

Supporting Information

Oxide-Based Bionic Hetero-Dendritic Neuron with Capabilities of Bienenstock-Cooper-Munro Learning Activities

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Table S1. Comparison of proton conductivity (σ) and relaxation times of different electrolyte.

σ (S/cm)	τ_1 (ms)	τ_2 (ms)	Ref.
1×10^{-4}	23	261	[1]
1.6×10^{-3}	18	312	[2]
1.8×10^{-4}	48	425	[3]
6×10^{-5}	170	3930	This work.

Table S2. Comparison of power consumptions of reported neuromorphic transistors.

Substrate	Channel	Electrolyte	Spike condition	P	Ref.
Paper	IZO	Chitosan	Vgs (0.5 V, 10 ms) Vds 0.6 V	26 pJ	[4]
Glass	DPP-SVS	Ion-gel	Vgs (-0.2 V, 20 ms) Vds -0.05 V	19.2 pJ	[5]
SiO ₂	CNT	PEG	Vgs (5 V, 1 ms) Vds 0.5 V	7.5 pJ	[6]
Glass	IZO	KH550-GO	Vgs (-0.8 V, 10ms) Vds 0.2 V	3.7 pJ	[7]
Si/SiO ₂	α -MoO ₃	LiClO ₄ /PEO	Vgs (2.5 V, 1 ms) Vds -	0.16 pJ	[8]
Glass	ITO	Pectin/Chitosan	-	7.8 fJ	[2]
PET	GDY/MoS ₂	LiClO ₄	-	5 fJ	[9]
Glass	ITO	PVA	Vgs (10 mV, -) Vds 1 mV	1.16 fJ	[10]
PDMS	IGZO	Ion-gel	Vgs (20 mV, 10 ms) Vds 0.1 mV	0.36 fJ	[11]
Glass	ITO	SA/GO	Vgs (0.1 V, 300 ms) Vds 0.01 mV	93.3 aJ	This work

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