**TABLE S1 |** The comparison between our work and other recent reports.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Materials | Conditions | Band gap (eV) | Photo-induced potential (mV) | Photo-induced current density (μA·cm−2) | Reference |
| CoNi-LDH/ZnO-C | 3.5 wt% NaCl | 2.70 | −430 | 4.0 | This work |
| NiFe-LDH/Fe2O3 | 3.5 wt% NaCl | 2.13 | −370 | 0.25 | (Fan et al., 2020) |
| NiAl-LDH | 5.0 wt% NaCl | 2.31 | −100 | 0.08 | (Zhou et al., 2021) |
| NiGa-LDH/TiO2 | 3.5 wt% NaCl | 3.20 | −680 | 24.0 | (Chen et al., 2021) |
| CoNi-LDH/ZnO-C | Na2SO3+NaOH  | 2.70 | −750 | 70.0 | This work |
| MOF/TiO2 | Na2S+NaOH  | 3.30 | −700 | 20.0 | (Guo et al., 2021) |
| rGO/g-C3N4/ZnS | Na2S+NaOH  | 2.99 | −670 | 15.0 | (Zheng et al., 2021) |

**TABLE S2 |** The electrochemical parameters of 304SS, LDH/ZnO-R, and LDH/ZnO-C.

|  |  |  |
| --- | --- | --- |
| Samples | Illumination | Dark |
| Ecorr (mV) | Icorr (μA·cm−2) | Ecorr (mV) | Icorr (μA·cm−2) |
| 304SS | –170 | 0.040 | –170 | 0.040 |
| LDH/ZnO-R | –390 | 0.98 | −180 | 0.089 |
| LDH/ZnO-C | –420 | 3.61 | −150 | 0.018 |

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