

Supporting information for

**Pseudo Janus Based on Rhombohedral Homobilayer Transition
Metal Dichalcogenides**

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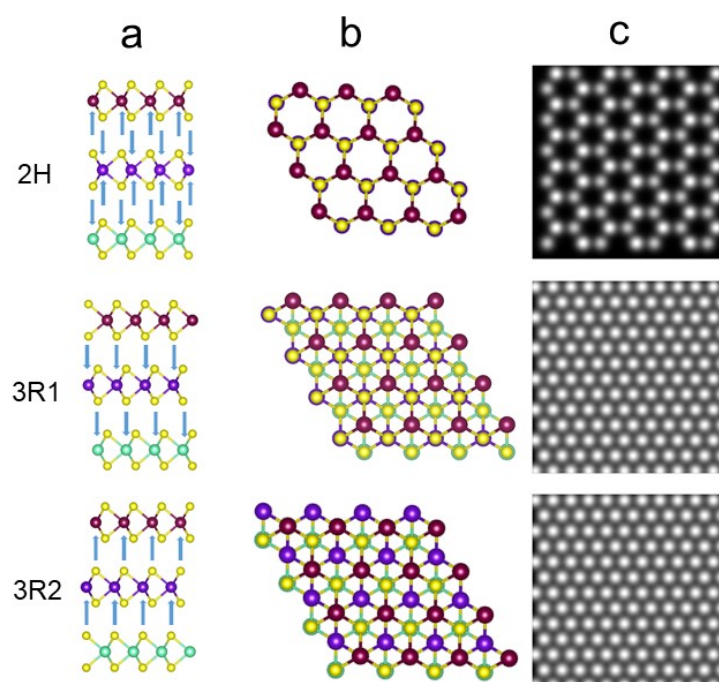


Figure S1. The structure and simulated HRTEM images for 2H and two 3R stacking tri-layer MoS₂. (a) Side view and (b) top view of three stacking trilayer MoS₂. (c) Simulated HRTEM of three tri-layer MoS₂ from top view.

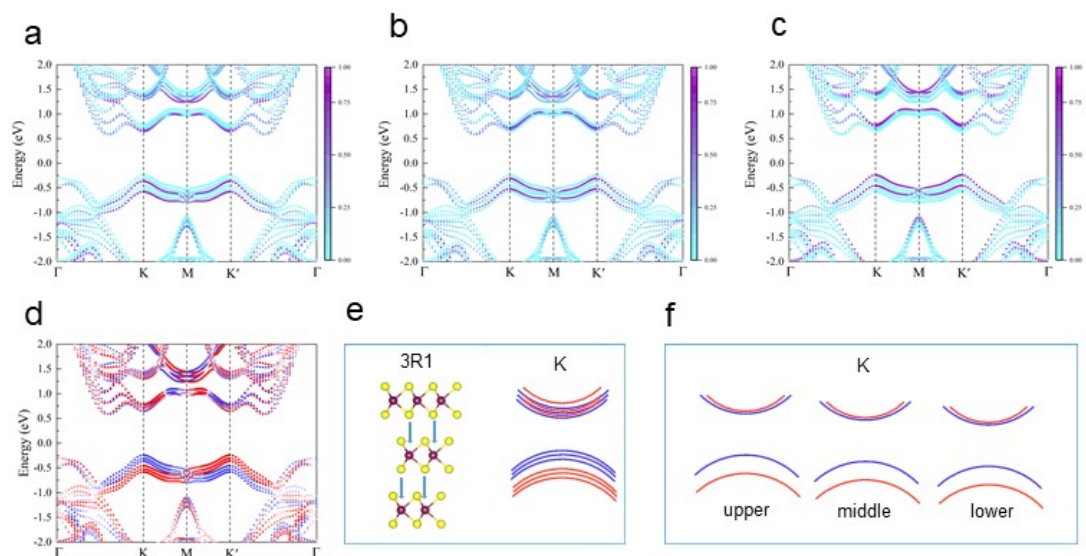


Figure S2. Layer and spin projected band structure of tri-layer MoS₂. (a-c) Lower, middle, and upper layer projected band structure of tri-layer MoS₂. (d) Spin s_z projected band structure of tri-layer MoS₂. (e) Scheme of valence band and conduction band edges around K point for tri-layer MoS₂. (f) Layer and spin projected states for tri-layer MoS₂.

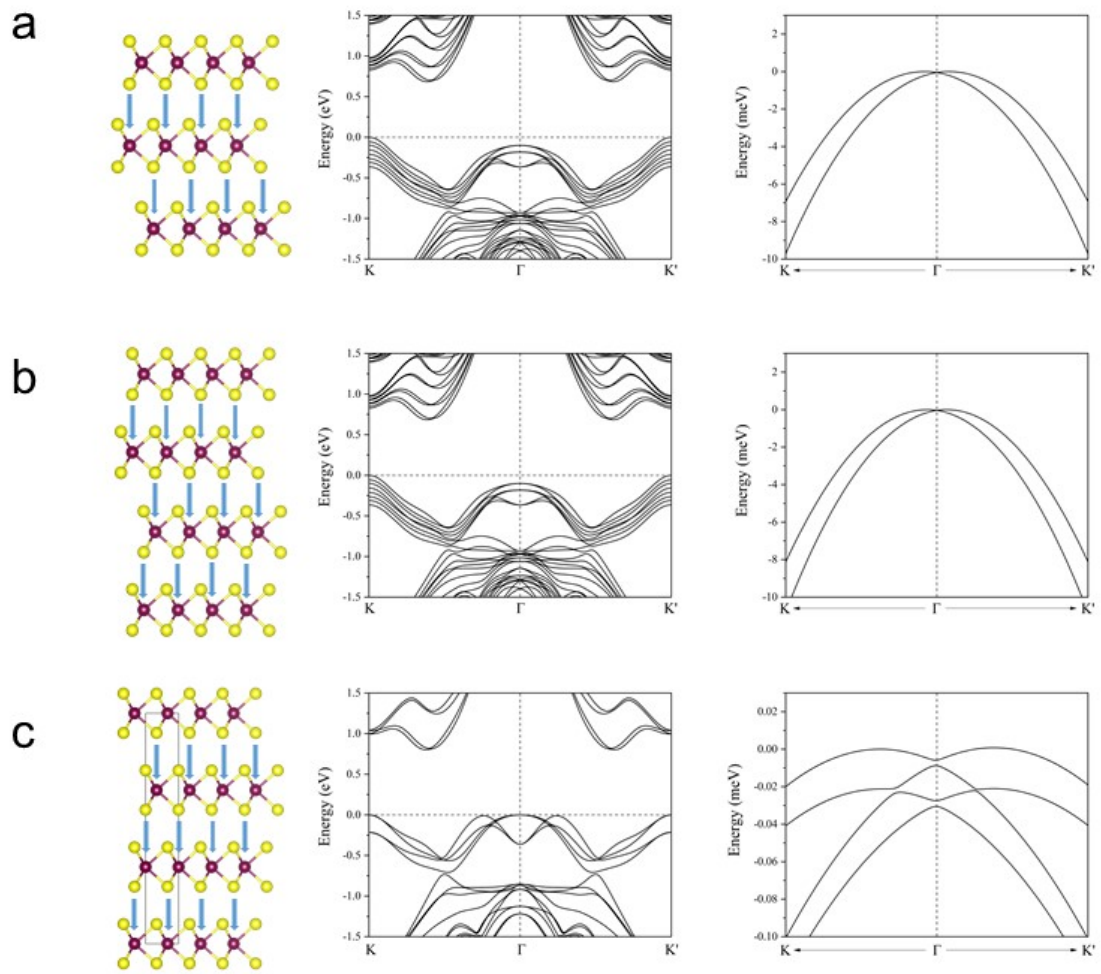


Figure S3. Rashba splitting of (a) tri-layer, (b) quadra-layer and (c) bulk 3R MoTe₂.