

## Supplementary document

### Transport mechanism of copper sulfide embedded carbon nitride thin film: A formation free memristor

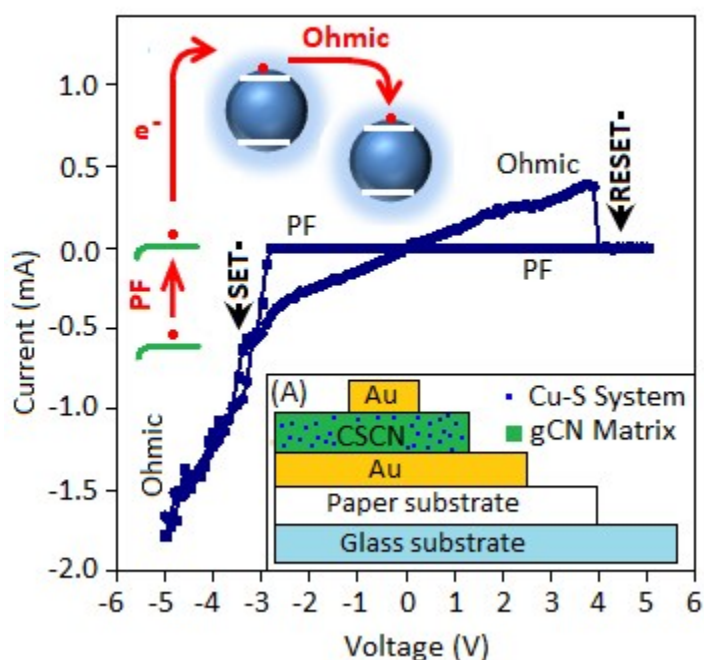
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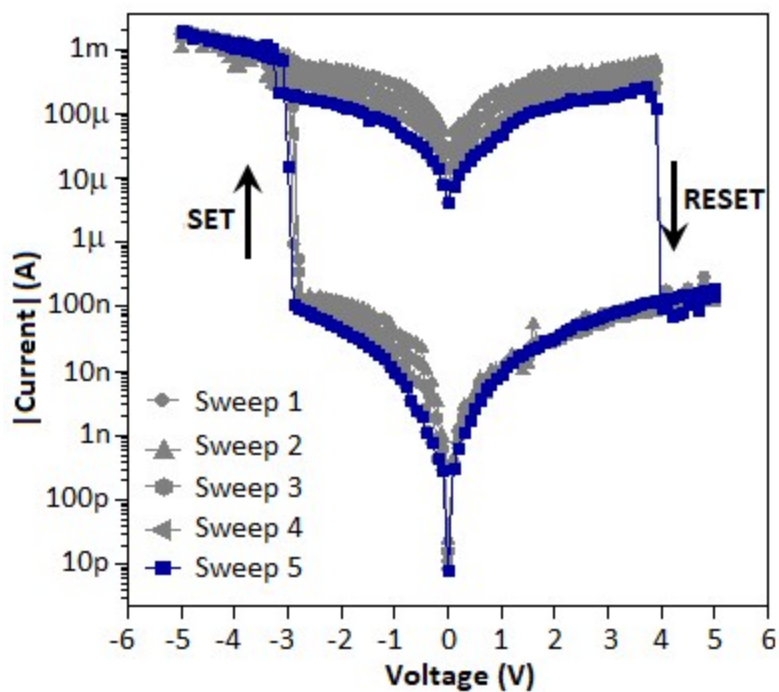
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Figure: S1



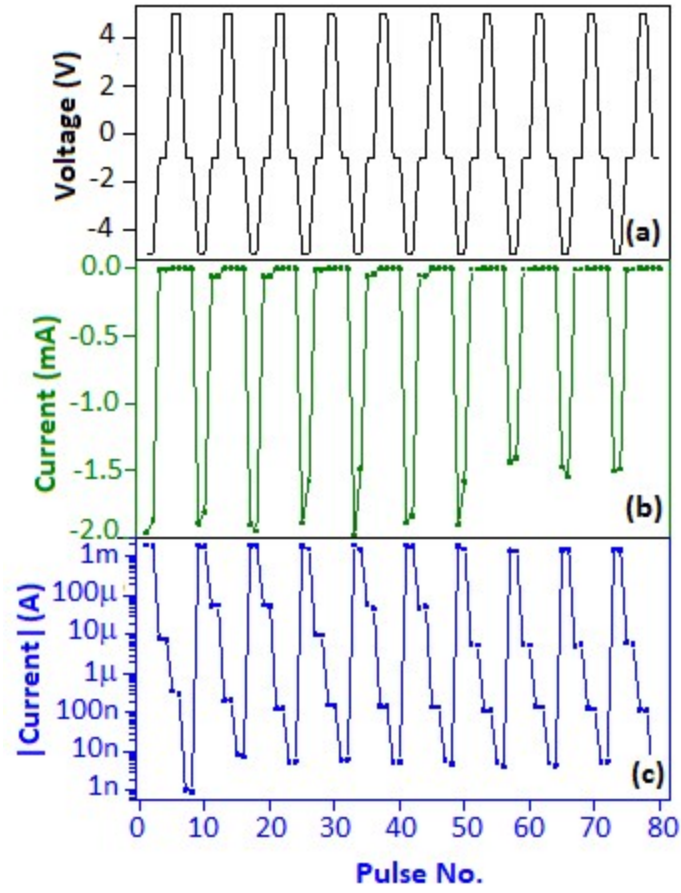
**Figure S1:** The linear current-voltage (I-V) plot of the fabricated device with the realization of the P-F in the low conductance and Ohmic in the high conductance state. The cross-section view of the fabricated device, Inset (A).

**Figure: S2**



**Figure S2:** The endurance study of the device for multiple voltage sweeps. After forth cycle the device reached to the stable form.

**Figure: S3**



**Figure S3:** (a) The Write-Read (1)-Erase-Read (0) voltage cycle (-5.0, -1.0, +5.0 and -1.0V) applied to the device, (b) the current response (linear) and (c) the respective current response (semi-log scale) received from the device.