

Supporting information for

Rare Earth Halide Double Perovskite for High-Performance Resistive Random-Access Memory

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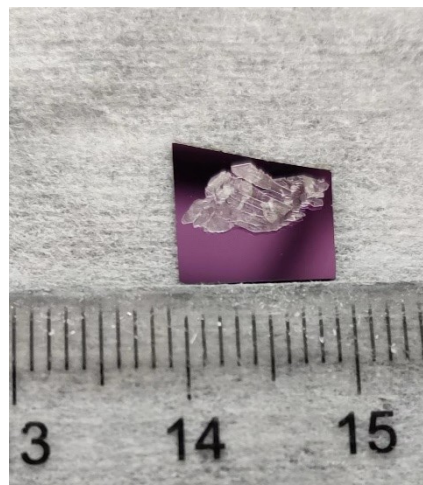
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(a)



(b)

Fig. S1 (a) the anti-solvent crystallization process of Cs₂AgEuBr₆ single crystal and (b) real top-view image of as-obtained white transparent Cs₂AgEuBr₆ single crystal.



Fig. S2 (a) AFM and (b) 3D AFM image of $\text{Cs}_2\text{AgEuBr}_6$ film

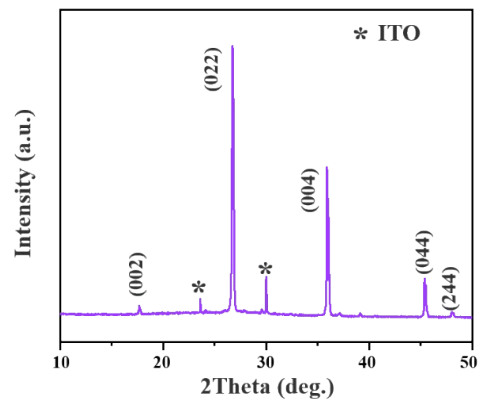


Fig. S3 XRD pattern of $\text{Cs}_2\text{AgEuBr}_6$ film

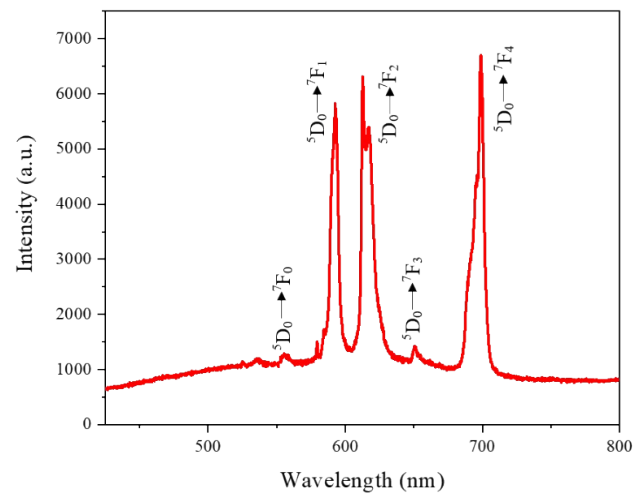


Fig. S4 PL spectrum of Cs₂AgEuBr₆ film

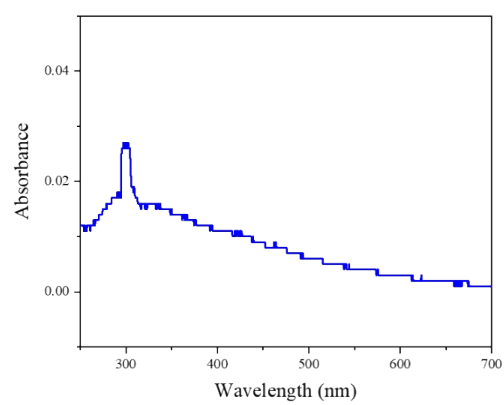


Fig. S5 UV-vis absorption spectrum of Cs₂AgEuBr₆ film

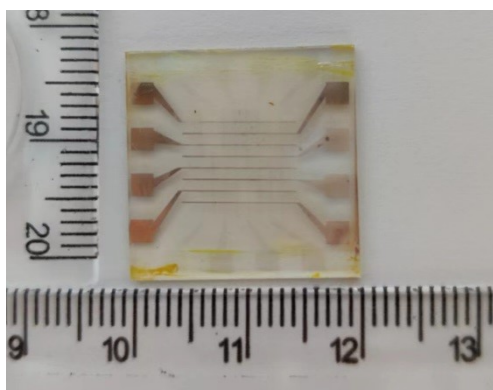


Fig. S6 Real top-view image of a typical Au/Cs₂AgEuBr₆/ITO memory device

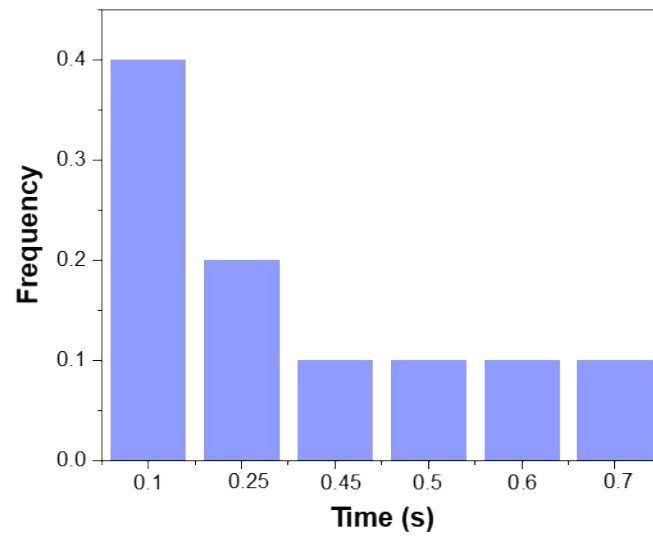


Fig. S7 The switching speed statistics of 10 unit cells

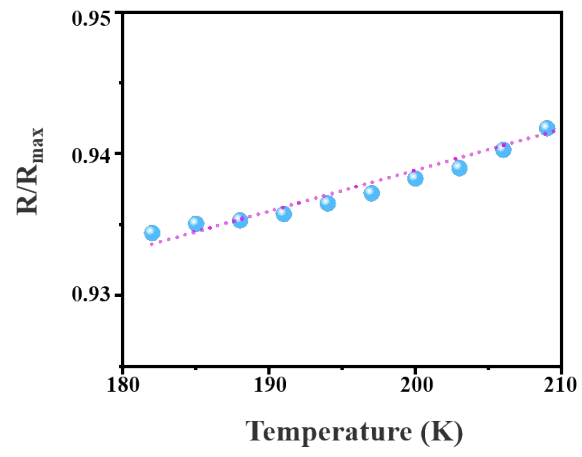


Fig. S8 Resistance of Au/Cs₂AgEuBr₆/ITO device at different temperature

Table S1 Comparison of Cs₂AgEuBr₆-based memristor with previous works

Structure	ON/OFF ratio	Retention time (s)	Ref.
Lead-free perovskite-based device			
Au/Cs ₂ AgEuBr ₆ /ITO	10 ⁴	12000	This Work
Au/ Cs ₂ AgBiBr ₆ /ITO	10 ³	100000	1
Ag/PMMA/AgBiI ₄ /ITO	10 ⁴	10000	2
Al/CsBi ₃ I ₁₀ /ITO	10 ³	10000	3
Lead-contained perovskite-based device			
Au/CH ₃ NH ₃ PbI ₃ /ITO	10 ²	10000	4
Au/CH ₃ NH ₃ PbI ₃ -XCIX/FTO	10 ⁴	40000	5
Ag/CH ₃ NH ₃ PbI ₃ /Pt	10 ⁶	11000	6
Au/CH ₃ NH ₃ PbClX ₃ -X/ Ti/TiO ₂	20	25000	7

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