Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supplementary Information

Switching of resistive memory behavior from binary to ternary logic via subtle polymer donor and molecular acceptors design

Saihu Pan,[a] Zhiqiang Zhu,[a] Hang Yu,[a] Weixia Lan,*[b] Bin Wei [b] and Kunping Guo*[b,c]

[a] School of Microelectronics and Control Engineering, Changzhou University, Changzhou, 213164, PR China

[b] School of Mechatronic Engineering and Automation, Key Laboratory of Advanced Display and System Applications, Ministry of Education, Shanghai University, Shanghai, 200072, PR China

[c] London Centre for Nanotechnology, University College London, London WC1H 0AH, UK

* Corresponding author.
E-mail address: weixia_lan@shu.edu.cn (W. Lan), kunping.guo@ucl.ac.uk (K. Guo).

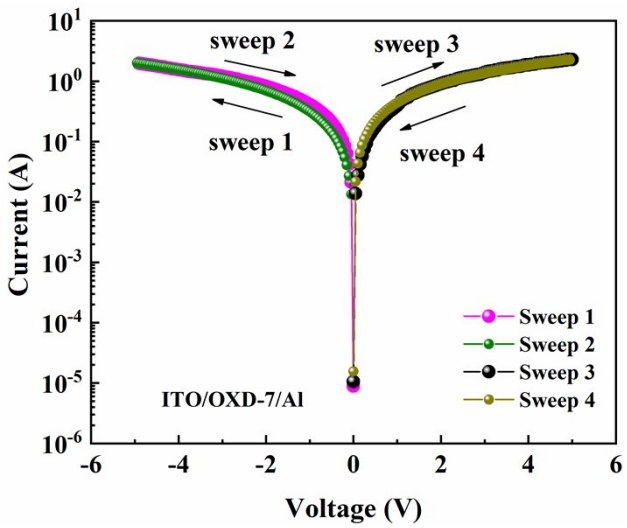

Figure S1. *I-V* characteristic of the device incorporating neat OXD-7.

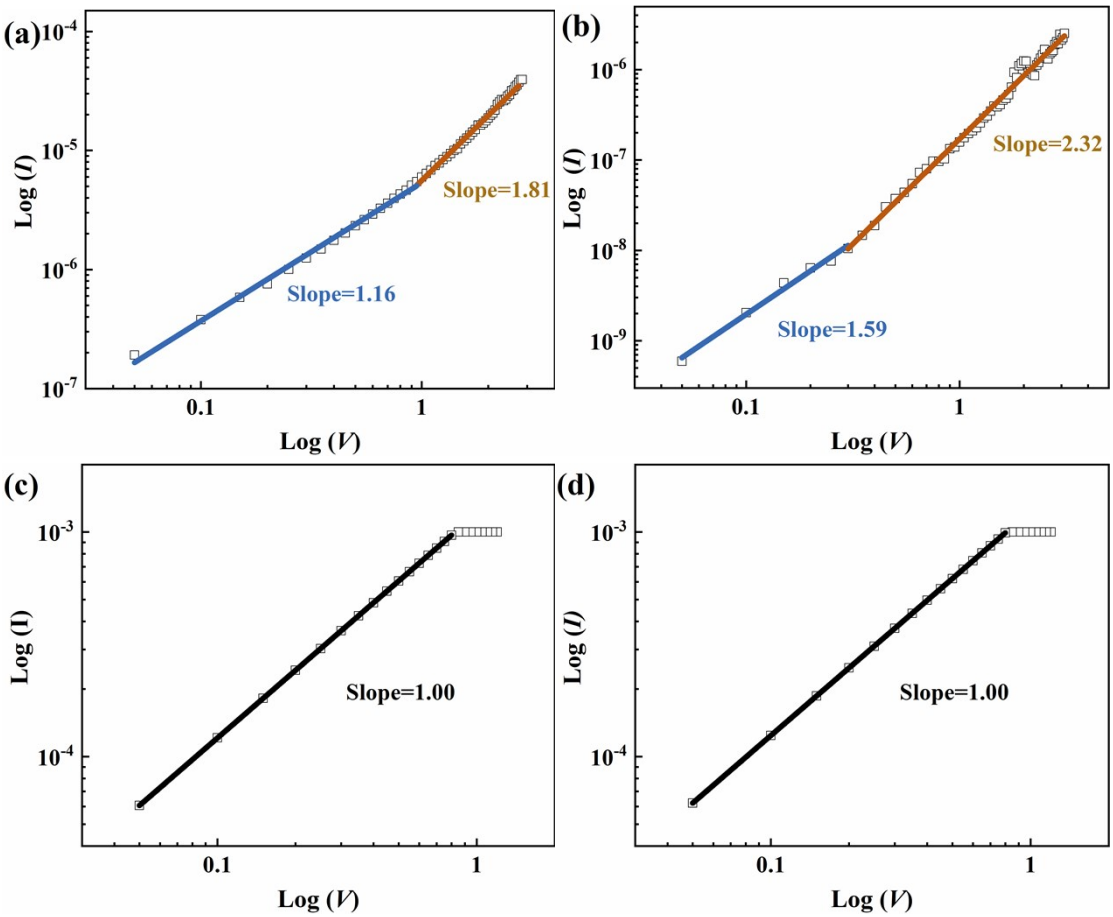

Figure S2. Analysis of *I-V* characteristics for the ITO/PVK: OXD-7: PBD/Al devices. (a) OFF and (c) ON states for device containing 26 wt% of OXD-7 and 4 wt% of PBD. (b) OFF and (d) ON states for device containing 20 wt% of OXD-7 and 10 wt% of PBD.

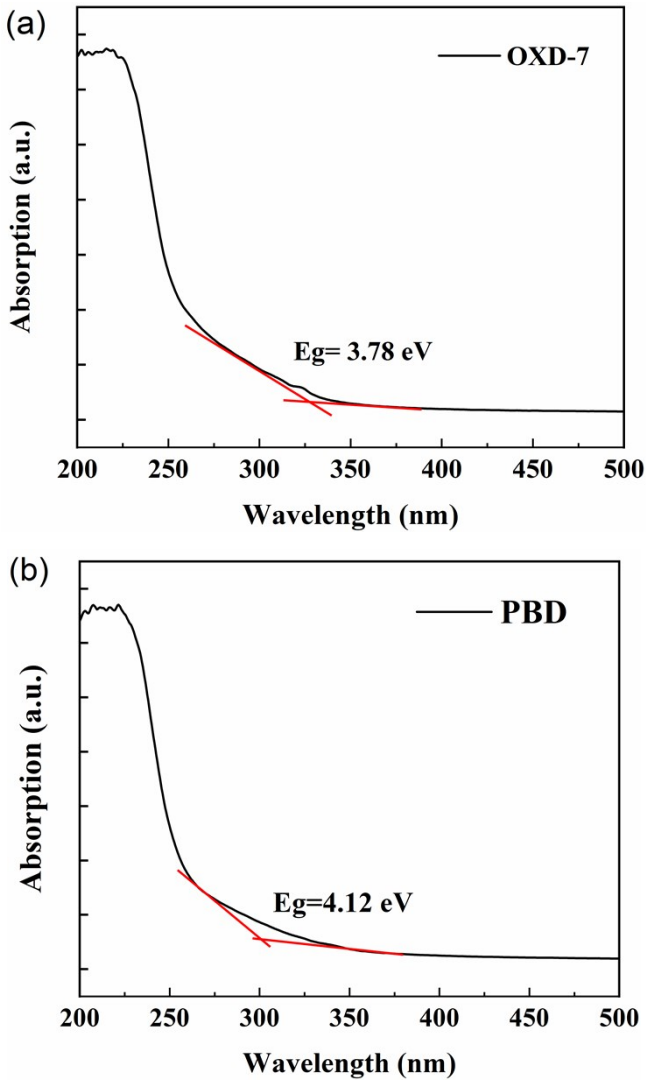

Figure S3. Absorption edge of the optical absorption spectra of (a) OXD-7 and (b) PBD.

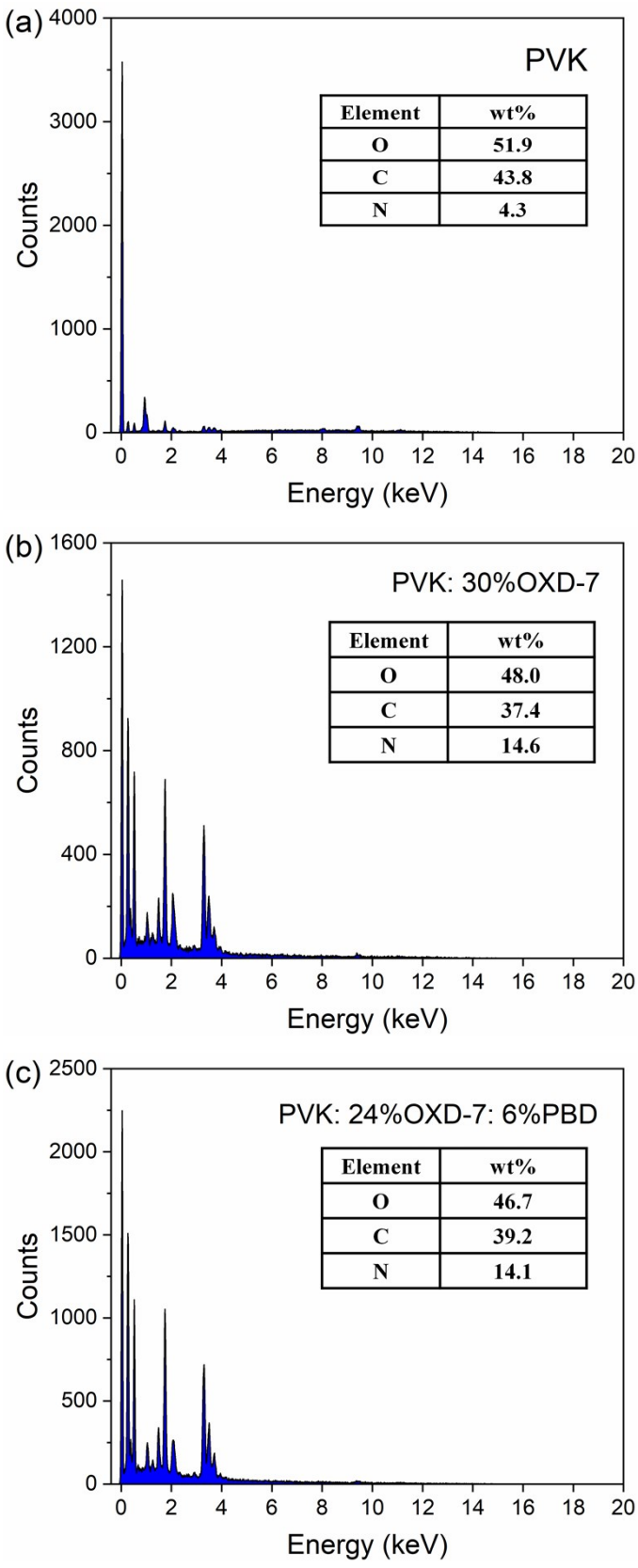

Figure S4. EDX spectra for (a) neat PVK, (b) PVK: 30%OXD-7 and (c) PVK: 24%OXD-7: PBD films.

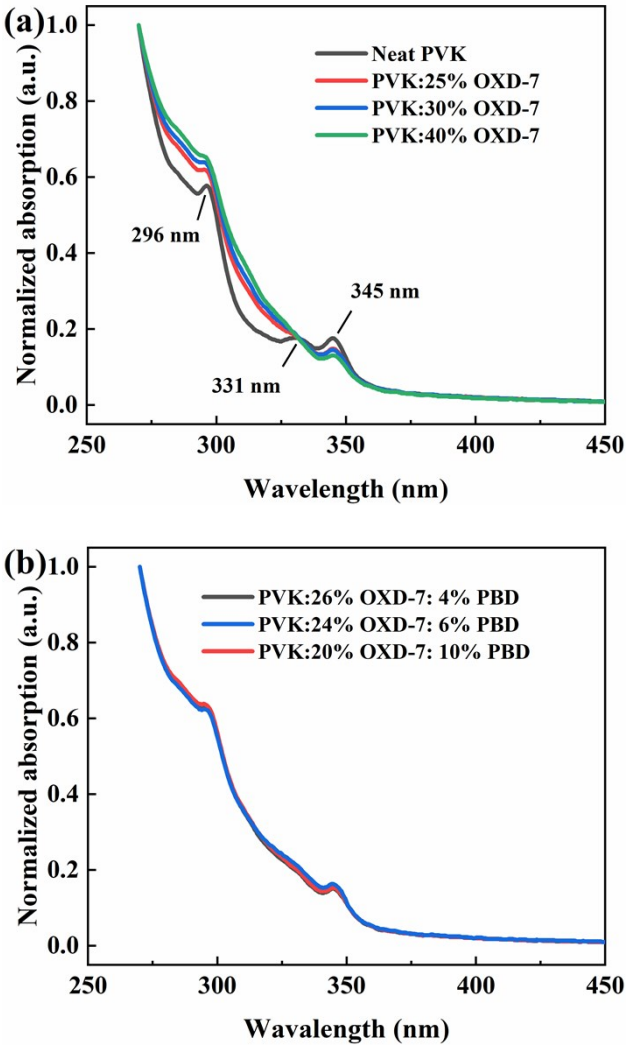

Figure S5. Normalized UV-Vis absorption spectra of (a) neat PVK, blended PVK: OXD-7, and (b) PVK: OXD-7: PBD films spin-cast on fused silica substrates.

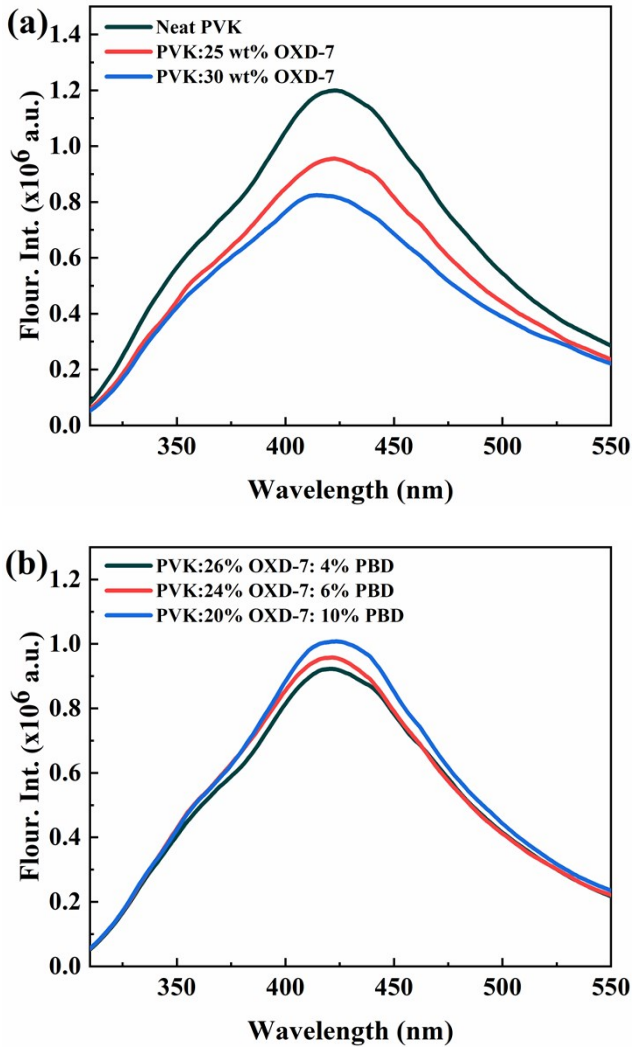

Figure S6. Fluorescence spectra of the (a) PVK: OXD-7 and (b) PVK: OXD-7: PBD films in the ON state under electrical biases (λ_{ex}= 290 nm).

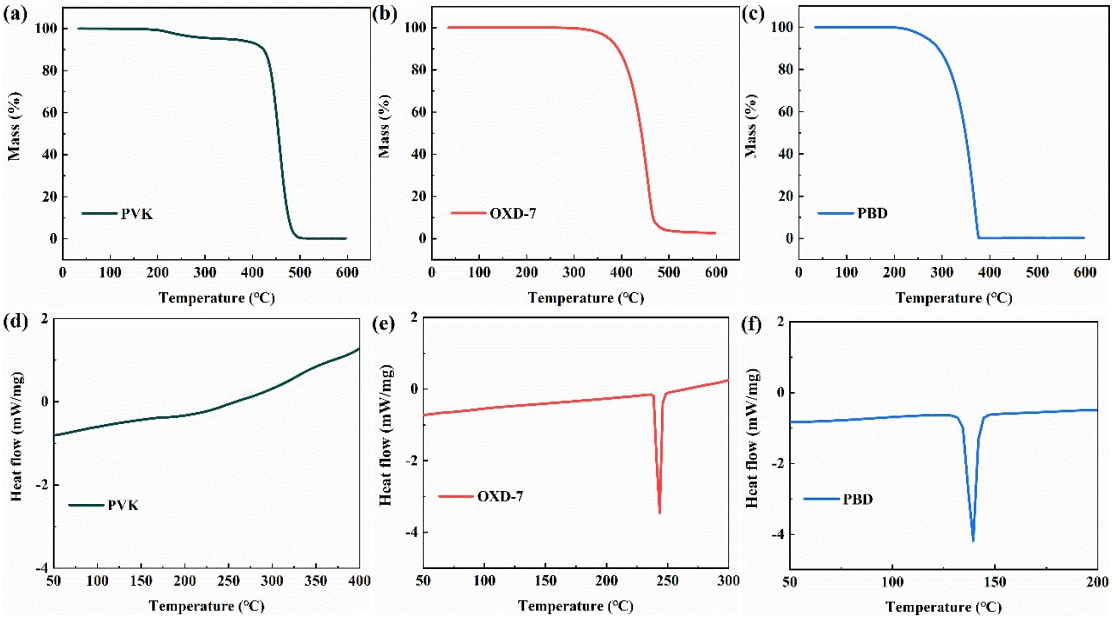

Figure S7. TGA thermograms of (a) PVK, (b) OXD-7 and (c) PBD under nitrogen. DSC thermal analysis of (d) PVK, (e) OXD-7 and (f) PBD under nitrogen.

Table S1. Thickness of neat and blend PVK films.

Film	Thickness (nm ± SD)
PVK	74.2 ± 2.5
PVK: 25 wt% OXD-7	72.9 ± 1.9
PVK: 30 wt% OXD-7	68.9 ± 2.5
PVK: 40 wt% OXD-7	69.2 ± 2.0
PVK: 26 wt% OXD-7：4 wt% PBD	72.2 ± 2.3
PVK: 24 wt% OXD-7：6 wt% PBD	73.3 ± 2.4
PVK: 20 wt% OXD-7：10 wt% PBD	71.5 ± 2.6