Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

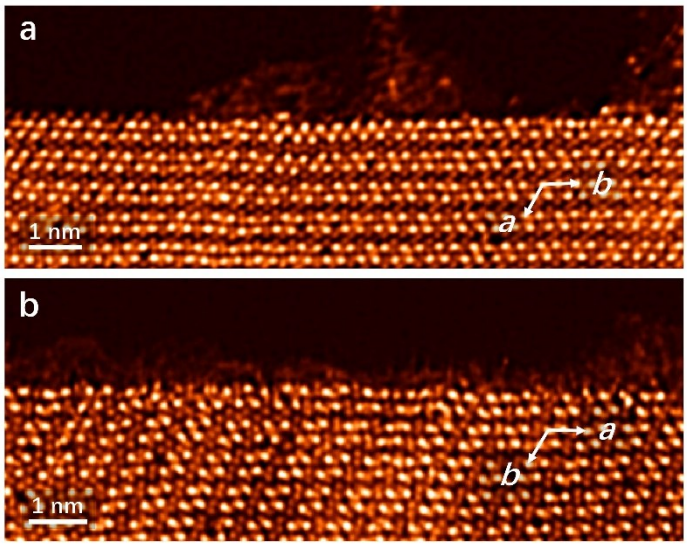

Figure S1. Typical edges of monolayer $ReSe_2$ with randomly distributed dangling Se atoms. (a, b) The atomic-resolution STEM-ADF images of edges parallel to the (a) ***b*** axis and (b) ***a*** axis.

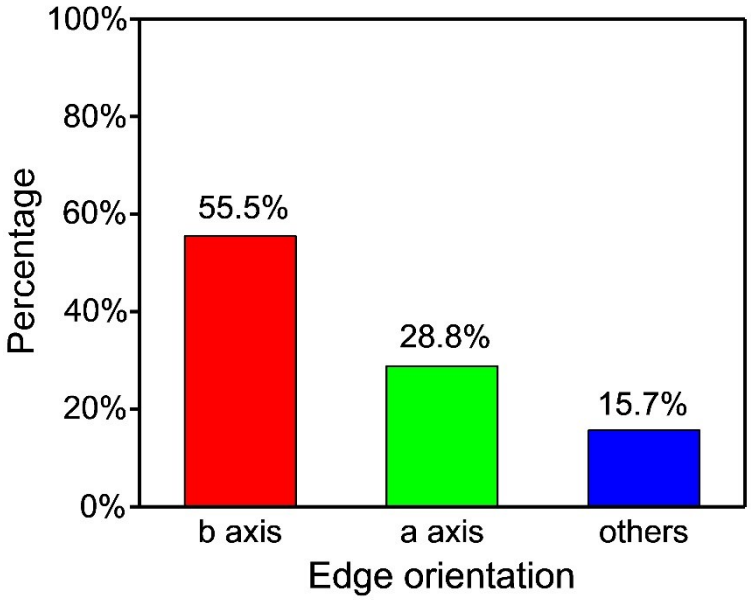

Figure S2. Statistics of the length of edges along different directions in monolayer $ReSe_2$. A total length of 2947 nm was investigated.

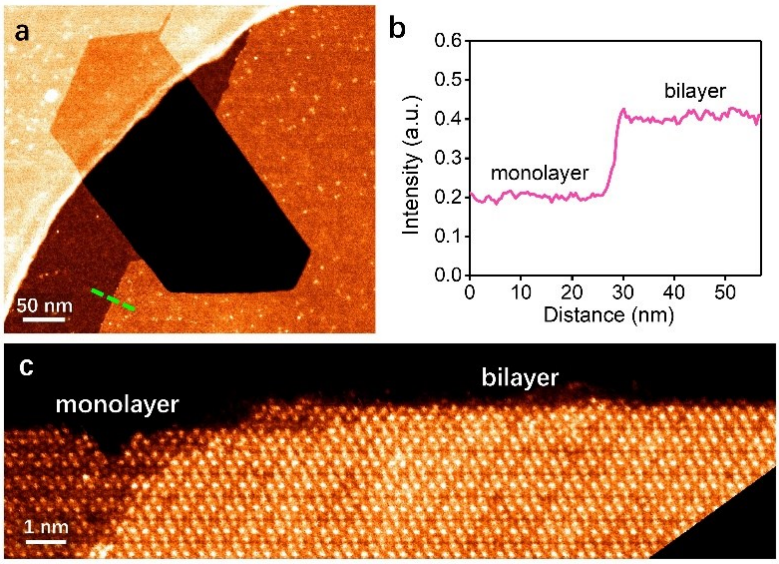

Figure S3. STEM-ADF imaging of bilayer edges in $ReSe_2$. (a) Low-magnification STEM-ADF image of bilayer edges in $ReSe_2$. (b) Intensity line profile along the dashed line in (a). The vacuum intensity was set to zero, and the ADF image intensity for the bilayer is twice of that for the monolayer. (c) Atomic-resolution STEM-ADF image of the monolayer-bilayer step edge.

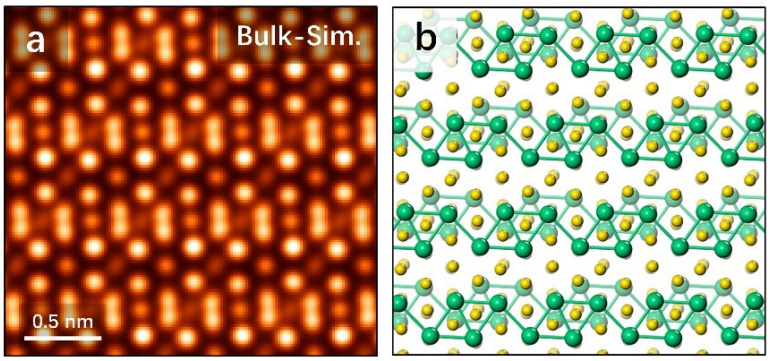

Figure S4. Simulated STEM-ADF image of bilayer $ReSe_2$ stacked in bulk mode. (a) The simulated STEM-ADF image and (b) the corresponding crystal model. The shaded model is the bottom layer.

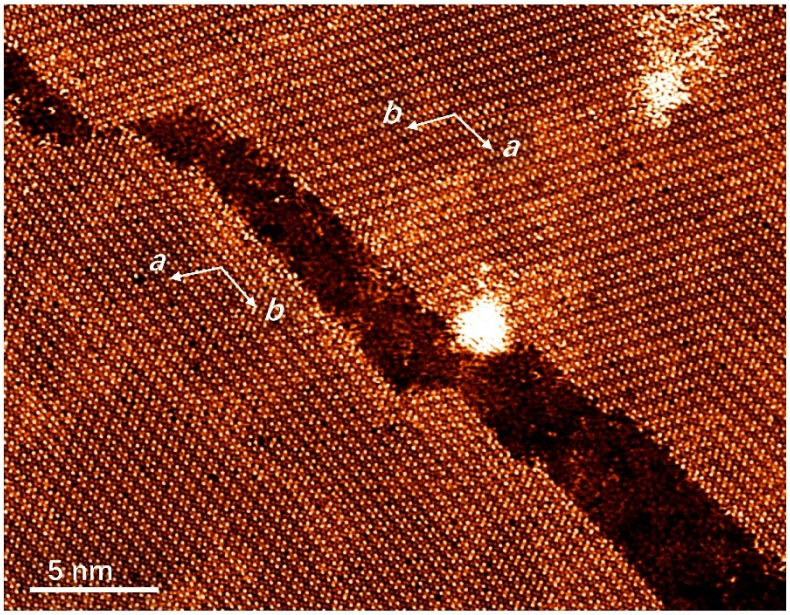

Figure S5. Different lattice orientations of two domains in $ReSe_2$ monolayer generated by mechanical fracture. The STEM-ADF image indicates that the two domains are formed by cracking, and flipping of the 4Re-diamond chains can be clearly observed.