

Supporting Information

Visible-light-responsive TaON/CdS photocatalytic film with ZnS passivation layer for highly extraordinary NO₂ photodegradation.

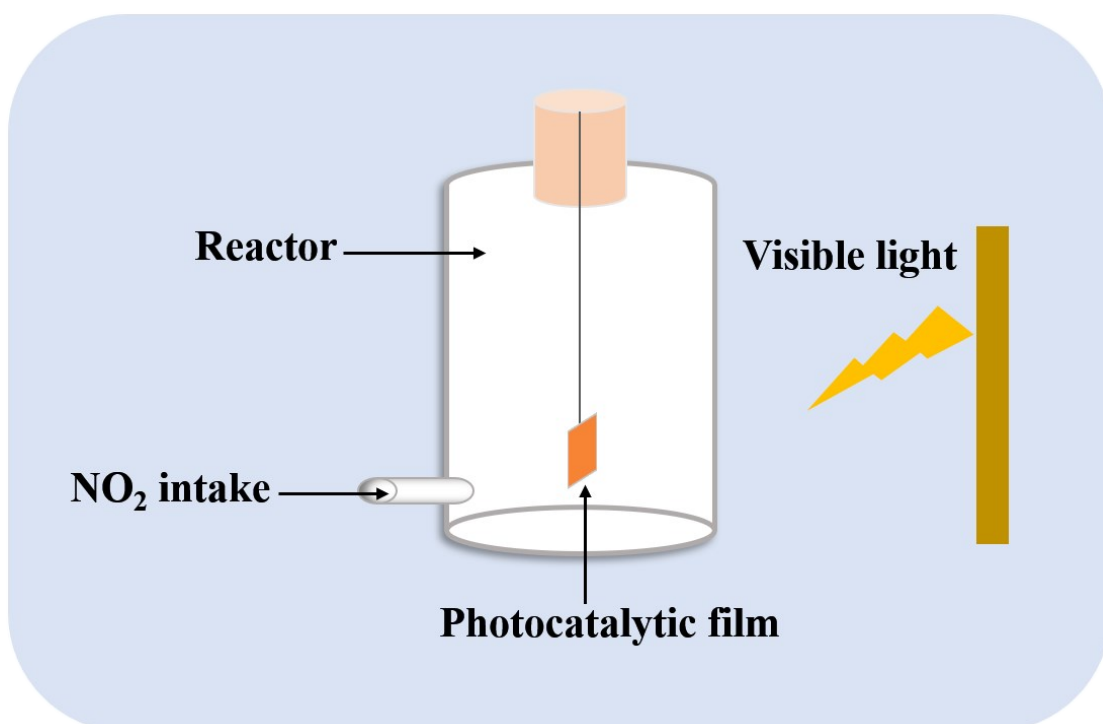


Fig. S1 The reaction scheme for NO₂ photodegradation system.

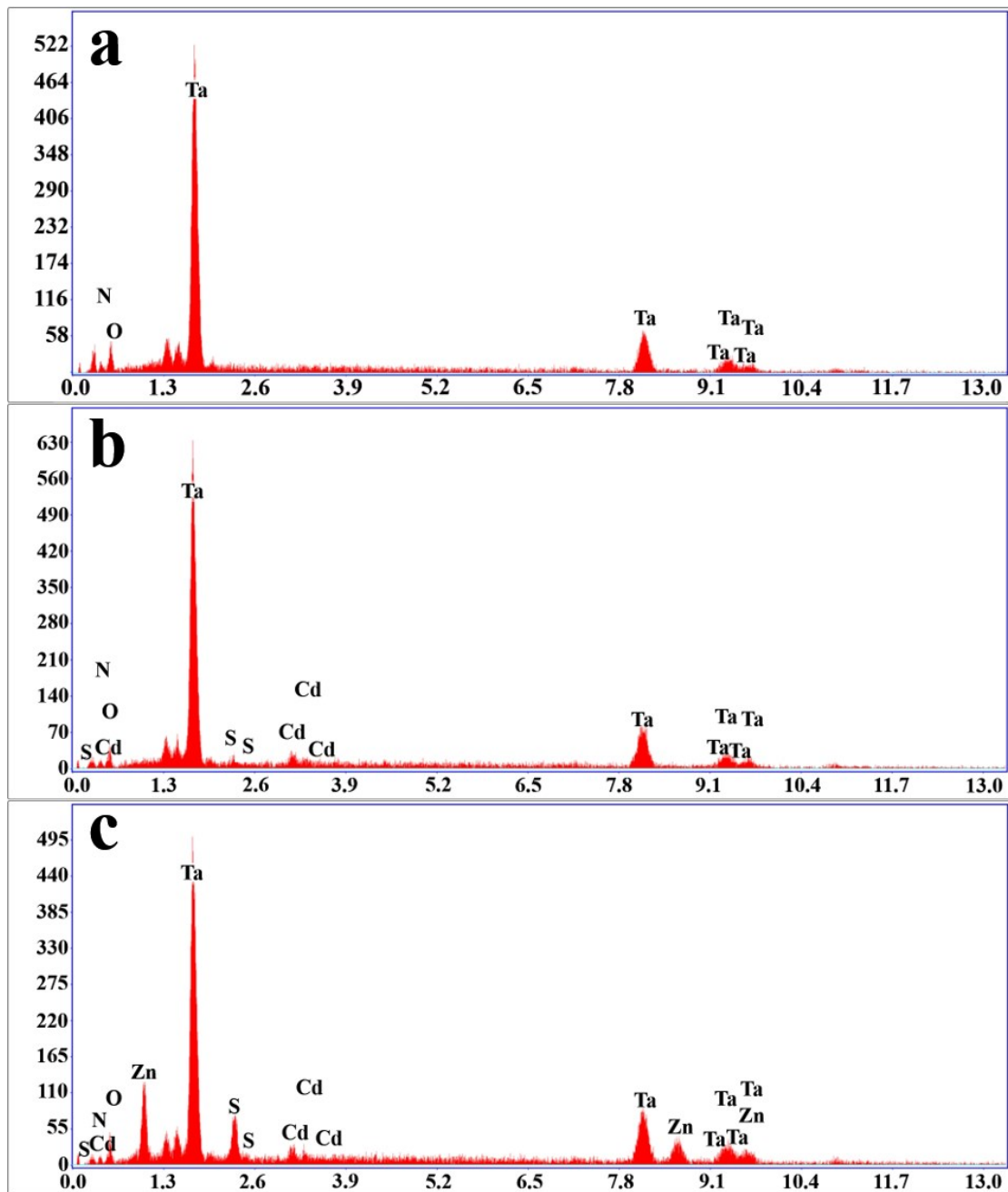


Fig. S2 The EDX analysis of (a) TaON film (b) TaON/CdS film and (c) TaON/CdS/ZnS film.

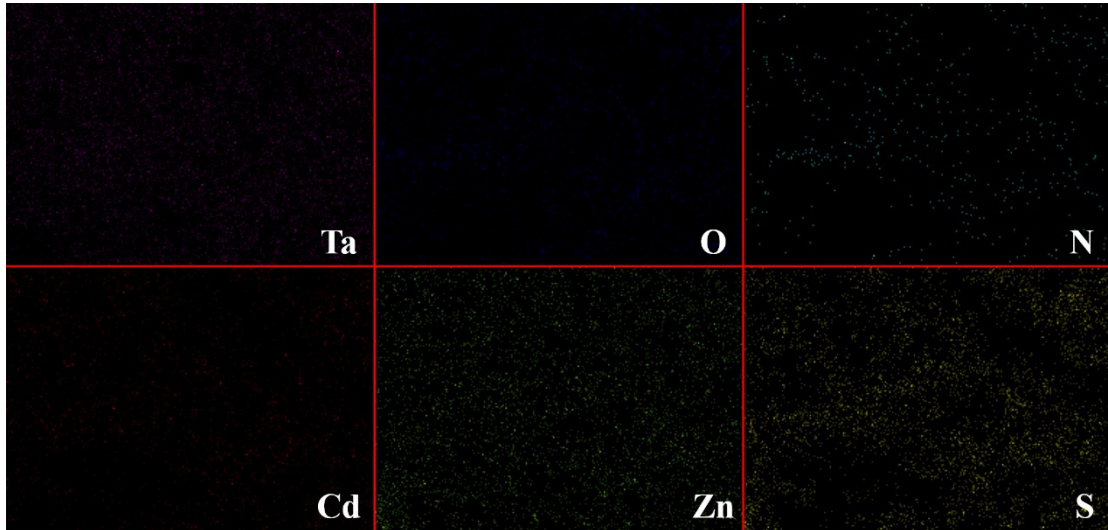


Fig. S3 The SEM EDX elemental mapping of Ta, O, N, Cd, Zn and S for the TaON/CdS/ZnS film.

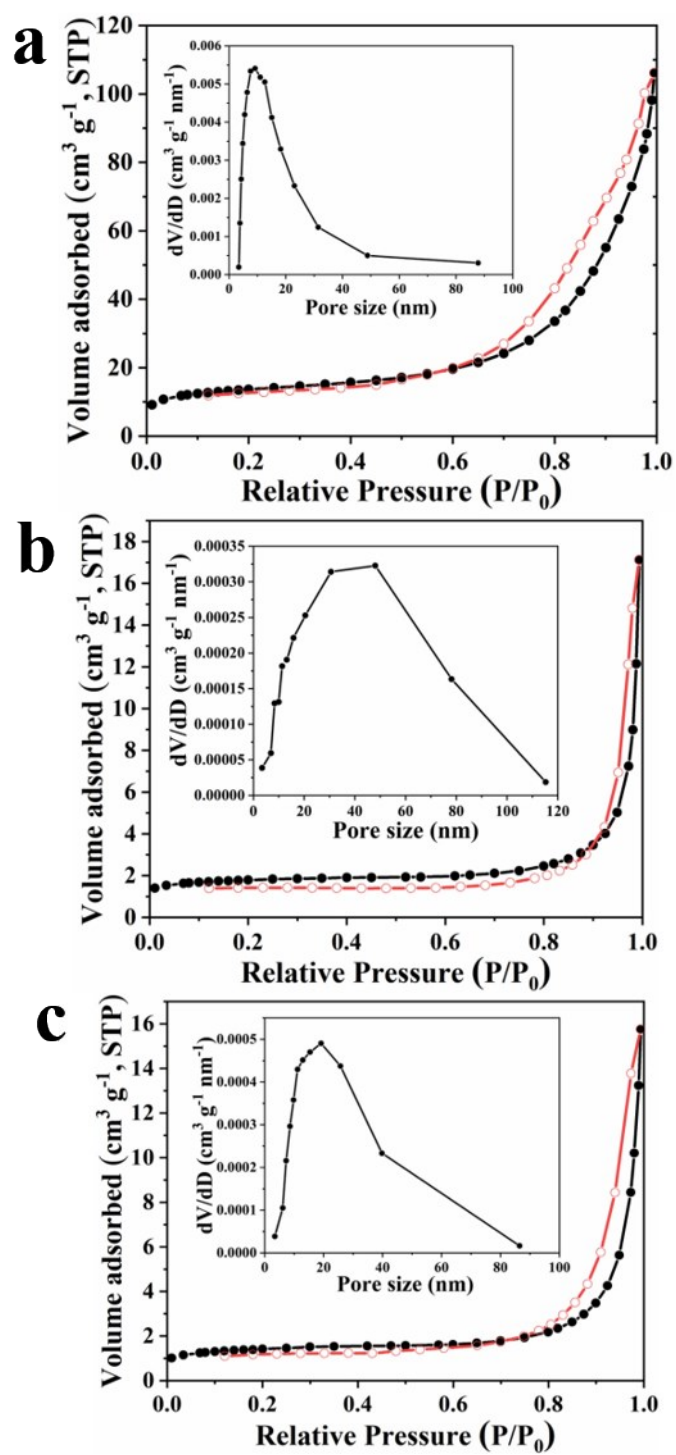


Fig. S4 N₂ adsorption-desorption isotherms at 77 K and the corresponding PSD for TaON (a), TaON/CdS (b) and TaON/CdS/ZnS (c).

Table S1 Summary of BET dates of all photocatalytic films.

Photocatalytic film	S_{BET} (m^2/g)	Pore volume (cm^3/g)	Pore size (nm)
TaON	47.56	0.16	10.91
TaON/CdS	6.12	0.03	46.70
TaON/CdS/ZnS	4.93	0.02	24.64

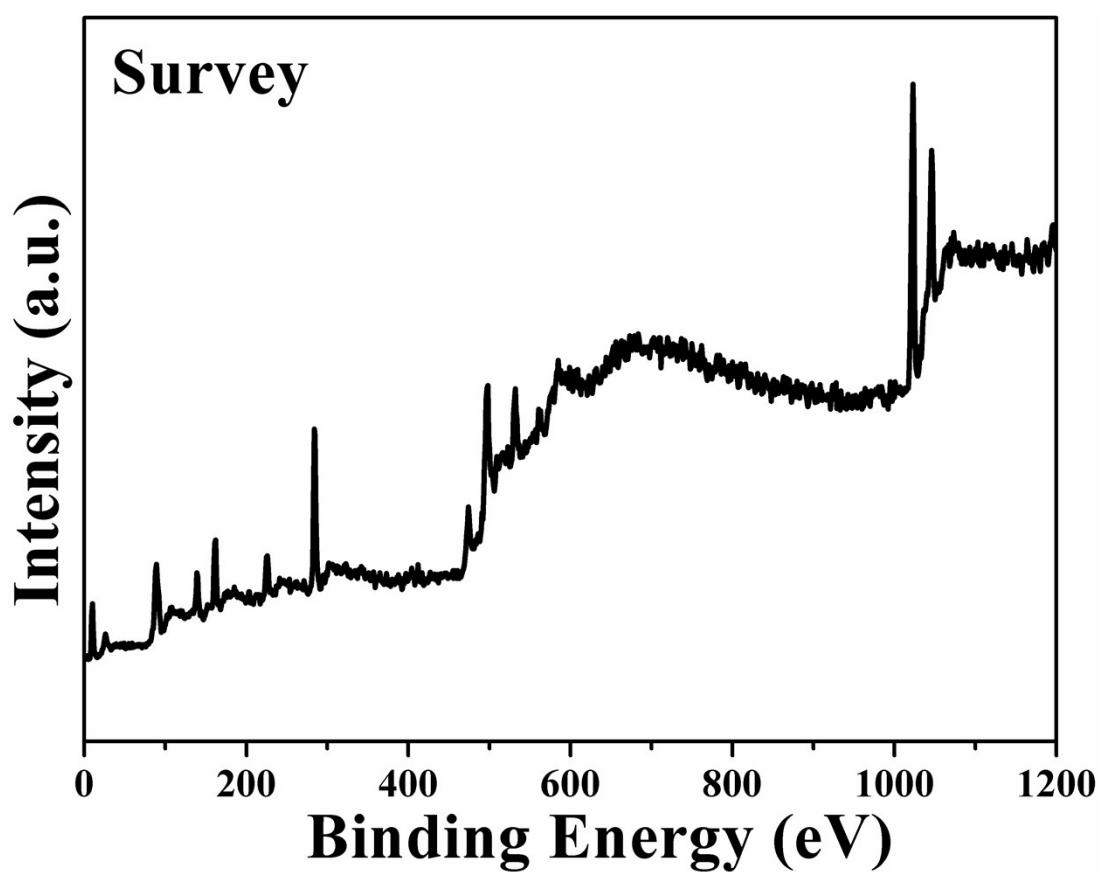


Fig. S5 XPS survey spectra of TaON/CdS/ZnS composite film.

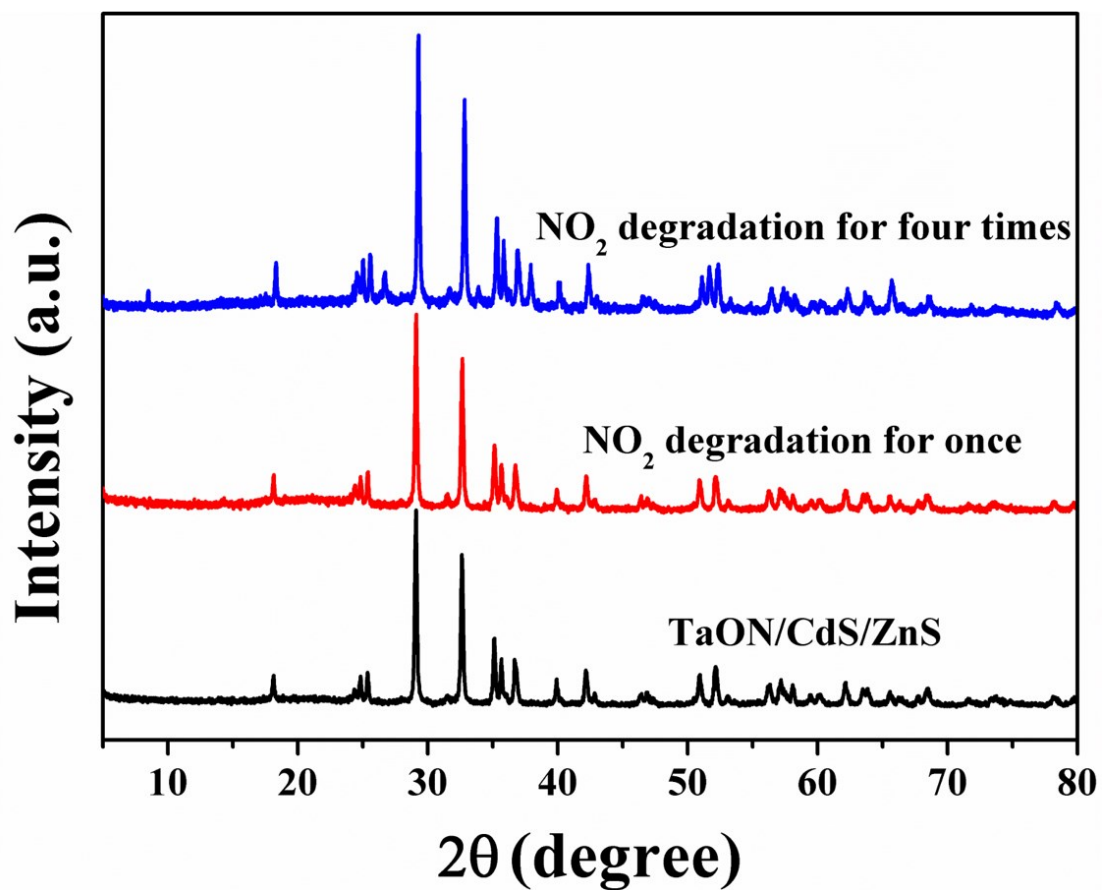


Fig. S6 XRD patterns of cycled NO₂ photodegradation over TaON/CdS/ZnS film. It shows a few more peaks after NO₂ degradation for four times, which may be owing to a small amount of TaON reduction in NO₂ degradation for four times.