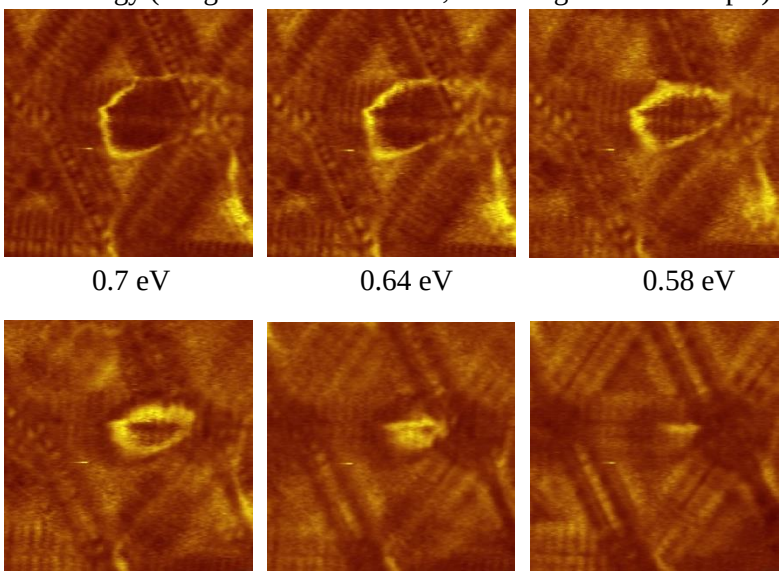
Line and Point Defects in $MoSe_2$ Bilayer Studied by Scanning Tunneling Microscopy and Spectroscopy

Hongjun Liu[1*], Hao Zheng[1,2,3*], Fang Yang[2], Lu Jiao[1], Jinglei Chen[1], Wingkin Ho[1], Chunlei Gao[2,3], Jinfeng Jia[2,3] and Maohai Xie[1†]

Supplementary information

Figure S1 Sets of voltage-depended dI/dV maps showing the evolution of the ionization rings with energy (image size: 9 nm × 9nm, tunneling current: 224 pA).



0.7 eV | 0.64 eV | 0.58 eV

0.52 eV | 0.46 eV | 0.4 eV

Figure S2 Simulations of the ionization of a point defect. The black lines display the simulated curves assuming a point defect being buried one layer below surface with the dielectric constant 4.6 (a) and 10.2 (b). The derived binding energies are marked against each line. Due to many critical parameters, e.g. the tip radius, tip-sample distance, contact potential, are missing, the values of the binding energy only present rough estimates. Nevertheless, the simulated curves fit well with the experimental data, lending support of the model and underlying physics of the phenomenon.