Anion exchange strategy for construction of a novel Bi₂SiO₅/Bi₂MoO₆

heterostructure with enhanced photocatalytic performance

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Fig. S1 EDX analysis of sample S-0.2 and the corresponding SEM image and elemental mapping

of Bi, Mo, Si.



Fig. S2 HRTEM images of sample S-0.2 (a) and sample S-1(b).



Fig. S3 Photocatalytic degradation efficiencies on methyl orange (MO) by the as-prepared samples under UV-light ($\lambda \approx 365$ nm) (a) and visible light ($\lambda \geq 420$ nm) (b) irradiation.



Fig. S4 HPLC chromatograms monitoring the photo-degradation process of phenol at interval times by S-1 (a) under UV light irradiation and S-0.2 (b) under visible light irradiation.



Fig. S5 TOC removal rate over phenol by S-1 (a) under UV light irradiation and S-0.2 (b) under visible light irradiation.



Fig. S6 Cycling runs in the photocatalytic degradation of phenol in the presence of S-1 (a) under

UV light irradiation and S-0.2 (b) under visible light irradiation.



Fig. S7 N_2 adsorption-desorption isotherms, pore size distribution and BET specific surface areas of the as-prepared samples.



Fig. S8 Time-resolved PL decay curves and lifetimes of sample $Bi_2MoO_6(a)$, S-0.2 (b) and S-1 (c) monitored at 397 nm with an excitation wavelength of 335 nm under room-temperature.



Fig. S9 ESR spectra upon visible light irradiation of S-0.2 suspension and UV light irradiation of S-1 suspension for detection of \bullet OH and O₂ \bullet .