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ARTICLE TYPE

Supporting Information

Different interaction between metal electrode and organic layer and their different electrical bistability performances

Yong Ma[a], Pei-Yang Gu[a], Feng Zhou[a], Hui-Long Dong[b], You-Yong Li[b], Qing-Feng Xu *[,a], Jian-Mei Lu *[,a], Wan-Li Ma[b]

1. ^{1}H NMR and ^{13}C NMR of 2PyNI

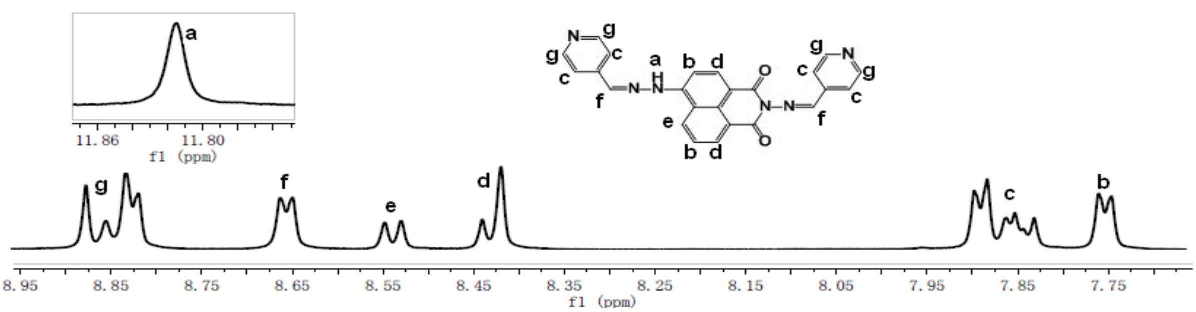

Figure S1. ^{1}H NMR spectrum of **2PyNI** in DMSO-*d6*.

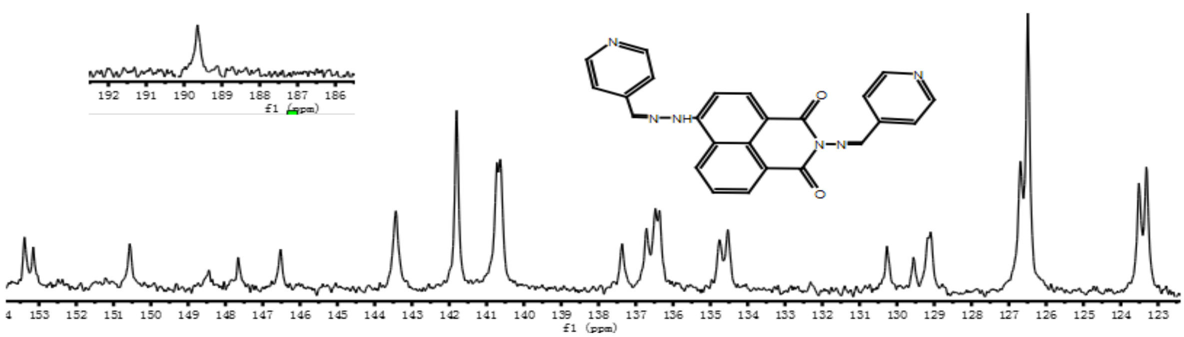

Figure S2. ^{13}C NMR spectrum of **2PyNI** in CF_3COOD.

2. Thermo-gravimetric Analysis (TGA) for bulk powder of 2PyNI.

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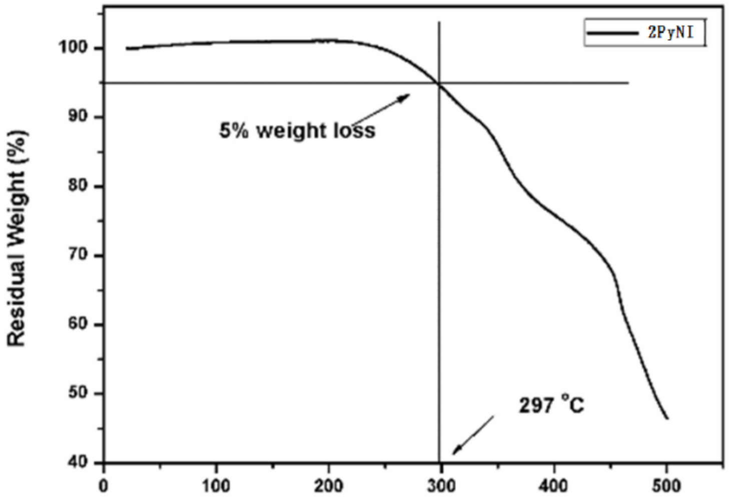

Figure S3. TGA curve of **2PyNI.**

The thermal stabilities of **2PyNI** were evaluated by TGA under a nitrogen atmosphere. As shown in the TGA curves, the thermal decomposition temperatures (the 5% weight-lost temperature) of **2PyNI** was up to 297 ^{o}C, respectively. The good-thermal stability of **2PyNI** would endure heat deterioration in the memory devices.

3. Scanning Electron Microscope (SEM) images of the devices

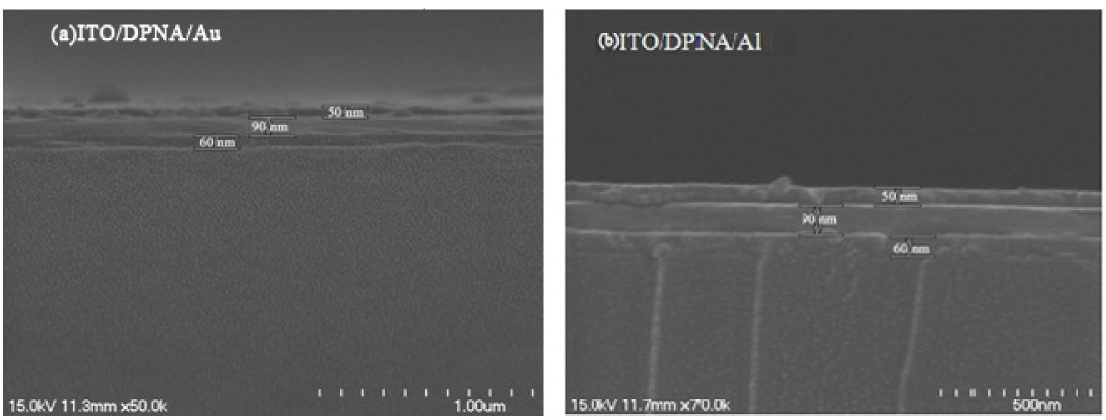

Figure S4. The cross section images of devices: (a) ITO/**2PyNI**/Au; (b) ITO/**2PyNI**/Al.

4. High resolution mass spectrometry (HRMS) of 2PyNI

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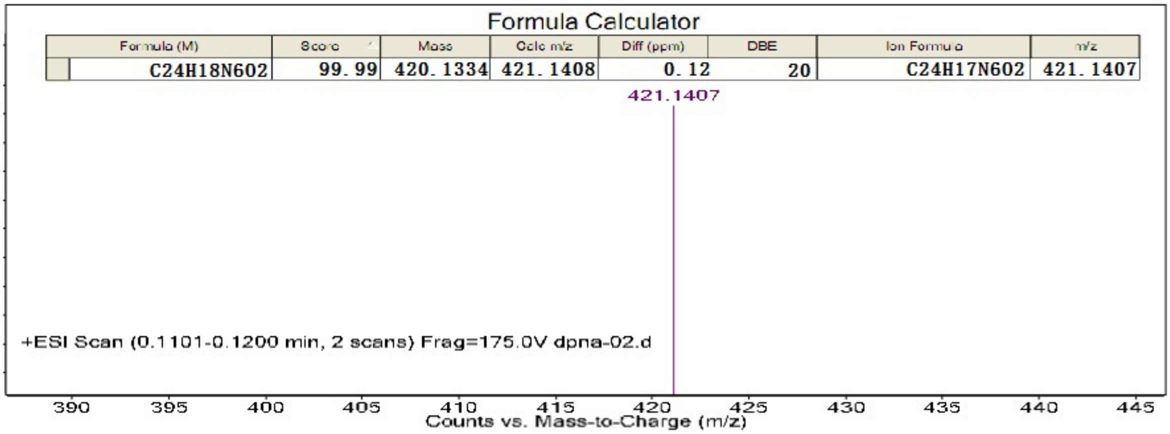

Figure S5. HRMS spectrum of **2PyNI**.

5. Crystallographic data of 2PyNI

Table S1. Crystallographic data for **2PyNI**

Compound	**2PyNI**
Formula	$C_{24}H_{20}N_6O_4$
F_w	456.46
T(K)	223(2)
Crystal system	orthorhombic
Space group	P 21 21 21
a (Å)	4.6051(10)
b (Å)	13.887(3)
c (Å)	33.216(7)
α (deg)	90
β (deg)	90
γ (deg)	90
V(Å ^{3})	2124.1(8)

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Z	4
D_{calc}	1.427
$\mu(mm^{-1})$	0.101
F (000)	952
θ_{max} (deg)	27.44
Reflections Collected	11621
Independent reflections	4749
Observed reflections	3398
Parameters refined	320
$R(I>2\sigma(I))$	0.0681
wR_2(all data)	0.1490
GOF on F^2	1.102

6. The extended retention time characterization of device 2

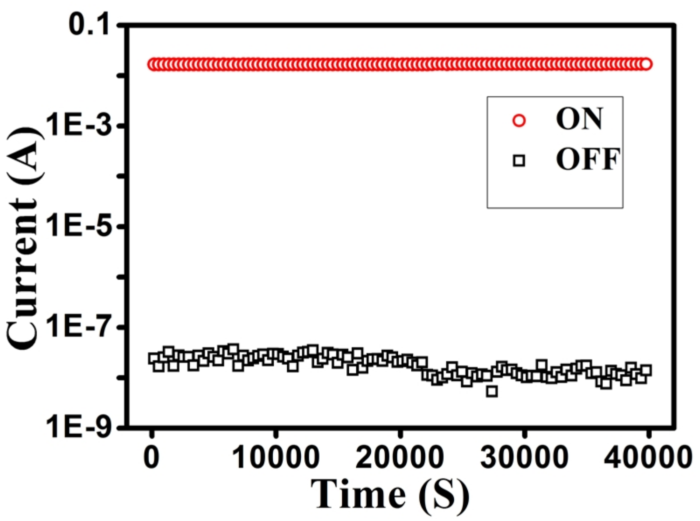

Figure S6. The effect of retention time of the memory device under a constant stress of -1.0 V

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7. The Temperature dependence characterization of device 1 and 2 for ON sate

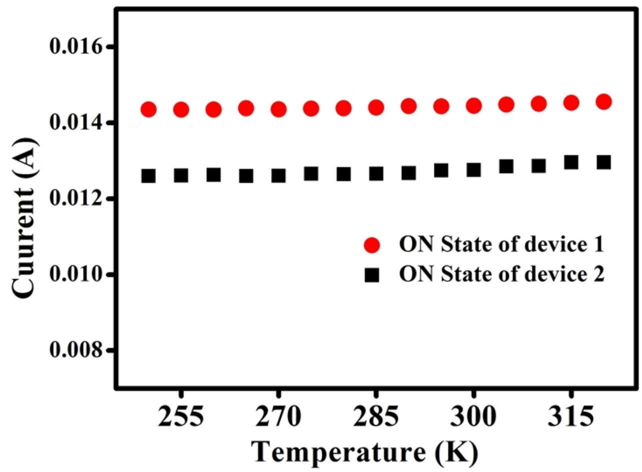

Figure S7. Temperature dependence of the current for the ON states of devices **1** and **2**.

The temperature dependence (between 250 and 320 K) of the current for ON state of device **1** and **2** were measured. The current was subsequently measured at 1 V while the temperature was swept at a speed of 1.0 K/min. It was found that the current for ON state of device **1** and **2** did not show the feature of conductors and was weakly affected by the temperature.