Supporting Information

Mechanically-induced Reverse Phase Transformation of MoS$_2$
from Stable 2H to Metastable 1T and Its Memristive Behavior

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Content:

- $I-V$ characteristic of bulk MoS$_2$ based device (Figure S1)
- FE-SEM morphology images of MoS$_2$ with and without ball-milling (Figure S2)
- TEM images of MoS$_2$ with and without ball-milling (Figure S3)
- AFM image and corresponding height profile of MoS$_2$ with and without ball-milling (Figure S4)
Figure S1. $I-V$ characteristic of bulk MoS$_2$ based device. (a) Schematic structure of bulk MoS$_2$ based device. (b) Typical $I-V$ characteristic of bulk MoS$_2$ based device at room temperature. (c) Typical $I-V$ characteristic of bulk MoS$_2$ based device in the logarithmic scale at room temperature. (d) Typical $I-V$ characteristic of bulk MoS$_2$ based device at the 1st (red), 500th (green), and 1000th (blue) cycle at room temperature.
Figure S2. FE-SEM morphology image of (a) bulk MoS$_2$ and (b) MoS$_2$-bm-5h nanoparticles.

Figure S3. TEM image of (a) bulk MoS$_2$ and (b) MoS$_2$-bm-5h nanoparticles.
Figure S4. AFM image and corresponding height profile of bulk MoS$_2$, MoS$_2$-bm-2h, MoS$_2$-bm-5h, and MoS$_2$-bm-10h.