**Constructing AgI/BiSI p-n heterojunctions with an internal electric field for efficient degradation of refractory organic pollutants**

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**Fig. S1.** Degradation rate and TOC rate of AR1 over 3AgI/BiSI under visible light irradiation.



**Fig. S2.** Effects of (a) AR1 concentration and (b) pH values on the photocatalytic performances of 3AgI/BiSI.

**Table S1.** The electrical properties of AgI and BiSI obtained by Hall effect measurements.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Samples | Carrier concentration  (cm-3) | Resistivity  (Ω·cm) | Hall mobility  (cm2 V-1 s-1) | Conduction type |
| AgI | 1.864×1013 | 2.272×103 | 1.452×102 | p |
| BiSI | 3.023×1012 | 1.053×105 | 9.826 | n |

**Table S2.** Comparison of AR1 degradation over different reported different photocatalysts.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Catalyst type | Catalyst dose (g) | AR1 concentration (mg L-1) | AR1  volume (mL) | Light source | k  (min-1) | Ref. |
| TiO2/glass microspheres | 0.03 | 40 | 50 | 20 W UV lamp | 0.0103 | [1] |
| ZnAl2O4/CuS | 0.2 | 20 | 200 | 4×17 W UV lamp | 0.030 | [2] |
| AgI/Bi2Ga4O9 | 0.02 | 20 | 50 | 100 W  LED lamp (λ=420 nm) | 0.2539 | [3] |
| Ag-Li-ZnO | 0.05 | 5 | 50 | 300 W tungsten lamp | 0.0181 | [4] |
| AgI/BiSI | 0.05 | 30 | 100 | 100 W LED lamp (λ=420 nm) | 0.4699 | This work |

**References**

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