

Supporting Information

Synapse transistors based on $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ nanofibers/ polyvinyl alcohol (PVA) composite gate dielectric for neuromorphic application

Yuxing Lei,^a Jun Li,^{a,b*} Wenhui Fu,^a and Jianhua Zhang^b

¹School of Material Science and Engineering, Shanghai University, Jiading, Shanghai 201800, People's Republic of China.

²Key Laboratory of Advanced Display and System Applications, Ministry of Education, Shanghai University, Shanghai 200072, People's Republic of China

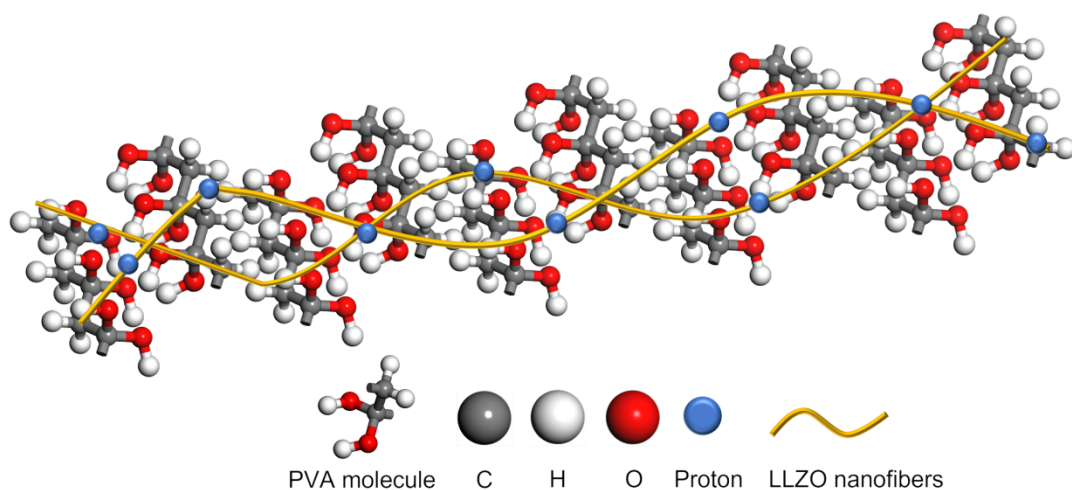


Figure S1 Schematic diagram of LLZO nanofibers adding ionic conductivity in PVA

* Corresponding author: Jun Li. E-mail: lijun_yt@shu.edu.cn



Figure S2 LLZO precursor solution

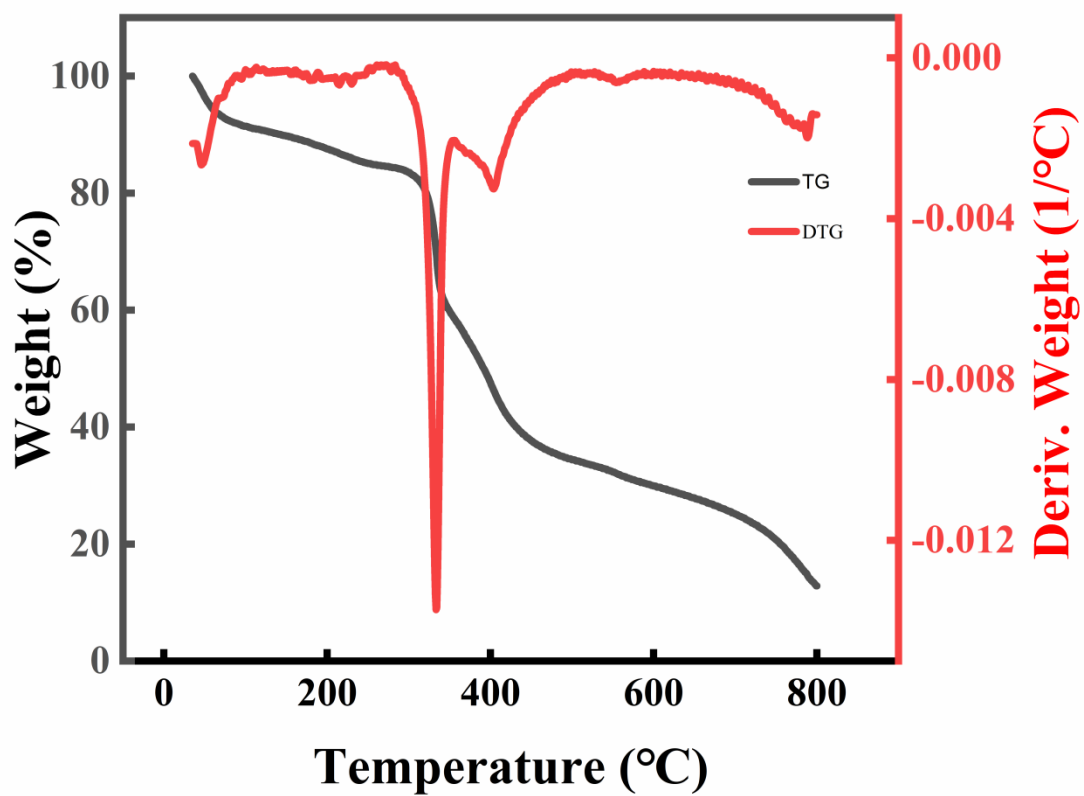


Figure S3 Thermogravimetric analysis of LLZO precursor solution

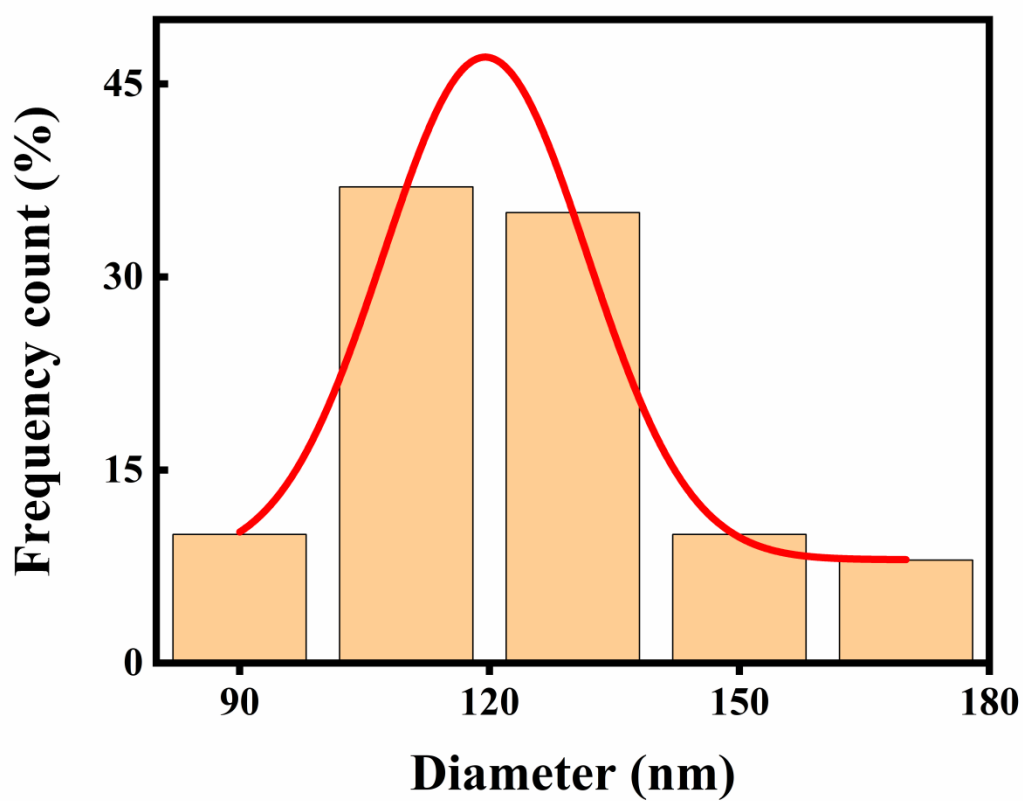


Figure S4 Diameter distribution of LLZO nanofibers

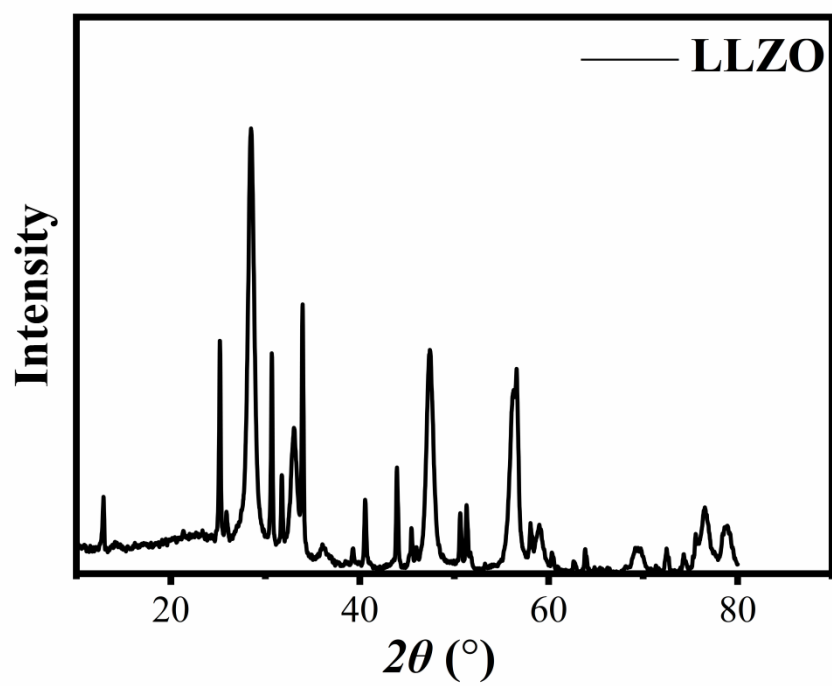


Figure S5 XRD of LLZO nanofibers

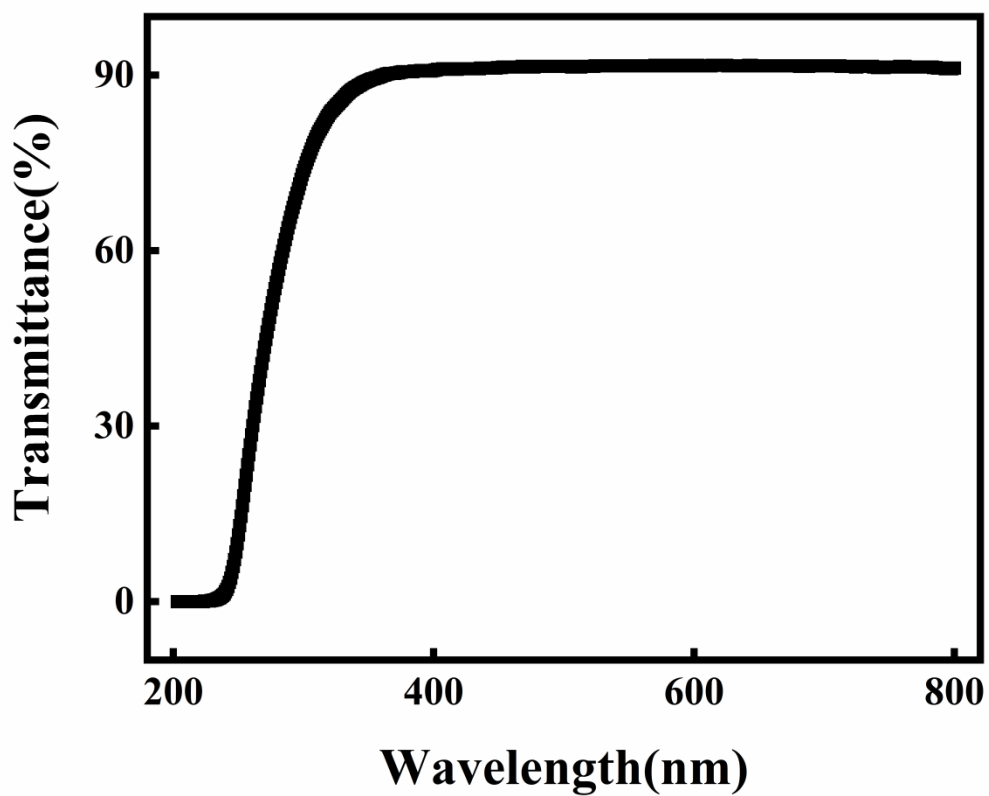


Figure S6 Light transmission of LLZO/PVA complex electrolyte film

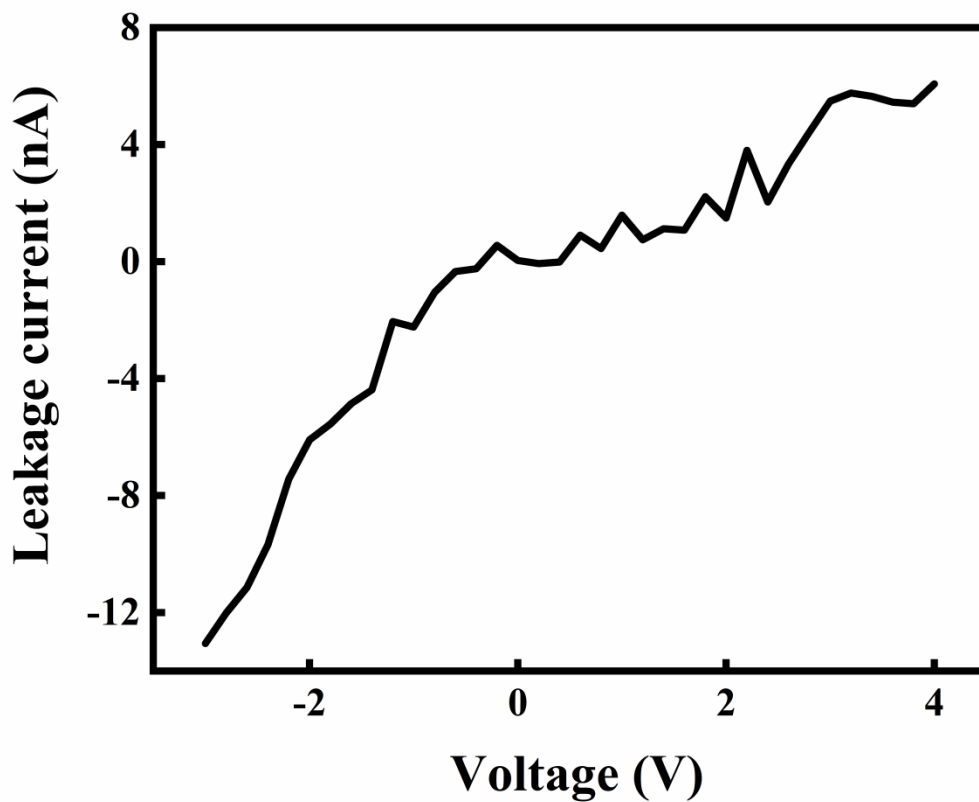


Figure S7 Leakage current of LLZO/PVA complex electrolyte film

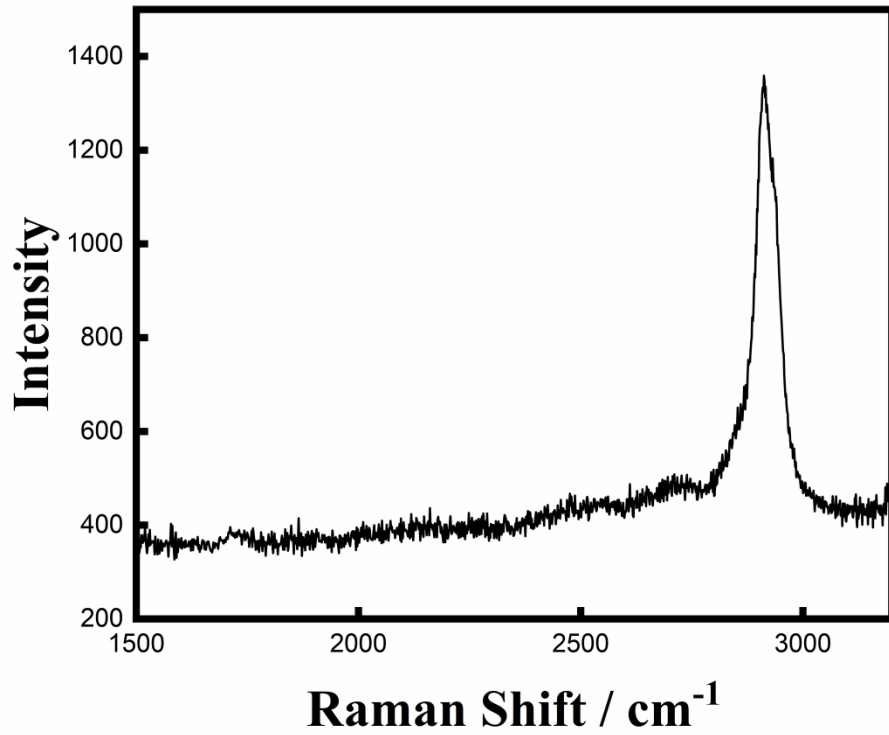


Figure S8 Raman spectra of PVA/LLZO complex electrolyte film

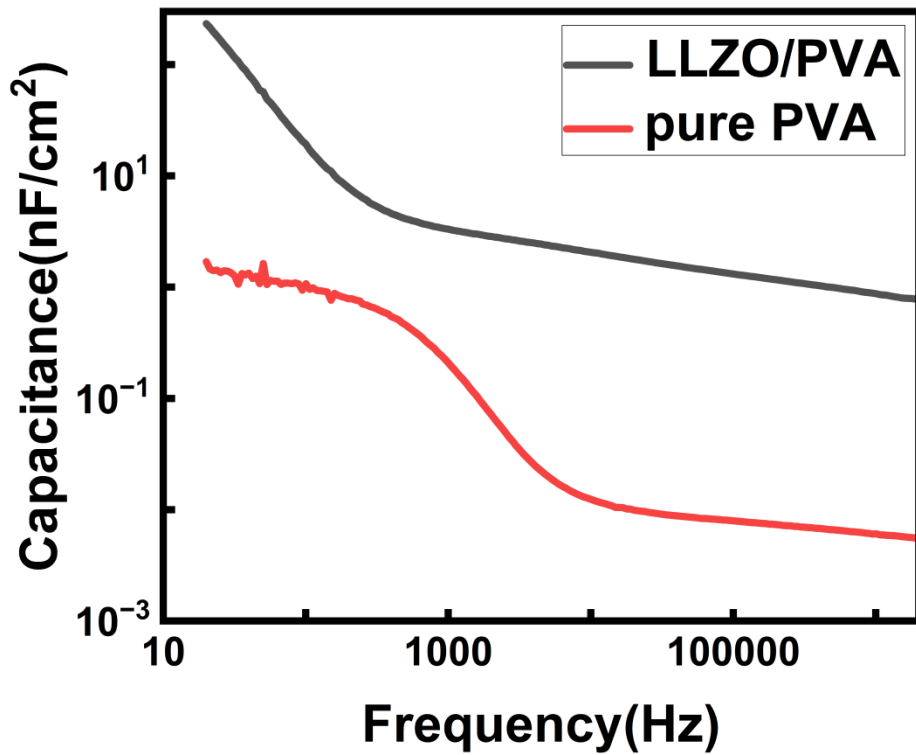


Figure S9 Comparison on the capacitance-frequency between LLZO/PVA

composite dielectric and pure PVA hydrogel dielectric

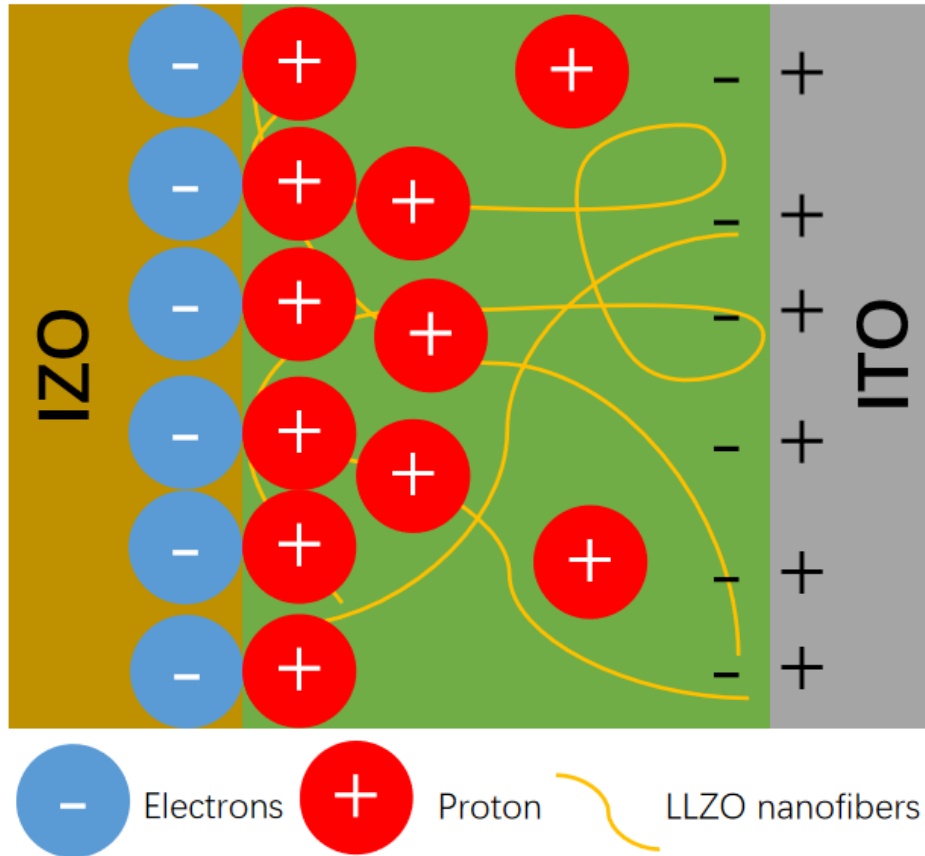


Figure S10 Schematic diagram of proton migration in PVA when voltages applied

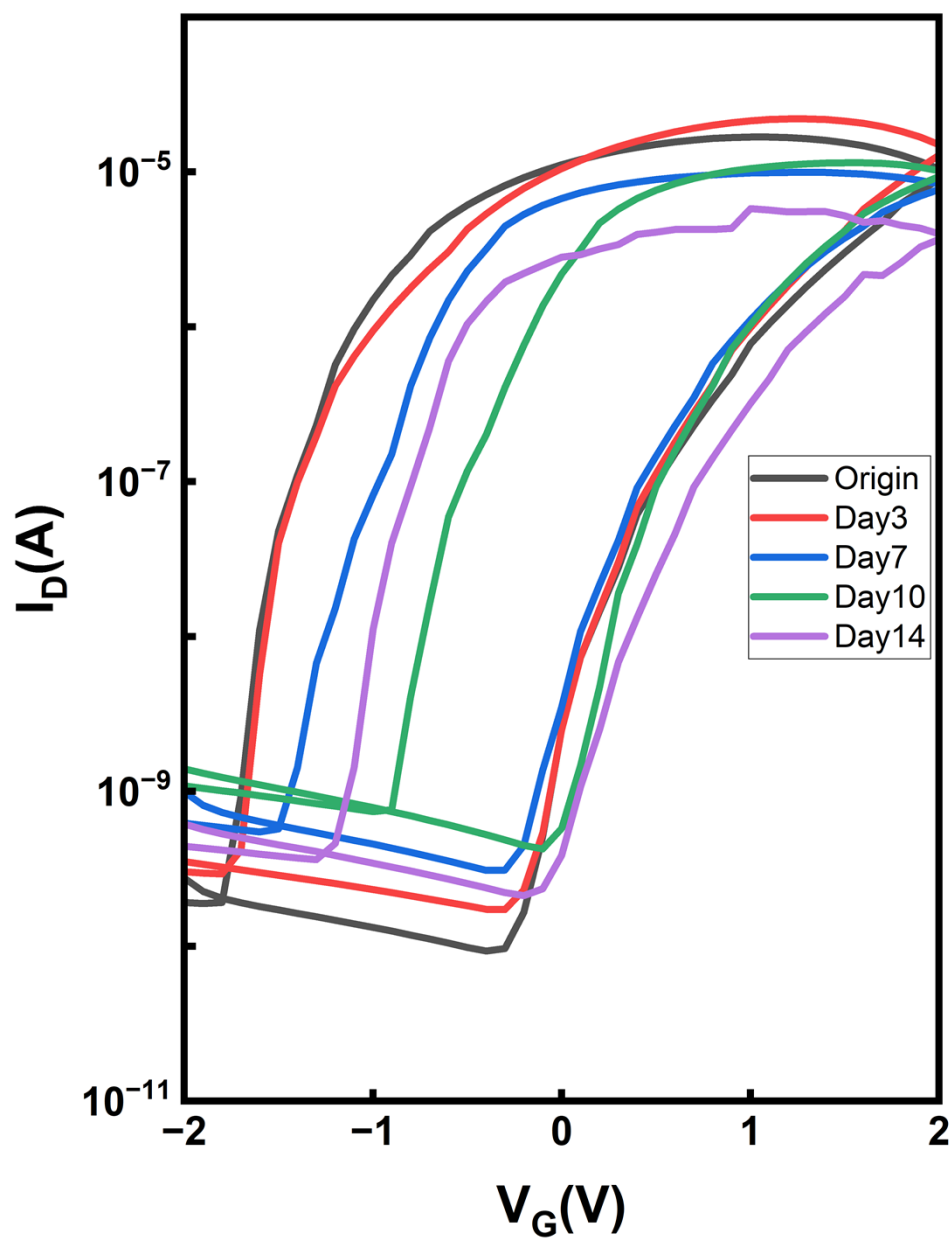


Figure S11 Time dependent forward scan and reverse scan transfer curves of the synapse transistors after 3,7,10,14 days

Table S1 Previously reported PPF of synaptic transistors based on other solid

electrolytes

Dielectric layer	Active layer	Δt	PPF	Ref.
Graphite oxide	IZO	20 ms	2.0	1
Chitosan	IZO	10 ms	1.8	2
Starch	IZO	15 ms	1.8	3
SiO ₂	CsPbBr ₃ /TIPS	1 s	~1.33	4
PVA	Al-Zn-O(AZO)	40 ms	~1.37	5
PVA/SiO ₂	Carbon Nanotubes	150 ms	1.7	6
PVA	IZO	1 s	1.89	This work

References

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