

Supporting Information

Activity-Dependent Synaptic Plasticity of a Chalcogenide Electronic Synapse for Neuromorphic Systems

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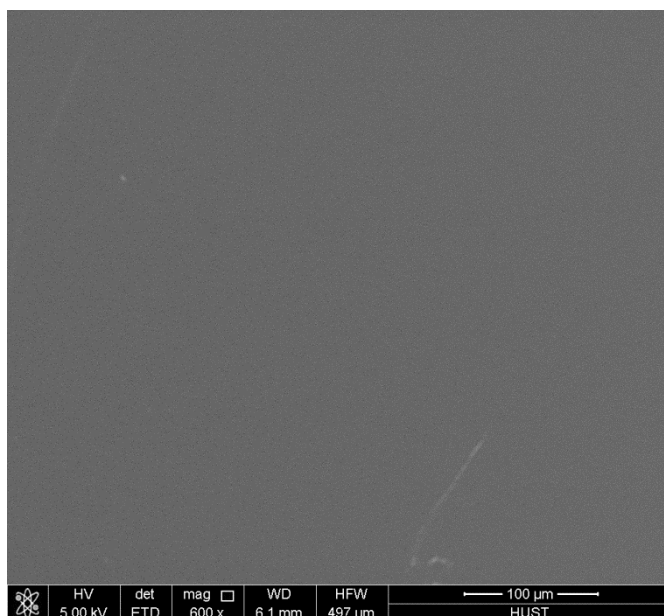
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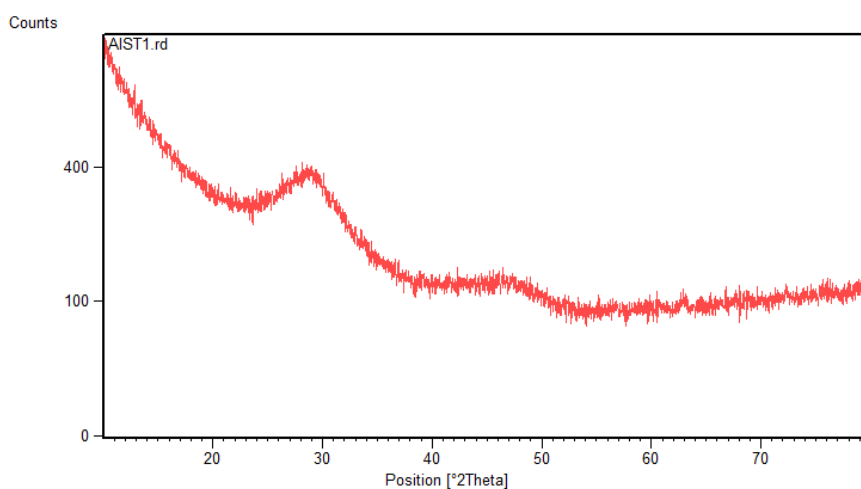
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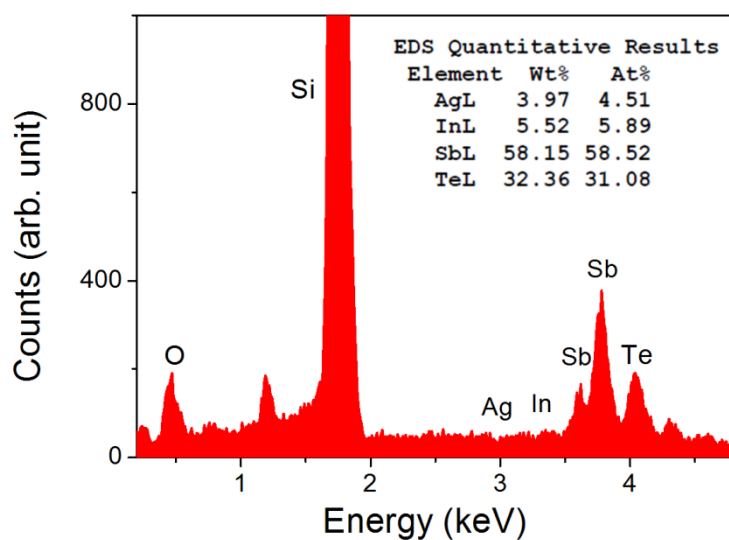
Supplementary Figures



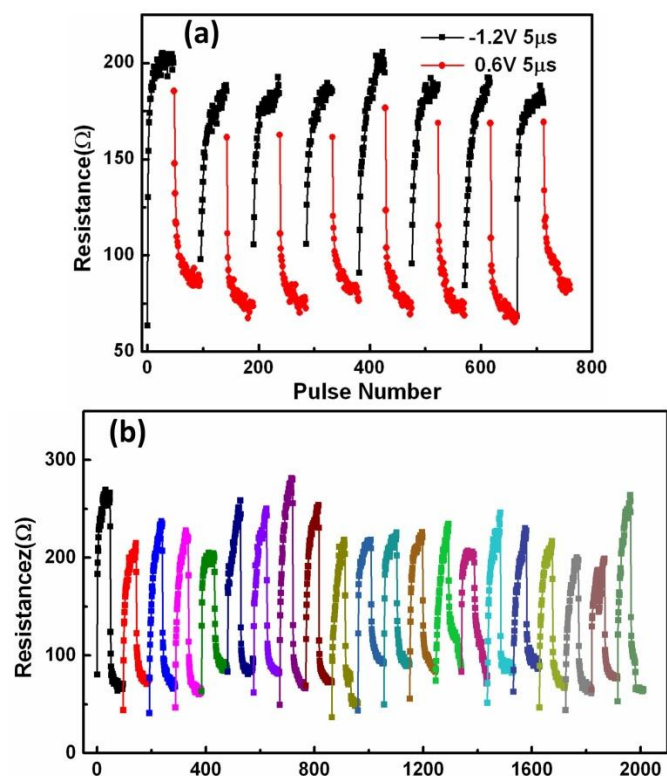
Supplementary Figure S1 | SEM image of 100 nm as-deposited AgInSbTe film on a silicon substrate. The smooth character of morphological features shows uniform deposition of the film.



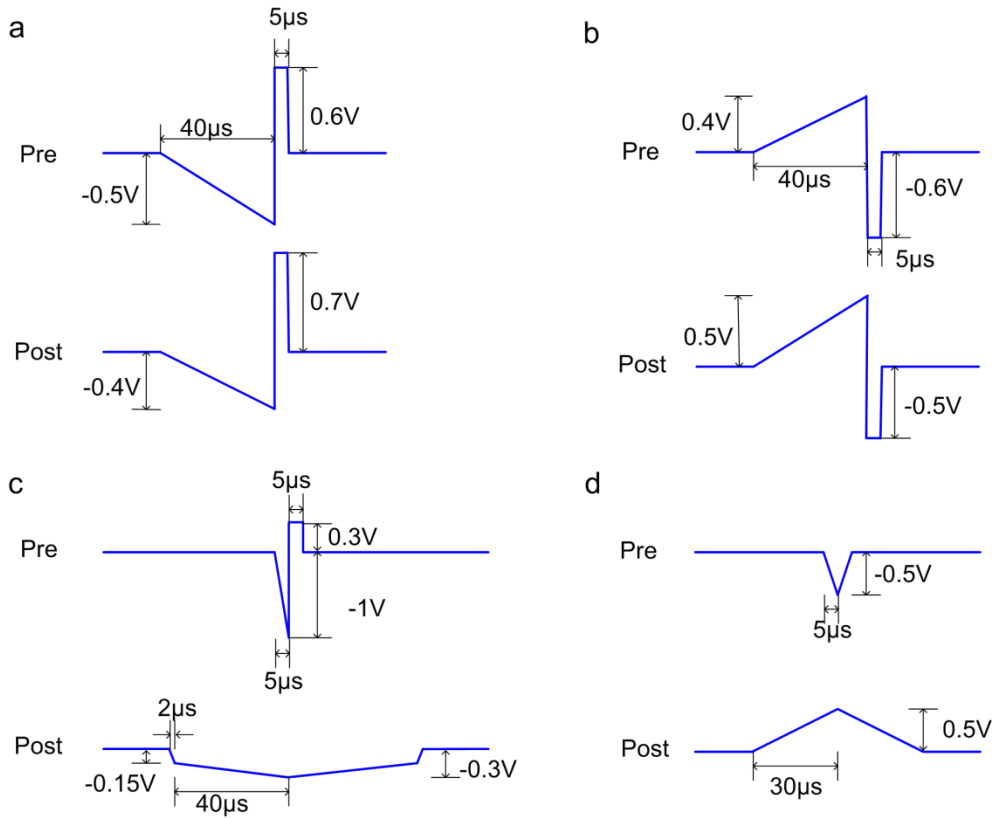
Supplementary Figure S2 | X-ray diffraction scans of the 100 nm as-deposited AgInSbTe film on a quartz substrate. The two broad peaks indicate a disordered amorphous phase.



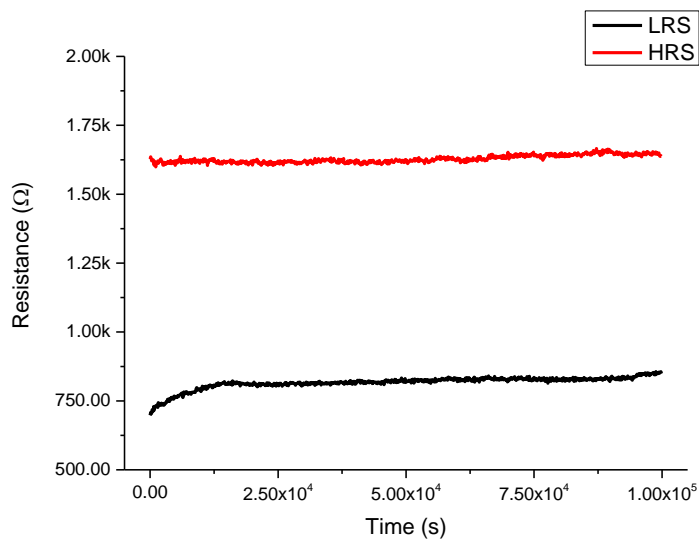
Supplementary Figure S3 | EDX of the 100 nm as-deposited AgInSbTe film on a silicon substrate. The EDX spectrum shows that the Ag : In : Sb : Te atom ratio is 4.51 : 5.89 : 58.52 : 31.08.



Supplementary Figure S4 | Reproducibility of gradual resistance tuning. (a) in one Ag/AIST/Ag cell. (b) in different cells represented by different colours.



Supplementary Figure S5 | Pre- and postsynaptic spikes utilized to implement STDP. (a) Spikes for asymmetric Hebbian learning rule. (b) Spikes for asymmetric anti-Hebbian learning rule. (c) Spikes for symmetric Hebbian learning rule. (d) Spikes for symmetric anti-Hebbian learning rule.



Supplementary Figure S6 | The retention property of a $20 \times 20 \mu\text{m}^2$ Ag/AgInSbTe/Ag memristor for 100,000 s.