

Supporting Information

Synthesis and Flash Memory Behavior of Alternate Copolymer Containing Carbazole Donor and Perylenediimide Derivatives Acceptor by the hybridization of organo-silicon

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Supporting figures:

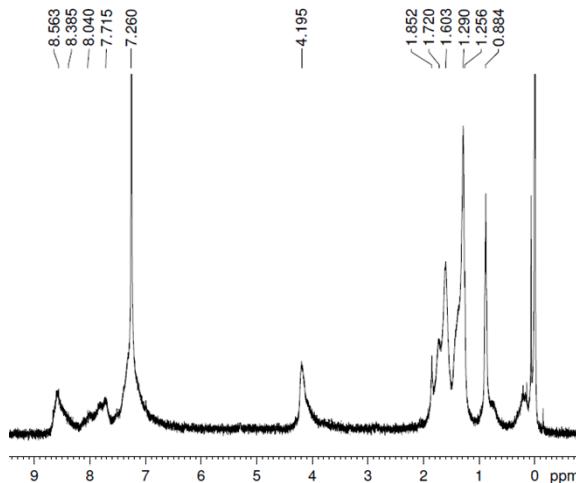


Figure S1. ^1H NMR of PCzPhSi-alt-PDISi in CDCl_3 .

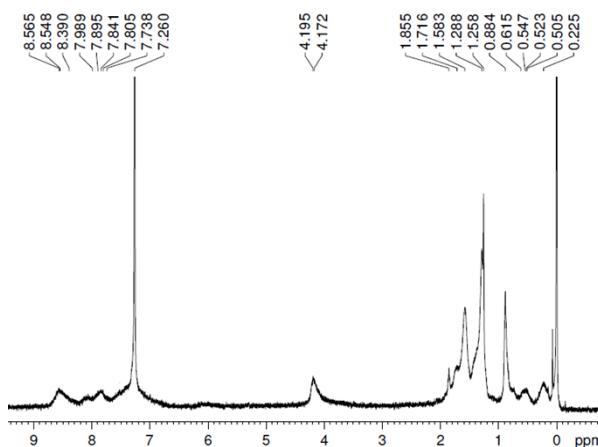


Figure S2. ^1H NMR of PCzMSi-alt-PDISi in CDCl_3 .

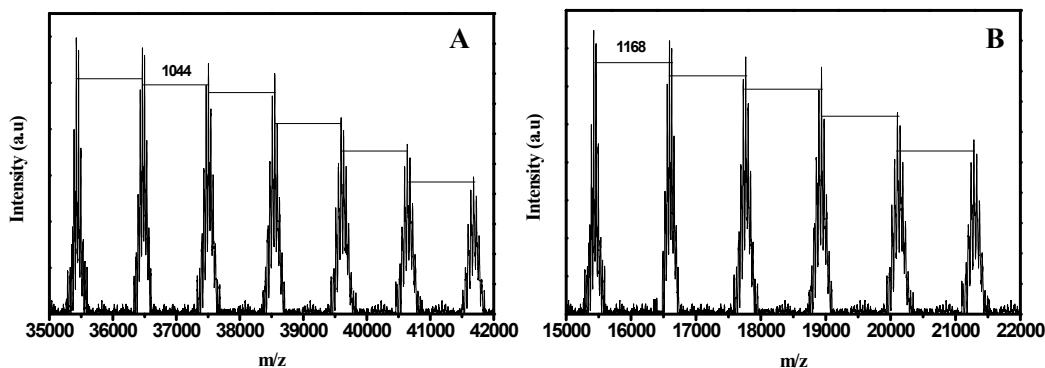


Figure S3. MALDI-TOF MS of PCzMSi-alt-PDISi (A) and PCzPhSi-alt-PDISi (B).

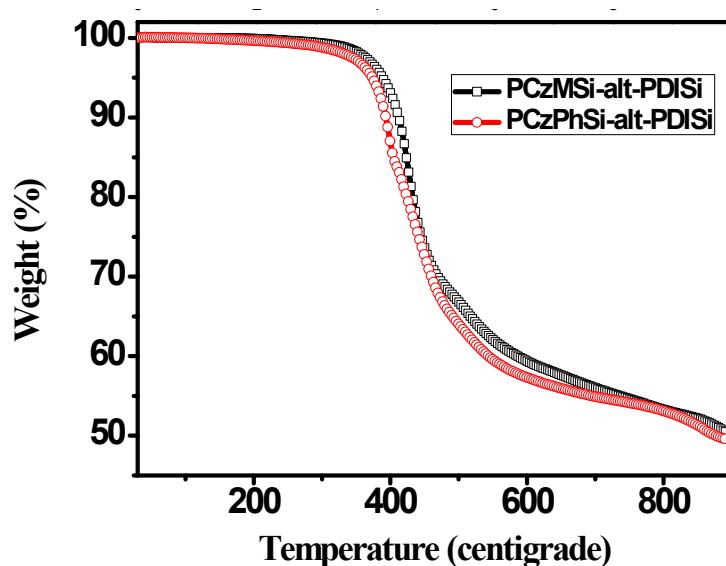


Figure S4. TGA of PCzMSi-alt-PDISi and PCzPhSi-alt-PDISi.

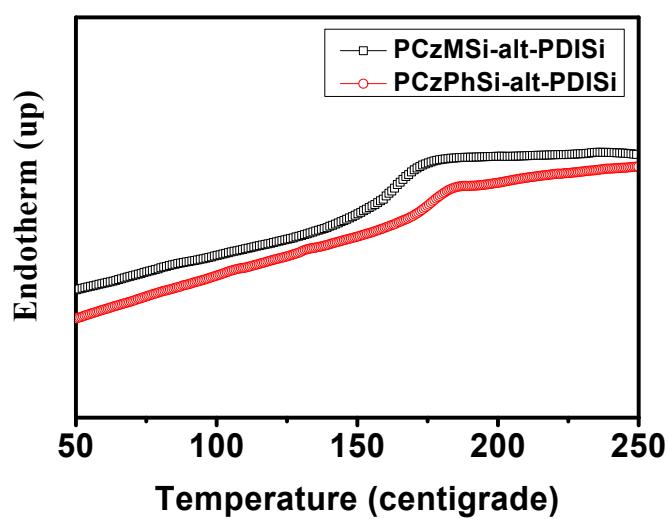


Figure S5. DSC traces of PCzMSi-alt-PDISi and PCzPhSi-alt-PDISi.

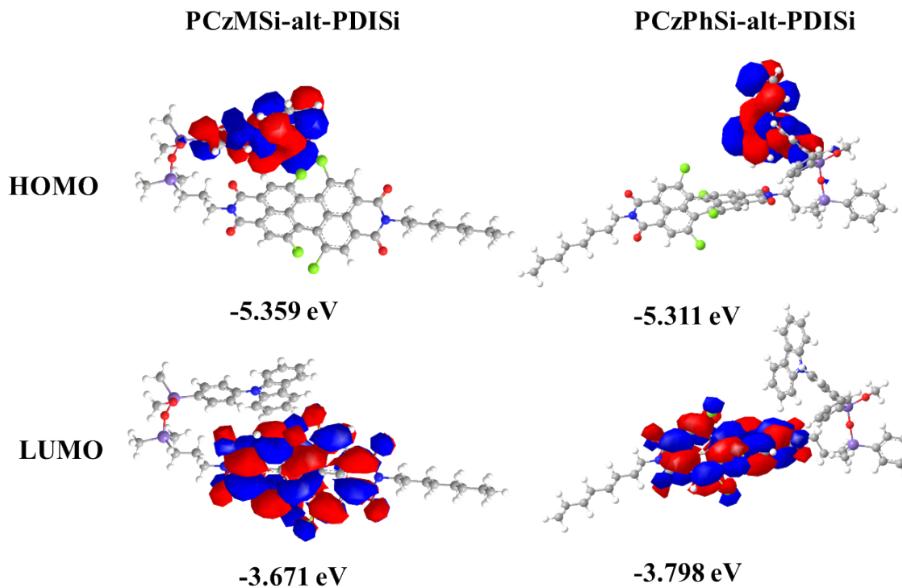


Figure S6. HOMO and LUMO levels of PCzMSi-alt-PDISi and PCzPhSi-alt-PDISi caculated by Gaussian 03.

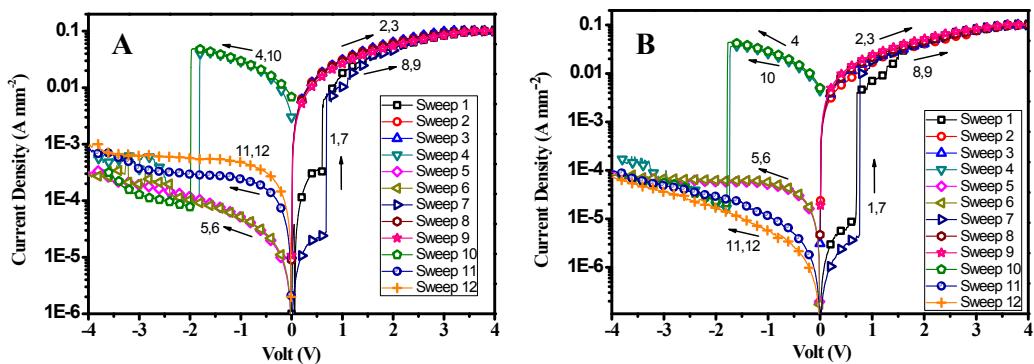


Figure S7. J - V characteristics of the memory device of PCzMSi-alt-PDISi (50 nm) (A) and PCzPhSi-alt-PDISi (50 nm) (B). The sweep sequence and direction are indicated by the numbers and arrows, respectively (sweep numbers 1, 2, 3, 7, 8 and 9: 0 to +4 V; sweep numbers 4, 5, 6, 10, 11 and 12: 0 to -4 V).

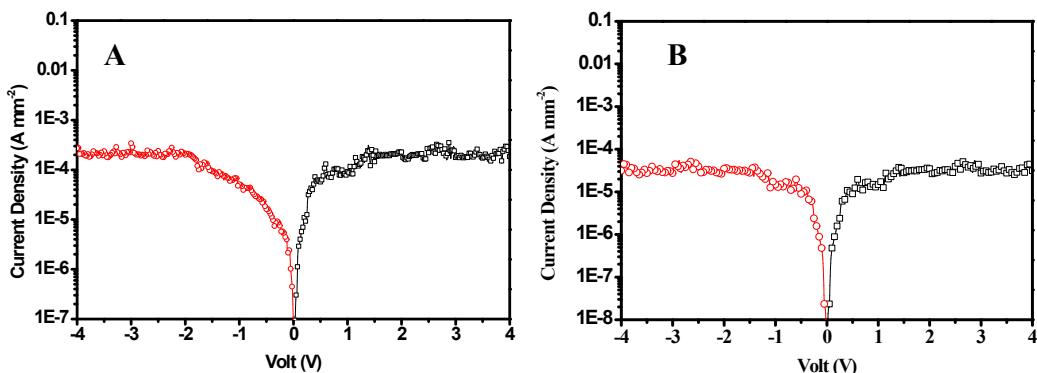


Figure S8. J - V characteristics of the memory device of PCzMSi-alt-PDISi (140 nm) (A) and PCzPhSi-alt-PDISi (140 nm) (B).

Table S1. Photophysical, molecular weight, Electrochemical and device data of all polymers

	M _w (kDa)	M _w /M _n	HOMO (eV) ^a	LUMO (eV) ^b	V _{on} (V) ^c	V _{off}	I _{on/off} ^e
						(V) ^d	
PCzMSi-alt-PDISi (80 nm)	50.9	1.27	-5.37	-3.77	0.67	-1.89	$\sim 1 \times 10^3$
PCzPhSi-alt-PDISi (80 nm)	22.6	1.29	-5.31	-3.81	0.90	-1.80	$\sim 4 \times 10^3$
PCzMSi/PDISi (80 nm)	5.2 ^f /27.7 ^g	1.24 ⁱ /1.25 ^j	-5.60 ^l /-5.95 ^m	-2.04 ^o /-3.95 ^p	0.91	-	$\sim 1 \times 10^2$
PCzPhSi/PDISi (80 nm)	3.8 ^h /27.7 ^g	1.08 ^k /1.25 ^j	-5.62 ⁿ /-5.95 ^m	-2.08 ^q /-3.95 ^p	0.93	-	$\sim 4 \times 10^2$

^a Determined from the onset of oxidation potentials of CV. ^b Calculated from HOMO and E_g estimated from the edge of the longest absorption wavelength for the solid-film sample. ^c Turn on voltage. ^d Turn off voltage. ^e ON/OFF current density ration. ^f, ⁱ, ^l, ^o M_w, M_w/M_n, HOMO and LUMO of PCzMSi. ^g, ^j, ^m, ^p M_w, M_w/M_n, HOMO and LUMO of PDISi. ^h, ^k, ⁿ, ^q M_w, M_w/M_n, HOMO and LUMO of PCzPhSi.