Supporting Information for

Highly Conductive, Binary Ionic Liquid-Solvent Mixture Ion Gels for Effective Switching of Electrolyte-Gated Transistors

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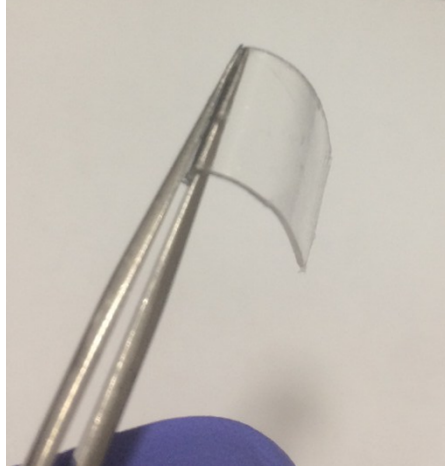
Figure S1. An optical image of the organogel based on pure PC and PVDF-HFP with a weight ratio of 4 : 1.
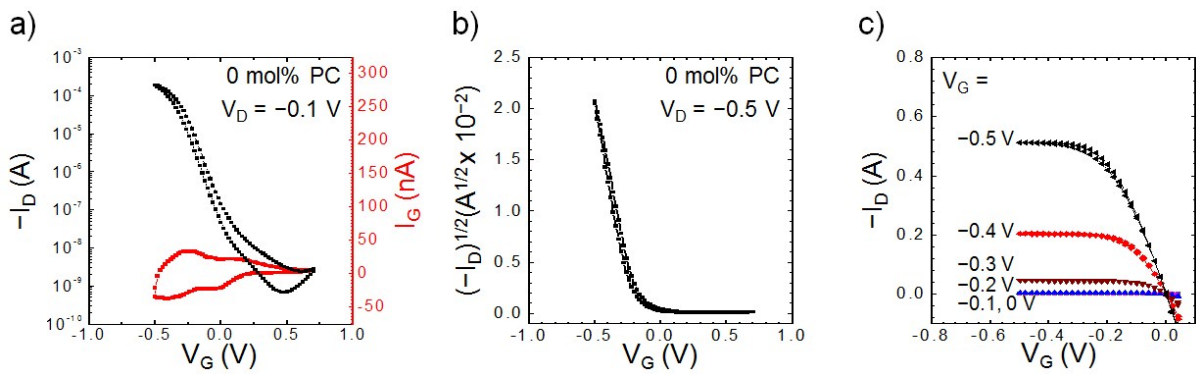
Figure S2. Representative characteristics of the P3HT transistor gated with the mixed ion gel containing 0 mol% of the molecular additive PC. (a) I_D–V_G (black) and I_G–V_G (red) data in the linear regime ($V_D = -0.1$ V). (b) $I_D^{0.5}$–V_G data measured in the saturation regime ($V_D = -0.5$ V). (c) I_D–V_D output data.
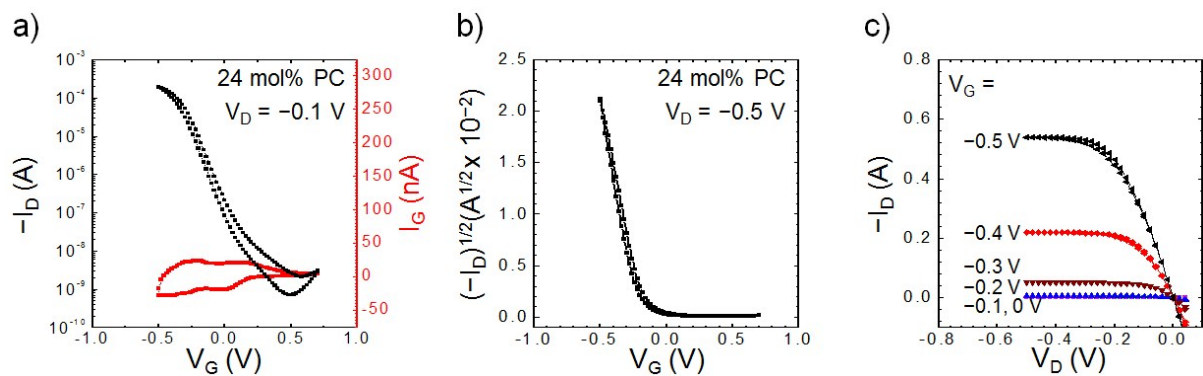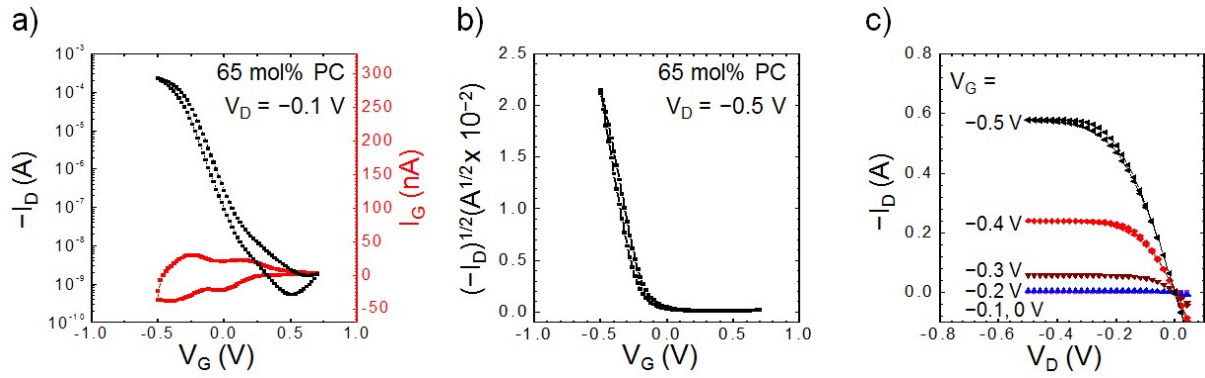
Figure S3. Representative characteristics of the P3HT transistor gated with the mixed ion gel containing 24 mol% of the molecular additive PC. (a) I_D−V_G (black) and I_G−V_G (red) data in the linear regime (V_D = −0.1 V). (b) $I_D^{0.5}$−V_G data measured in the saturation regime (V_D = −0.5 V). (c) I_D−V_D output data.
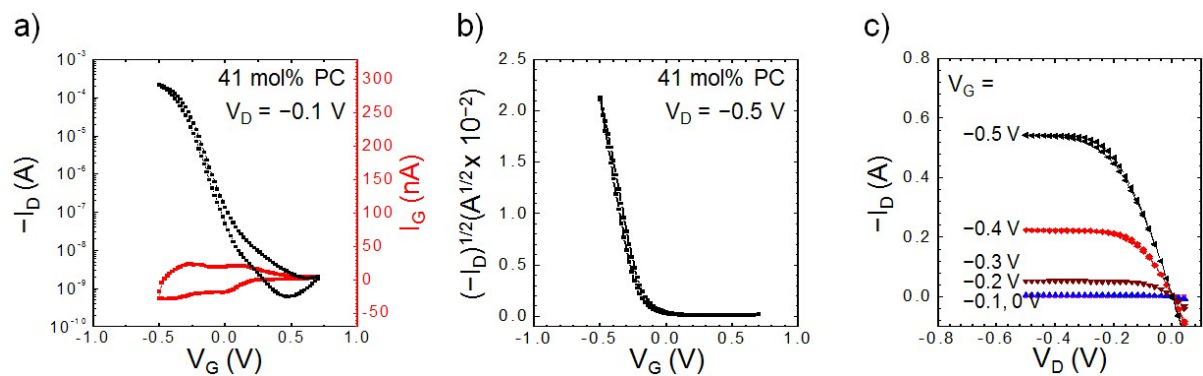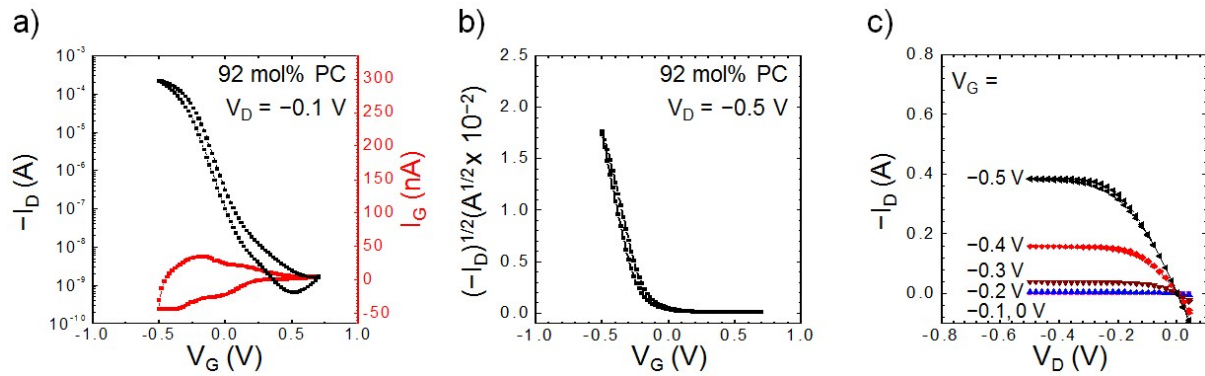

Figure S4. Representative characteristics of the P3HT transistor gated with the mixed ion gel containing 41 mol% of the molecular additive PC. (a) I_D−V_G (black) and I_G−V_G (red) data in the linear regime (V_D = −0.1 V). (b) $I_D^{0.5}$−V_G data measured in the saturation regime (V_D = −0.5 V). (c) I_D−V_D output data.

Figure S5. Representative characteristics of the P3HT transistor gated with the mixed ion gel containing 65 mol% of the molecular additive PC. (a) I_D−V_G (black) and I_G−V_G (red) data in the linear regime ($V_D = -0.1$ V). (b) $I_D^{0.5}$−V_G data measured in the saturation regime ($V_D = -0.5$ V). (c) I_D−V_D output data.

Figure S6. Representative characteristics of the P3HT transistor gated with the mixed ion gel containing 92 mol% of the molecular additive PC. (a) I_D−V_G (black) and I_G−V_G (red) data in the linear regime ($V_D = -0.1$ V). (b) $I_D^{0.5}$−V_G data measured in the saturation regime ($V_D = -0.5$ V). (c) I_D−V_D output data.
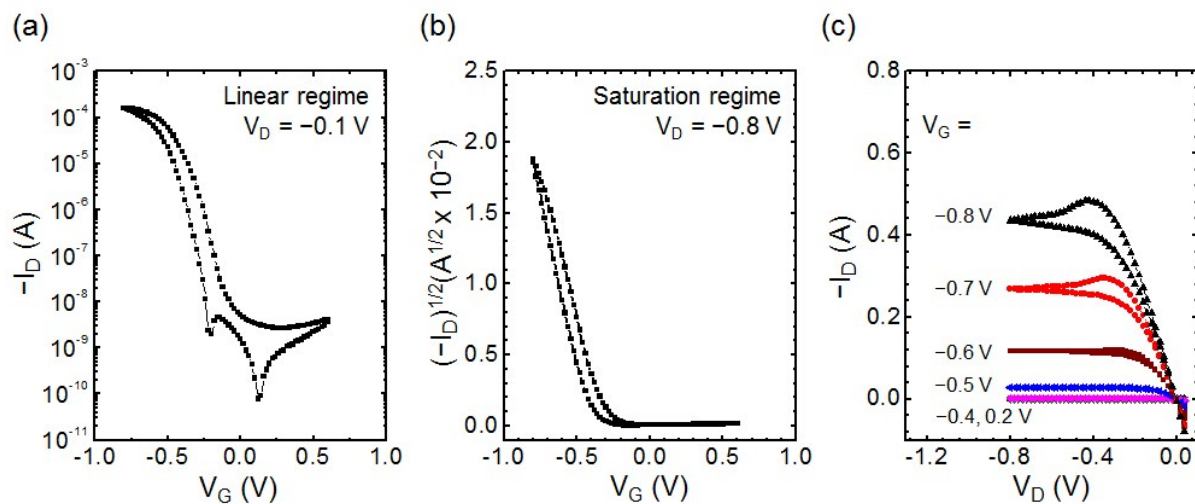
Figure S7. (a) Representative I_D-V_G transfer data in the linear regime ($V_D = -0.1$ V) obtained for the P3HT transistor gated with a PEO/LiClO$_4$ polymer electrolyte. (b) $I_D^{0.5}-V_G$ data measured in the saturation regime ($V_D = -0.8$ V). (c) Representative I_D-V_D output data.