Supporting Information

Controllable Tunneling Triboelectrification of Two-dimensional Chemical Vapor Deposited MoS₂

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Fig. S1 Schematic illustration for the growth of MoS₂ films on the SiO₂/Si substrates by CVD.

Fig. S2 Temperature profile of MoO₃ (black line) and S (red line).
**Fig. S3** XPS spectrum of C 1s orbital.

![XPS Spectrum](image)

**Fig. S4** (a) Surface potential image and (b) cross-section profile of the potential distribution along the red line in (a) before rubbing process (the rubbed area is marked with the blue square).

![Surface Potential Image and Cross-section Profile](image)

**Fig. S5** Surface topography images before and after triboelectric charge generation.

![Surface Topography Images](image)
Fig. S6 (a) KFM images of MoS₂ on gold substrate before and after triboelectrification. (b) Cross-section profile along the red line in (a).
Fig. S7 (a) KFM images of MoS$_2$ on sapphire substrate after triboelectrification. (b) Cross-section profile along the red line in (a) for 0 and 12 hours.
Fig. S8 (a) KFM images of MoS$_2$ on polyimide substrate after triboelectrification. (b) Cross-section profile along the red line in (a) after 0 and 12 hours.