

Electronic Supplementary Information

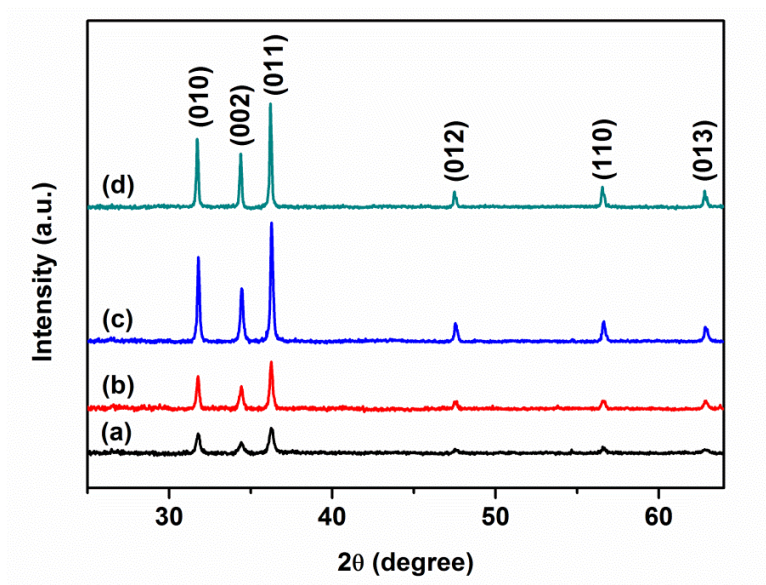


Fig. S1 XRD pattern of as-prepared ZnO nanocones at different reaction time: (a) 1 h; (b) 3 h; (c) 8 h and (d) 24 h.

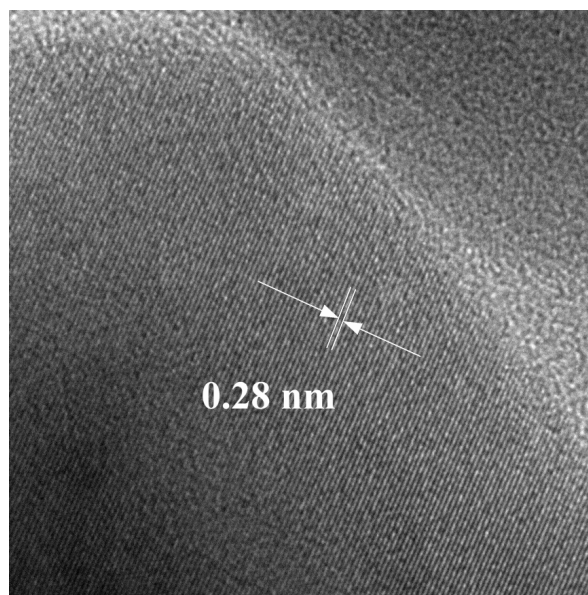


Fig. S2 HRTEM image of typical ZnO cone sample along the [0001] zone axis with lattice spacing of 0.28 nm.

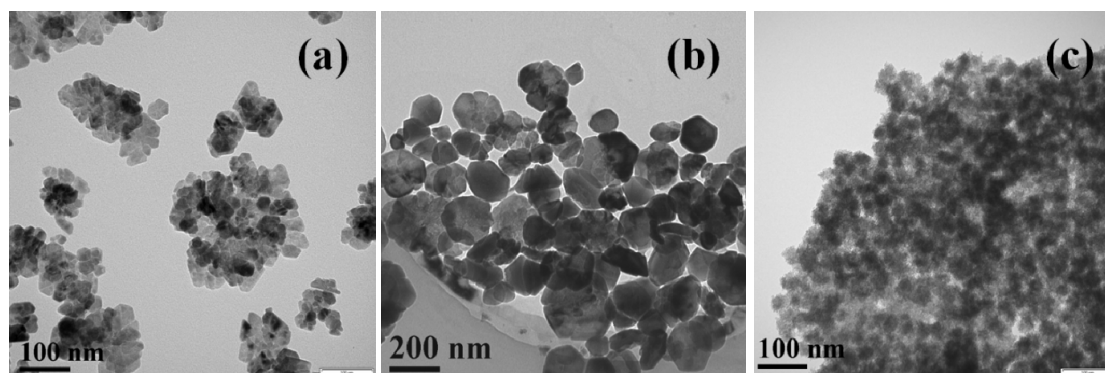


Fig. S3 Representative TEM images shown the morphologies of ZnO samples prepared in different solutions: a) benzyl ether; b) benzylamine and c) dimethyl sulfoxide/benzylamine.

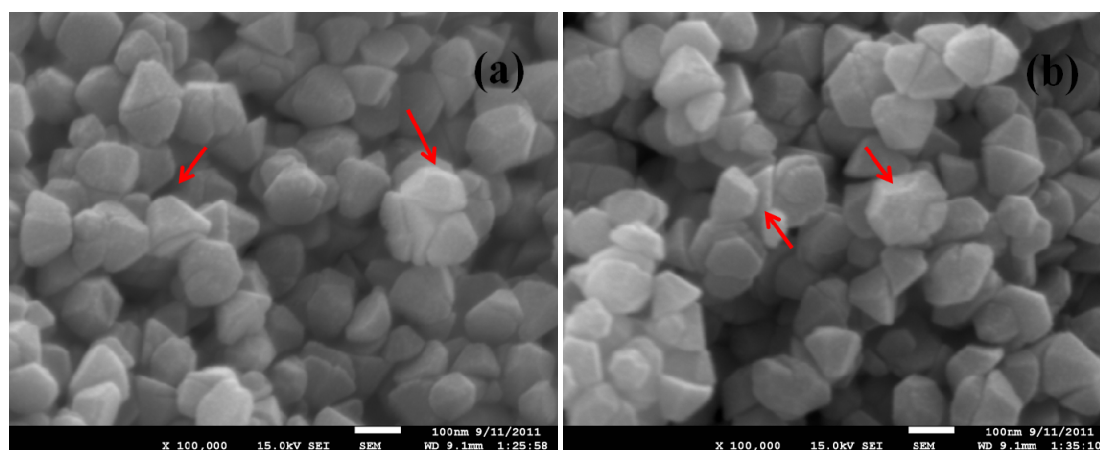


Fig. S4 Representative FE-SEM images of uncompleted ZnO nanocones prepared by slowly heating $\text{Zn}(\text{OAc})_2$ in benzyl ether/benzylamine solution to 220 °C and then maintained at this temperature for 5 h.

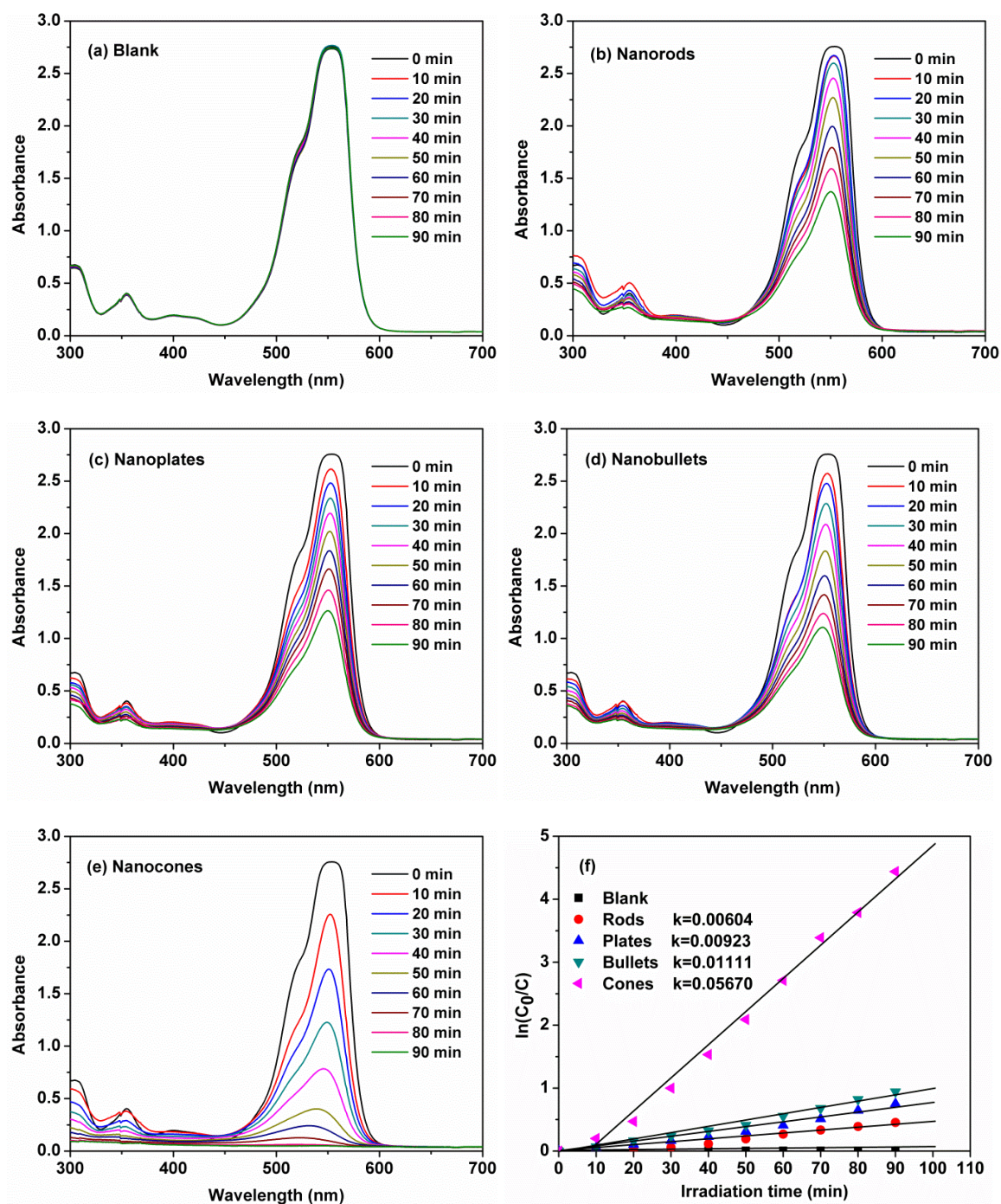


Fig. S5 UV-vis spectra changes of Rh B aqueous solutions as a function of irradiation time. Reaction conditions: Rh B concentration $5.0 \times 10^{-5} \text{ mol} \cdot \text{L}^{-1}$; catalyst concentration $1.0 \text{ g} \cdot \text{L}^{-1}$; 100 W UV-Lamp ($\lambda = 365 \text{ nm}$).

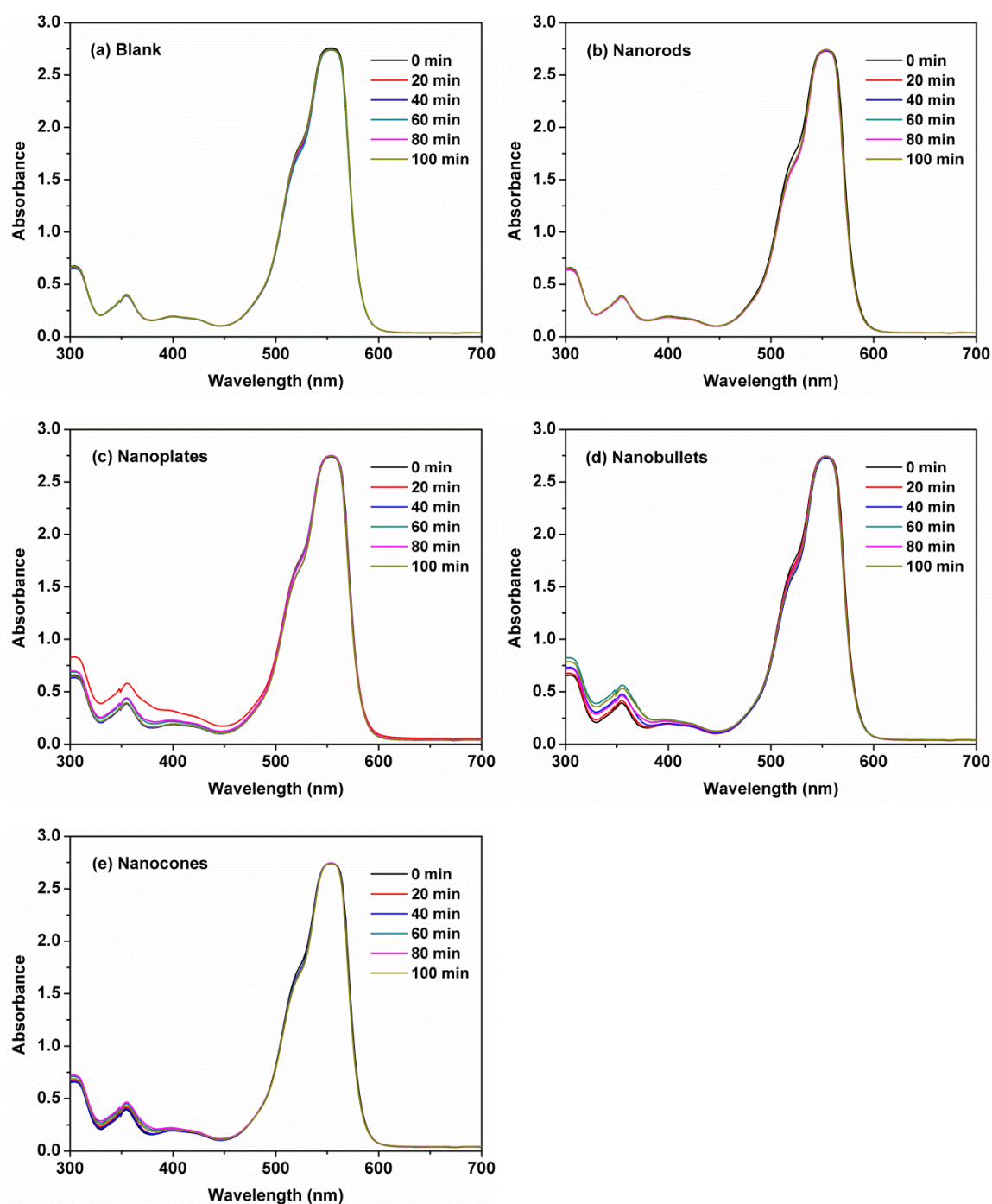


Fig. S6 UV-vis spectra changes of Rh B aqueous solutions as a function of time in the dark. Reaction conditions: Rh B concentration $5.0 \times 10^{-5} \text{ mol} \cdot \text{L}^{-1}$; catalyst concentration $1.0 \text{ g} \cdot \text{L}^{-1}$; 100 W UV-Lamp ($\lambda = 365 \text{ nm}$).