## *High adsorption and efficient visible-light-photodegradation for cationic*

## Rhodamine B with microspheric BiOI photocatalyst

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Figures



Figure S1. The chemical structure of Rhodamine B (RhB).



**Figure S2.** Adsorption isotherms of RhB by BiOI at different temperatures. Dose of BiOI was 1 g/L.



Figure S3. The zeta potentials curve of the as-synthesized BiOI products.



**Figure S4.** Residual RhB concentrations after desorption by NH<sub>4</sub>Ac solutions. Dose of BiOI was 1 g/L,  $C_0$ =60 mg/L and T=298 K.



**Figure S5.** The diffuse reflection spectrum of as-prepared BiOI sample. The inset is the  $(Ahv)^{1/2}$ -hv curve.



**Figure S6.** (a) Residual RhB concentrations after desorption by 0.5 M NH<sub>4</sub>Ac solutions. Dose of BiOI was 1 g/L,  $C_0=5$  mg/L and T=298 K. (b) UV–vis spectral changes of RhB after lighting for 1 h.



**Figure S7.** The change of RhB concentration in pure water after adsorption for 1 h in dark as a function of irradiation time.