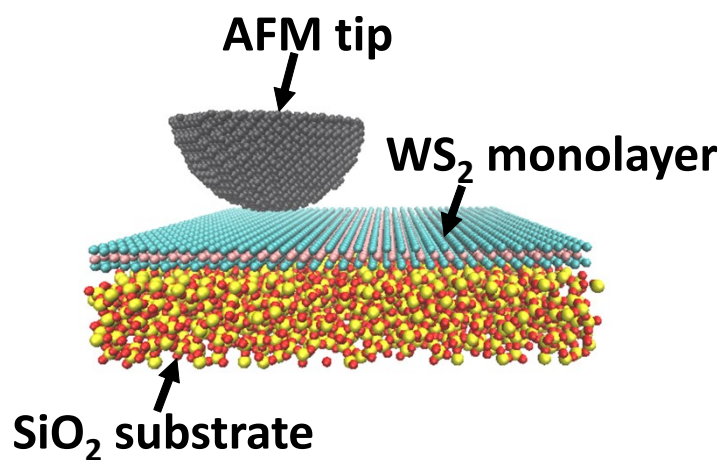
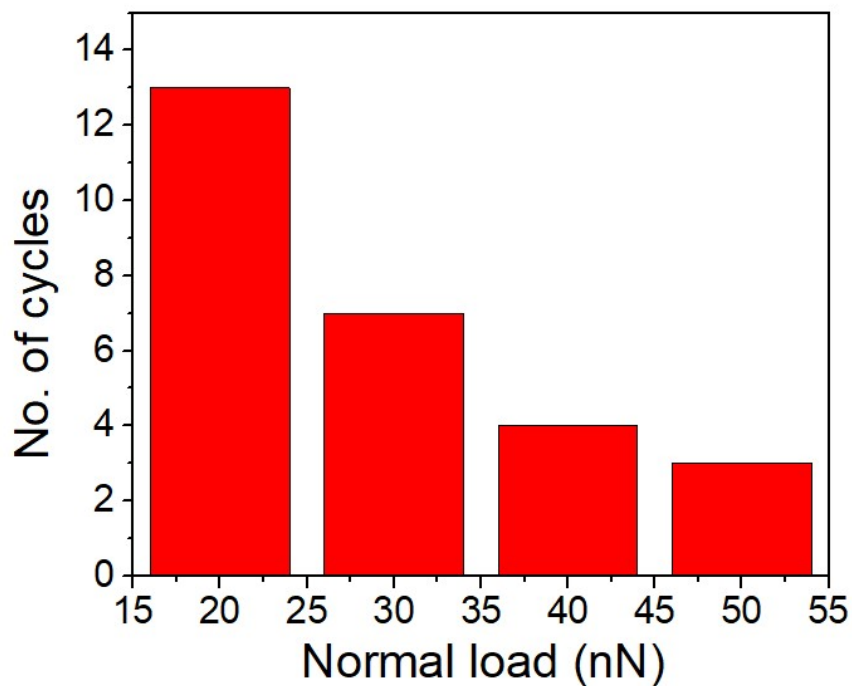


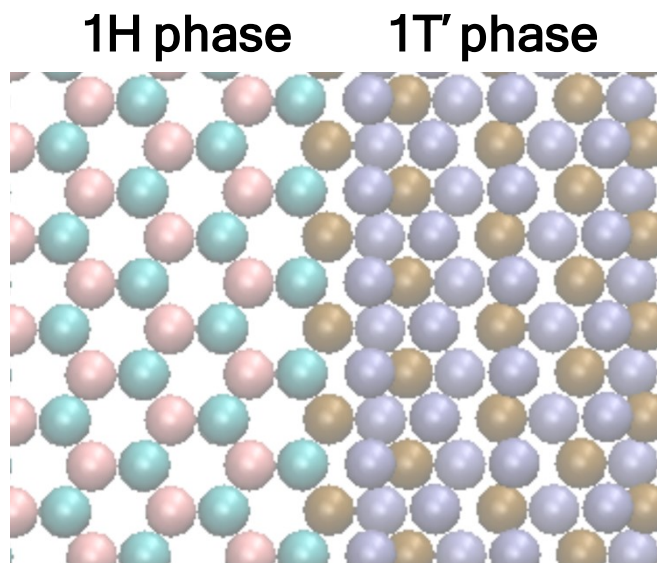
### Supporting Information



**Figure. S1.** A snapshot of MD simulations setup illustrates a diamond AFM tip on WS<sub>2</sub> monolayer supported by amorphous SiO<sub>2</sub> substrate.



**Figure. S2.** No. of cycles vs. normal load shows a decreasing trend as lower no. of scans are required for transformation (1H phase to 1T' phase) with the increasing normal loads.



**Figure. S3.** MD simulations snapshot shows the boundary between 1H and 1T' phases in WS<sub>2</sub> monolayer.