

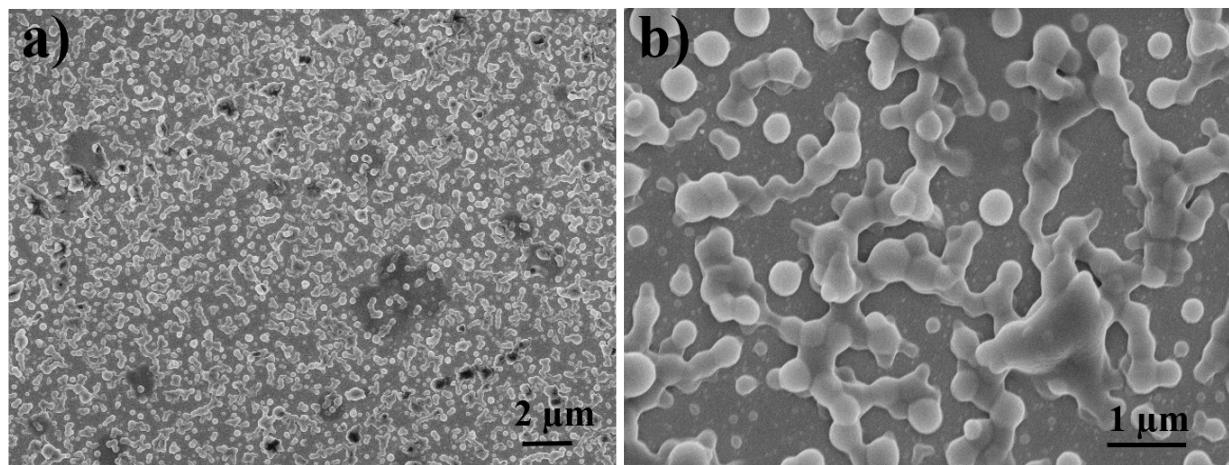
## Supplementary Information

### Two Dimensional Hexagonal Boron Nitride/Polymer Nanocomposite for Flexible Resistive Switching Devices

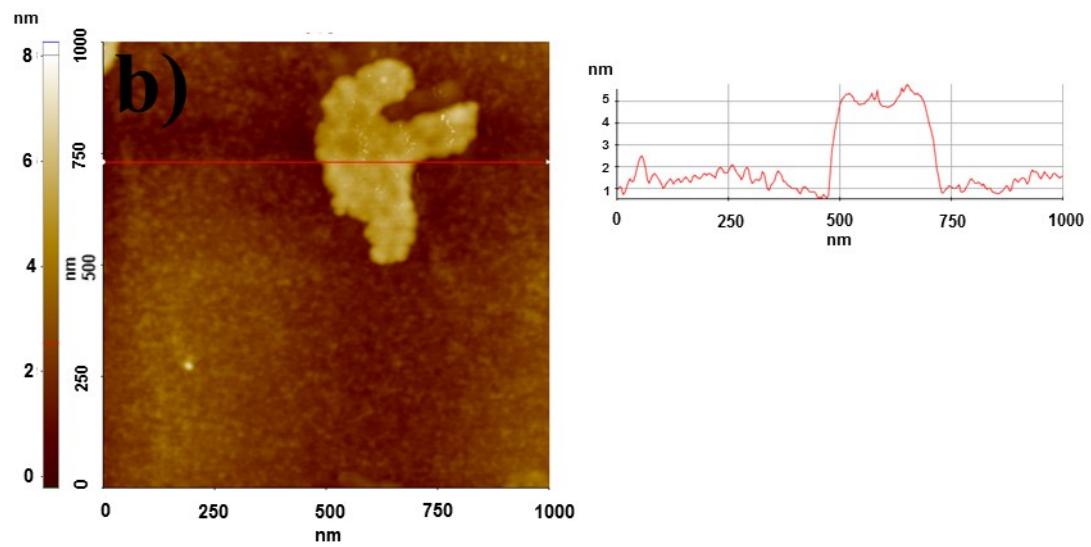
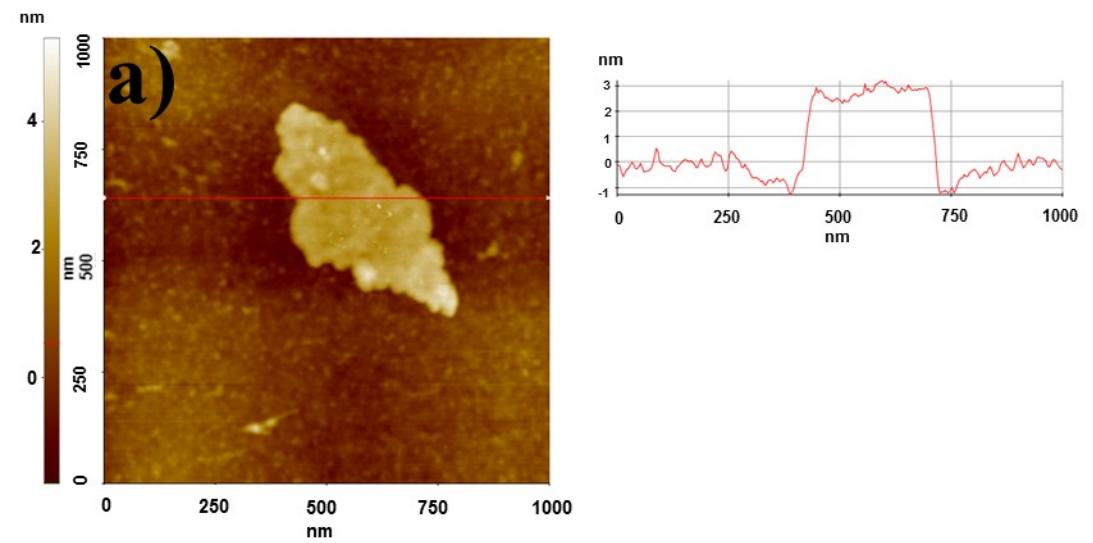
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**Fig. S1** FESEM images of the obtained nanocomposite product of hBN/PVOH at a) lower magnification b) higher magnification



**Fig. S2** AFM images of the as exfoliated hBN nanosheets by liquid exfoliation method illustrating different thickness a) 3 nm  
b) 5 nm

**Table S1.** Comparison table of memory devices with hybrid active layers.

Active Layer Materials	Voltage Sweep (V)	Off/On ratio	Current Compliance	Electrical Endurance	Retention (s)	Mechanical Robustness	Ref.
PVOH-hBN	-1 to +1	$4.8 \times 10^2$	10 uA	1000	$10^4$	1500 cycles	This Work
PVA-PbS	-30 to +30	< 10	30 uA	-	-	-	<sup>1</sup>
PVA-AgNW	-10 to +10	~ 10	10 mA	160	-	-	<sup>2</sup>
PVA-PEDOT:PSS	-2 to +2	~ $10^2$	100 mA	-	$10^4$	-	<sup>3</sup>
PVA-GNF	-7 to +2	~ $10^2$	1 mA	100	$10^4$	-	<sup>4</sup>
PVP-MoS <sub>2</sub>	-5 to +5	~ $10^2$	100 uA	-	-	-	<sup>5</sup>
PMMA-MoS <sub>2</sub>	-5 to +5	~ $10^3$	100 uA	-	-	-	<sup>6</sup>

## References:

- 1 S. Sarma and P. Datta, *Nanosci. Nanotechnol. Lett.*, 2010, **2**, 261–265.
- 2 K. Oh, W. Jeon and S. Lee, *ACS Appl. Mater. Interfaces*, 2012, **4**, 5727–5731.
- 3 J. Huang and D. Ma, *Appl. Phys. Lett.*, 2014, **105**, 93303.
- 4 Y. Lai, D. Wang, I. Huang, Y. Chen and Y. Hsu, *J. Mater. Chem. C*, 2013, **1**, 552–559.
- 5 J. Liu, Z. Zeng, X. Cao, G. Lu, L.-H. Wang, Q.-L. Fan, W. Huang and H. Zhang, *Small*, 2012, **8**, 3517–3522.
- 6 S. M. Shinde, G. Kalita and M. Tanemura, *J. Appl. Phys.*, 2014, **116**, 214306.