Electronic Supplementary Material (ESI) for Nanoscale.
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Supplementary Material

Two Dimensional HfS_2-ZrS_2 Lateral Heterojunction FETs with High Rectification and Photocurrent

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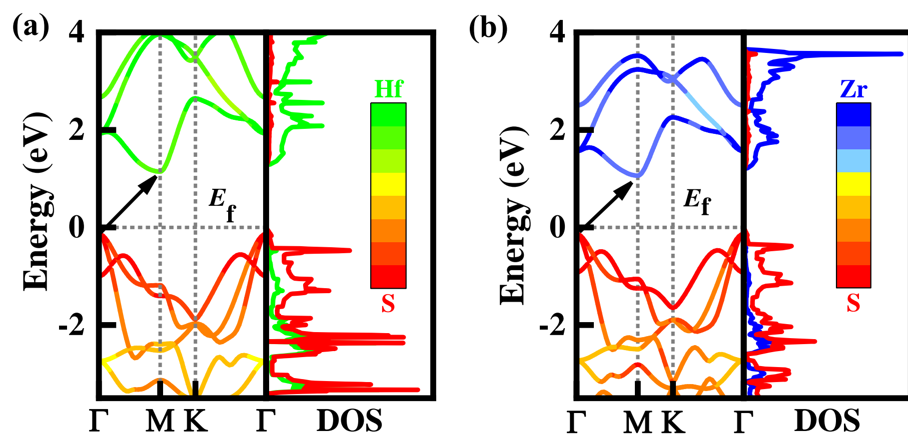

Fig. S1. The projected band structures for monolayer (a) HfS_2 and (b) ZrS_2.

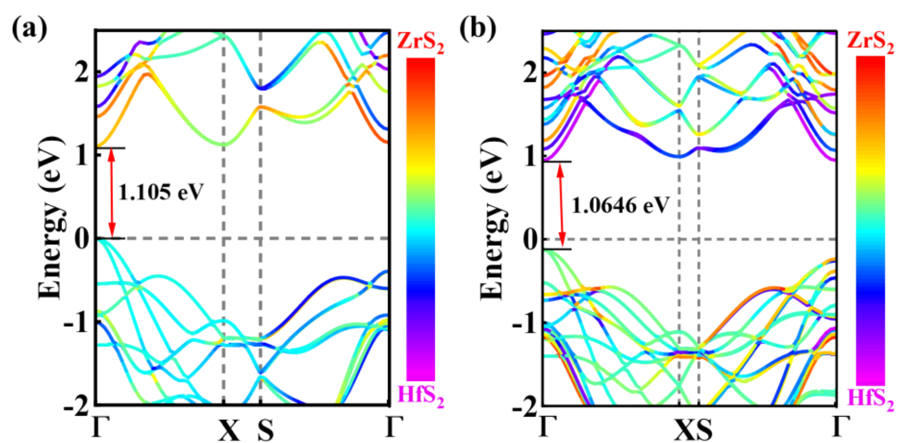

Fig. S2. The projected band structures for monolayer (a) $(HfS_2)_1$-$(ZrS_2)_1$ and (b) $(HfS_2)_2$-$(ZrS_2)_2$ lateral heterojunction.

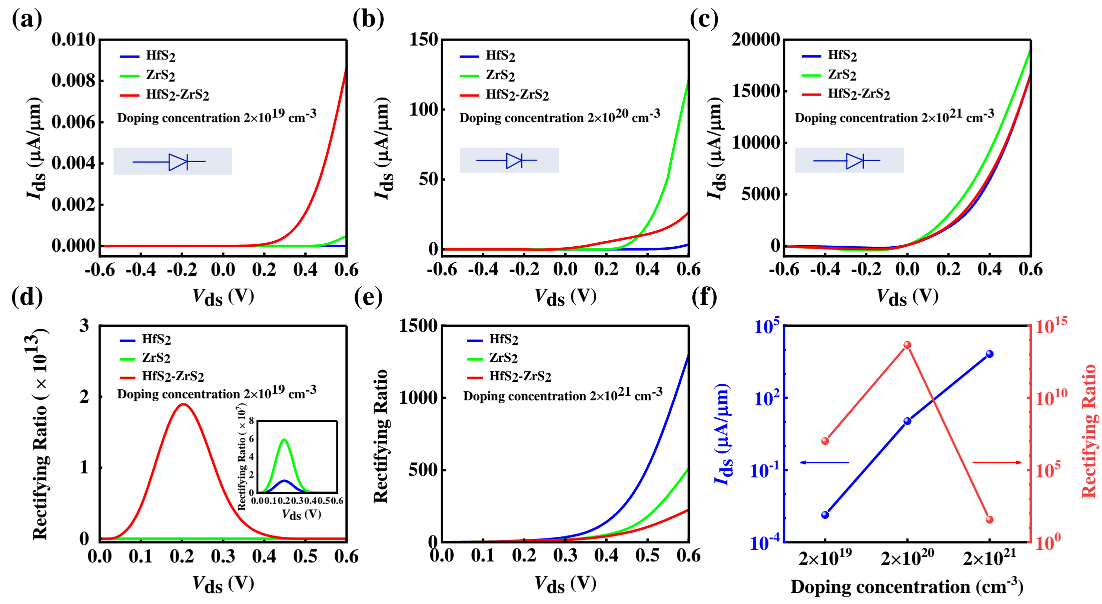

Fig. S3. (a-e) Bias dependent current and rectifying ratio curves of the monolayer diodes with different doping concentrations. (f) The doping concentrations dependent I_{ds} and rectifying ratio curves of the monolayer HfS_2-ZrS_2 lateral diodes.

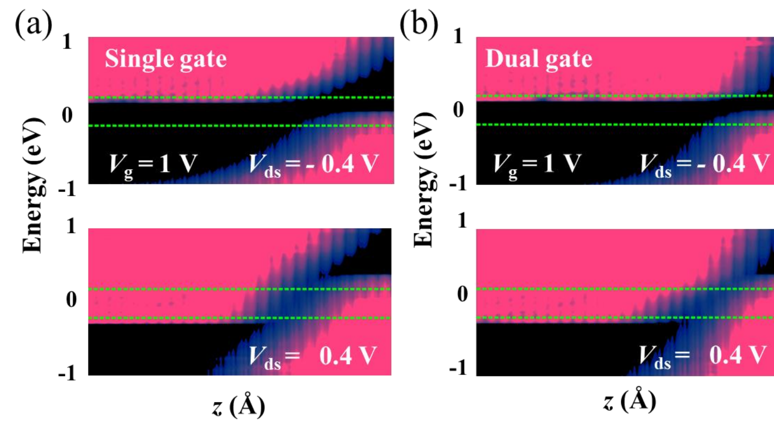

Fig. S4. PDOS of (a) single- and (b) dual-gate under ±0.4 V bias and 1 V gate voltage.

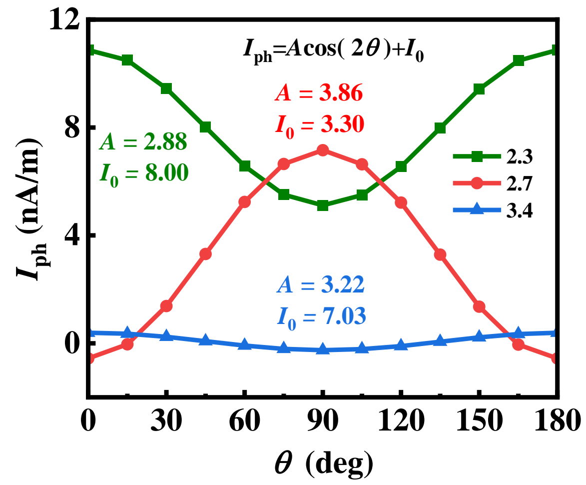

Fig. S5. The photocurrent density of monolayer HfS_2-ZrS_2 lateral heterojunction induced by linearly polarized light respectively at zero bias voltage for photon energies of 2.3, 2.7 and 3.4 eV, respectively.

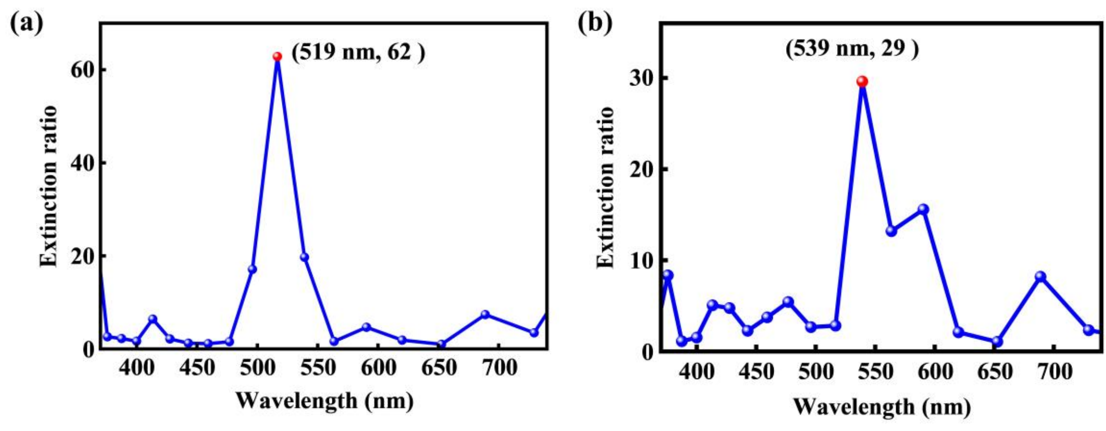

Fig. S6. Extinction ratio of the photocurrent for the monolayer (a)HfS_2- and (b)ZrS_2-based photodetectors.