Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Effect of Interlayer Spacing in Layered Perovskite on Resistive Switching Memory

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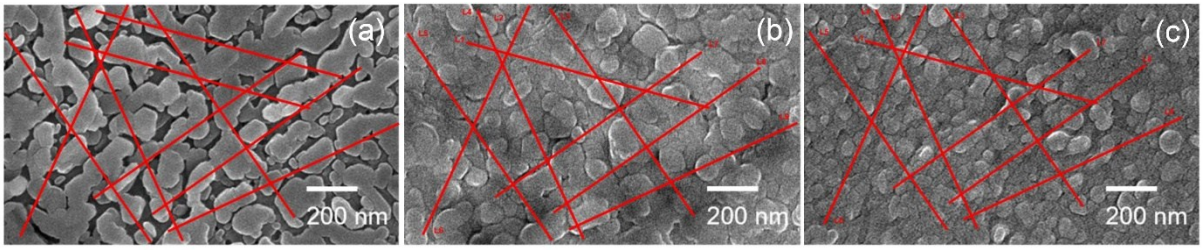

Figure S1. Line intercept method for estimating the average grain size of (a) $(An)_2PbI_4$, (b) $(BzA)_2PbI_4$, and (c) $(PEA)_2PbI_4$ films. The average grain sizes of $(An)_2PbI_4$, $(BzA)_2PbI_4$, and $(PEA)_2PbI_4$ films were determined to be 78.85 nm, 51.82 nm, and 47.92 nm, respectively.

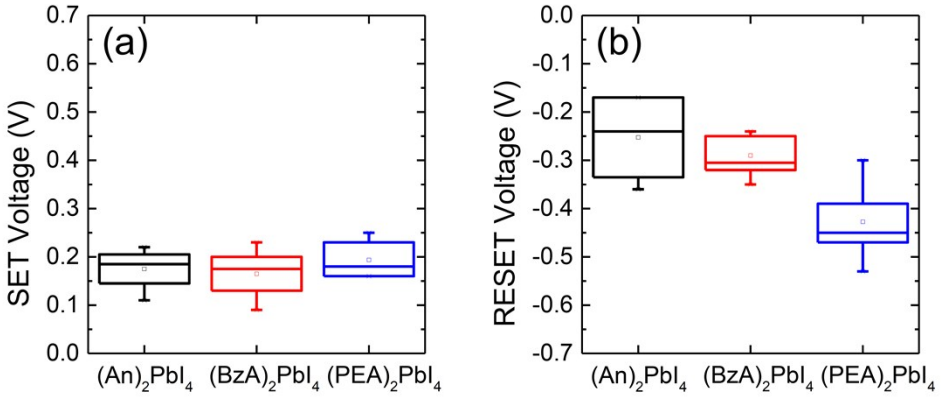

Figure S2. Box-plotted (a) SET and (b) RESET voltages for $(An)_2PbI_4$, $(BzA)_2PbI_4$, and $(PEA)_2PbI_4$ resistive switching devices.

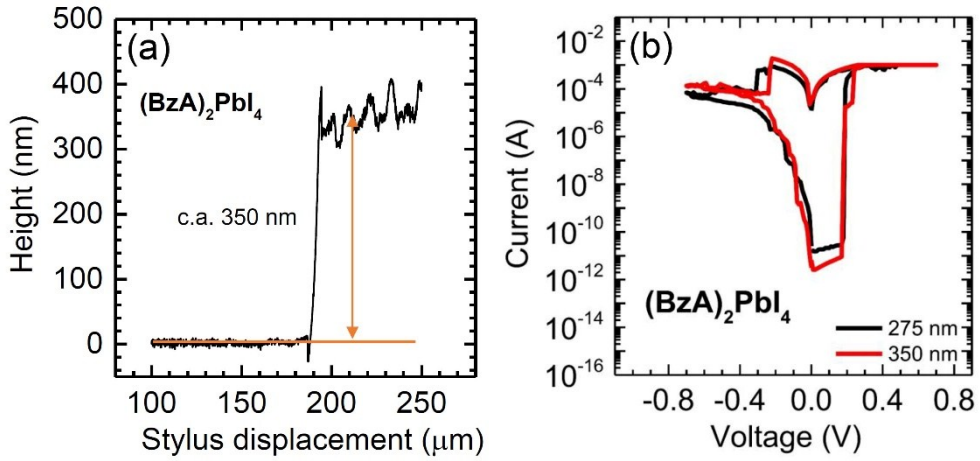

Figure S3. (a) Height of $(BzA)_2PbI_4$ film measured by α-step profiler. (b) I-V characteristics of $(BzA)_2PbI_4$ based memristor devices with different film thickness.

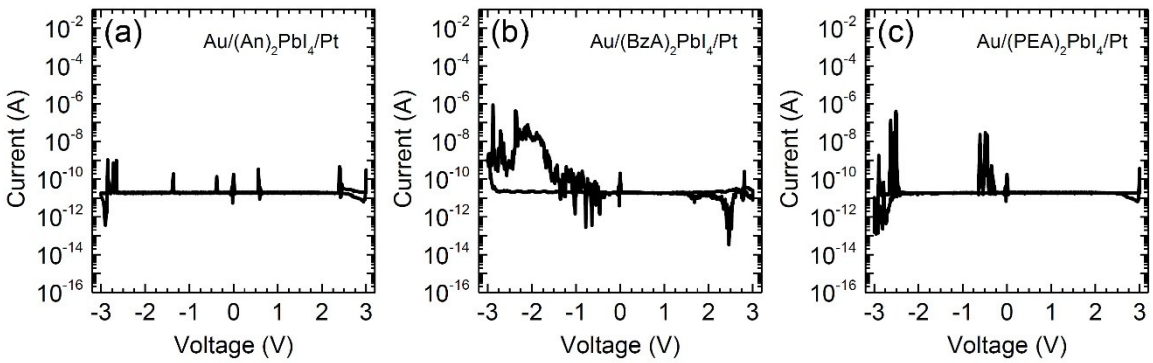

Figure S4. I-V characteristics of the Au/2D perovskite/Pt devices to analyze the electrochemical metallization mechanism. (a) $(An)_2PbI_4$, (b) $(BzA)_2PbI_4$, and (c) $(PEA)_2PbI_4$.

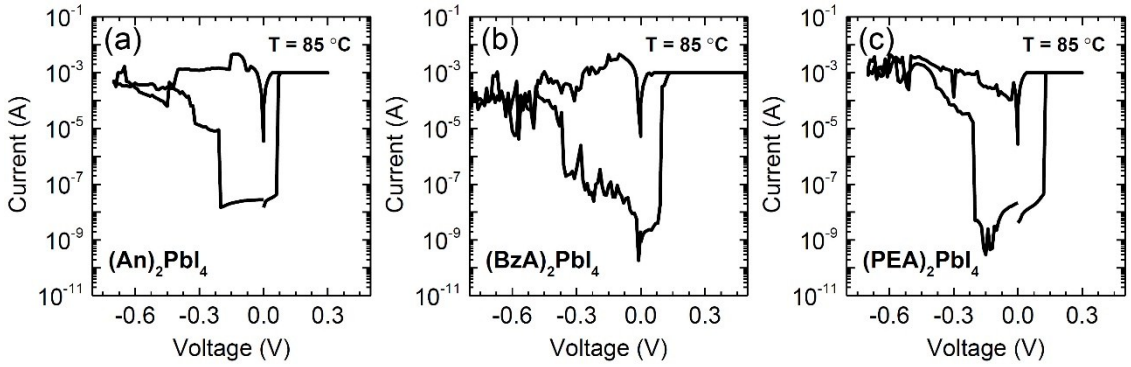

Figure S5. I-V characteristics of the Ag/PMMA/2D perovskite/Pt devices measured at 85 °C for (a) $(An)_2PbI_4$, (b) $(BzA)_2PbI_4$ and (c) $(PEA)_2PbI_4$.

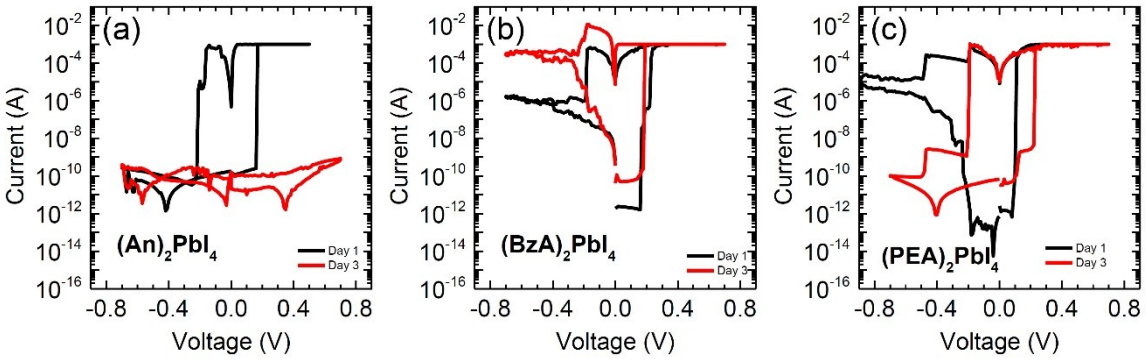

Figure S6. I-V characteristics of the Ag/PMMA/2D perovskite/Pt devices in ambient air condition under 50% humidity at 25 °C for (a) $(An)_2PbI_4$, (b) $(BzA)_2PbI_4$ and (c) $(PEA)_2PbI_4$.