

**Figure S1:** Scheme of structure of PEDOT:PSS hybrid c-Si solar cells.

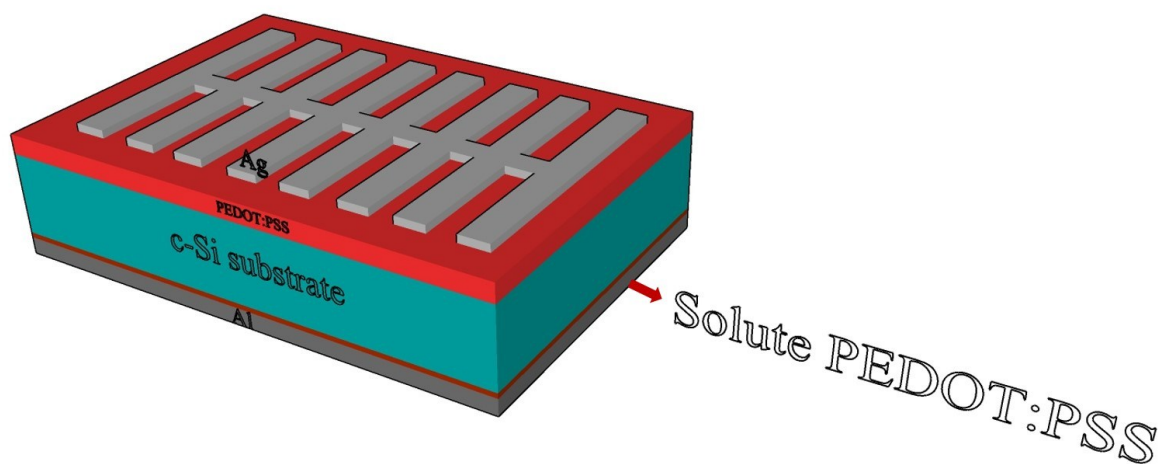
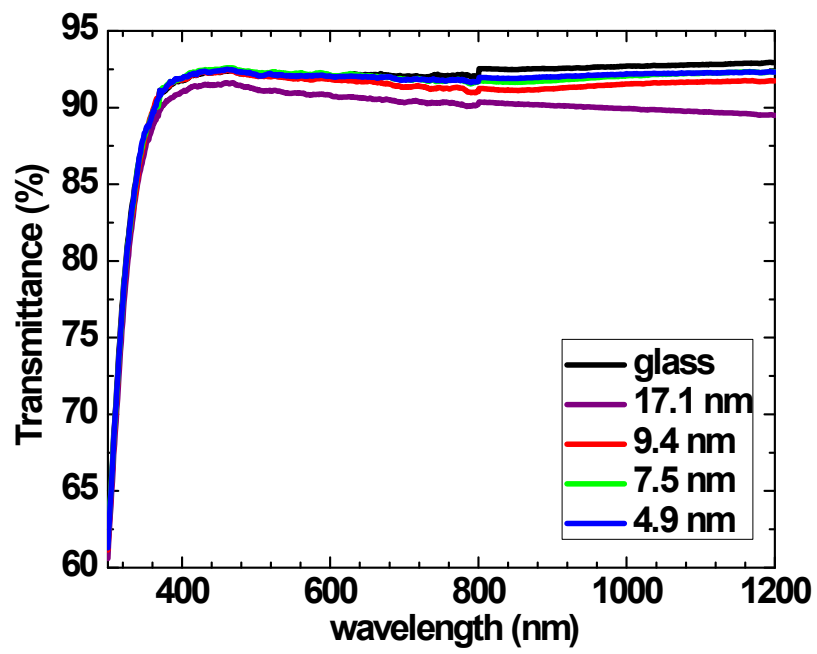


Figure S2: Transmittance of different solute PEDOT:PSS on glass.



**Figure S3:** Effective carrier lifetimes under different injection levels of c-Si substrates passivated by solute PEDOT:PSS with thickness of 17.1, 9.4, 7.5 and 4.9 nm.

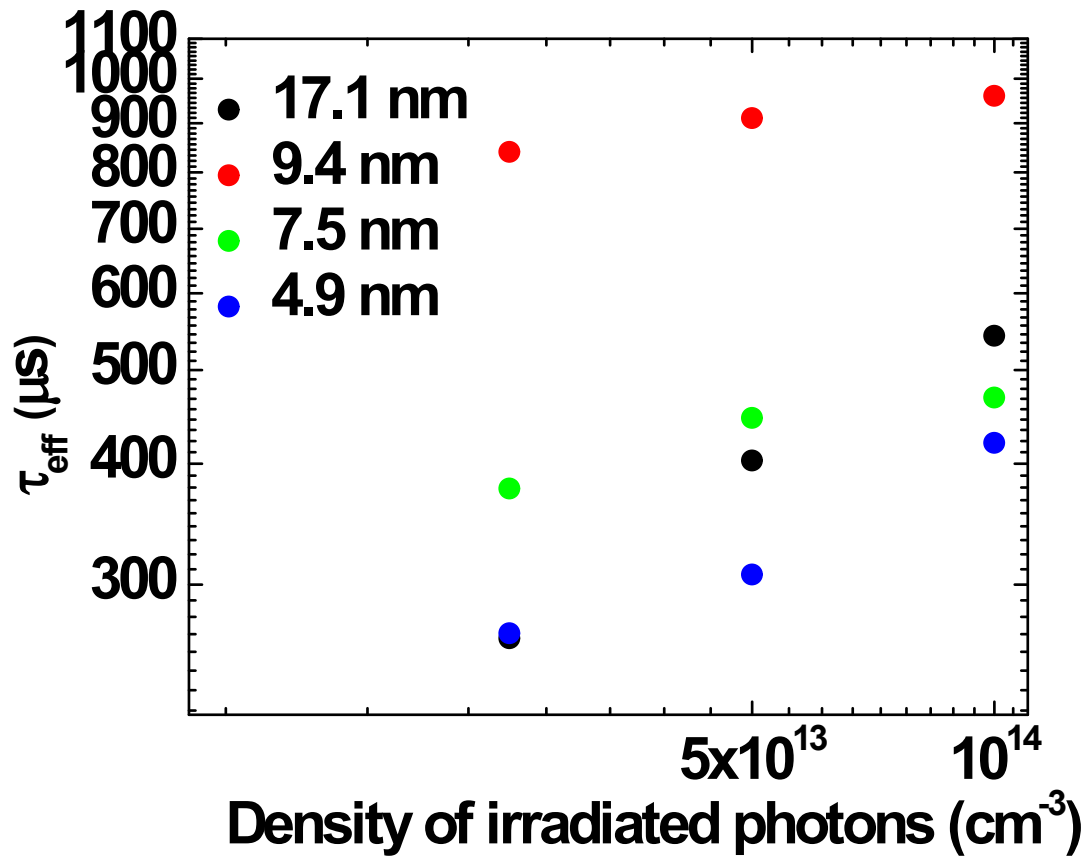


Figure S4: *J-V characteristics of solar cells as Ag/solute PEDOT:PSS/c-Si/Al*

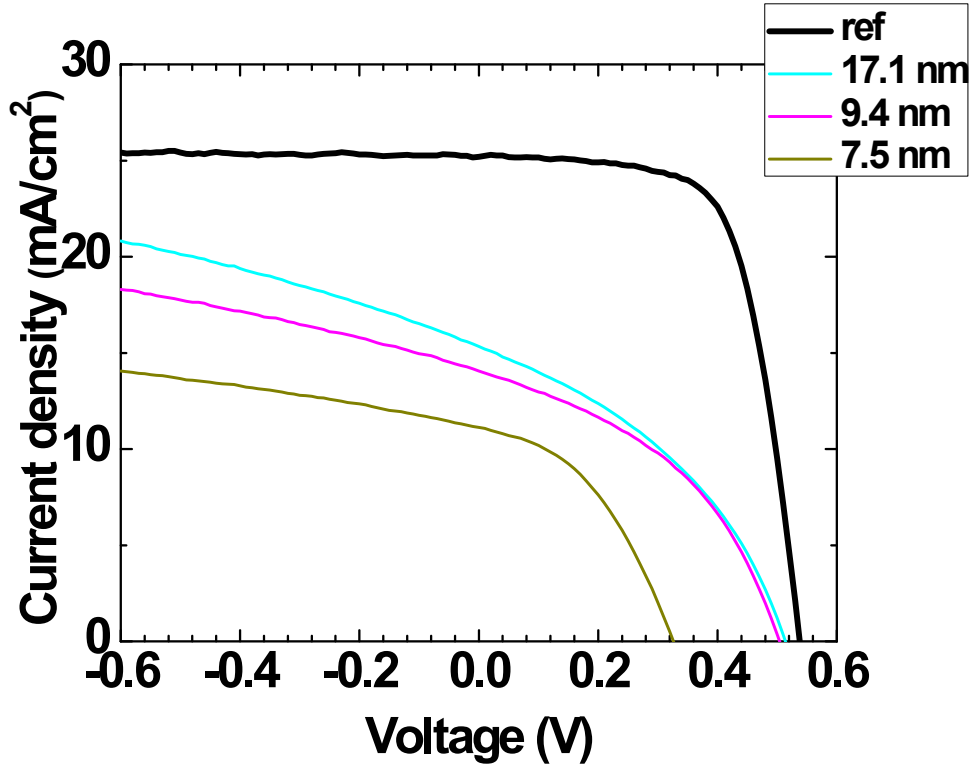


Table S1: *Key parameters extracted from thin PEDOT:PSS/ c-Si solar cells*

	$J_{sc}$ (mA/cm <sup>2</sup> )	$V_{oc}$ (V)	FF	$Eff$ (%)
<b>Ref</b>	25.97	0.550	0.656	9.37
<b>17.1 nm</b>	16.02	0.518	0.407	3.38
<b>9.4 nm</b>	15.34	0.514	0.388	3.06
<b>7.5 nm</b>	11.12	0.326	0.418	1.52

**Figure S5:** a) Band diagram of PEDOT/c-Si/solute PEDOT:PSS; Dark J-V for evaluation of  $R_S$  from hybrid c-Si with solute PEDOT:PSS at the backside.

