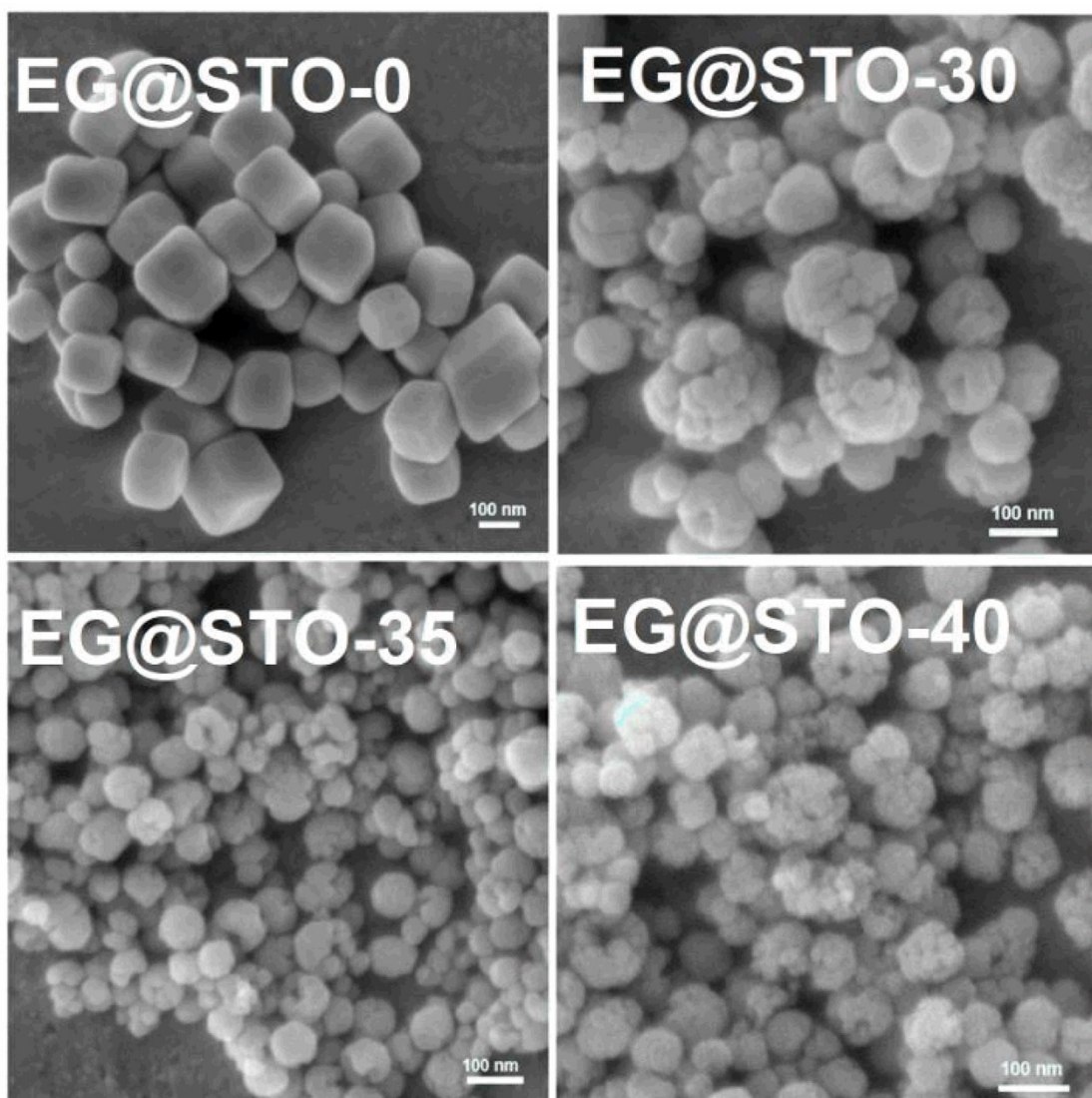


Figure S7. SEM of EG@STO-x.

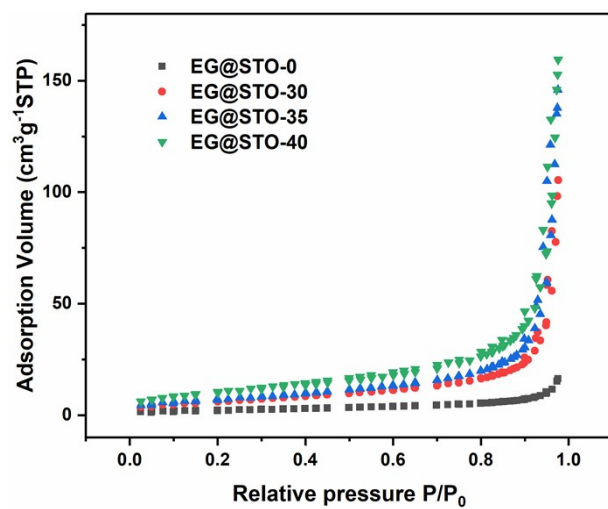


Figure S8. N₂ adsorption-desorption isotherms of EG@STO-x (x = 0, 30, 35, 40).

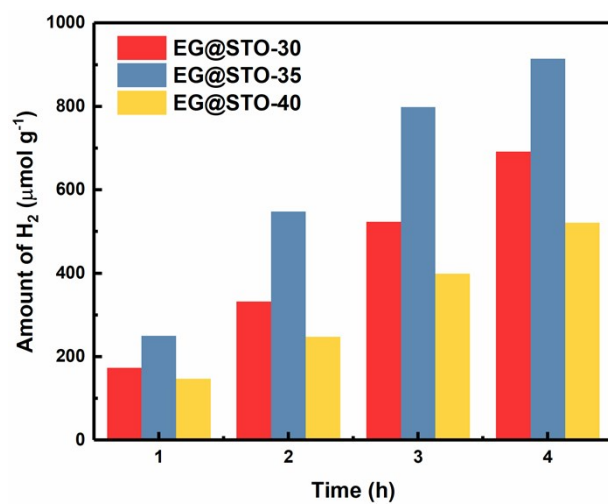


Figure S9. (a) photocatalytic hydrogen production performance of EG@STO-x (x = 0, 30, 35, 40).

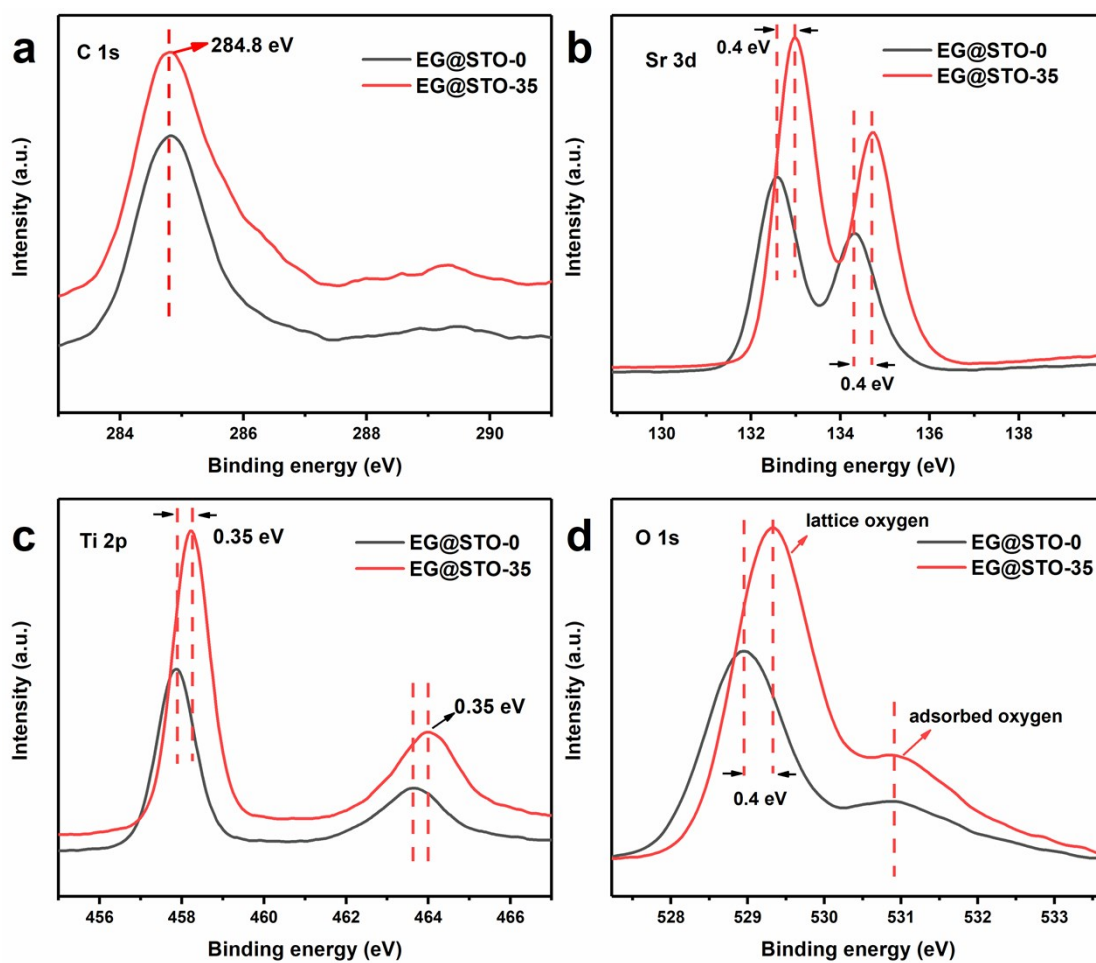


Figure S10. C 1s, Sr 3d, Ti 2d and O 1s XPS spectra of EG@STO-0 and EG@STO-

35.

Table S1. Electron density distribution changes of STO after coating with EG.

Atom	Number	Charge (Surface with EG)	Charge (Surface without EG)
O	3	-0.71	-0.74
O	6	-0.71	-0.74
O	12	-0.71	-0.74
O	15	-0.71	-0.74
O	21	-0.71	-0.74
O	24	-0.71	-0.74
O	30	-0.71	-0.74
O	33	-0.71	-0.74
Ti	3	1.11	1.09
Ti	6	1.11	1.09
Ti	9	1.31	1.09
Ti	12	1.11	1.09