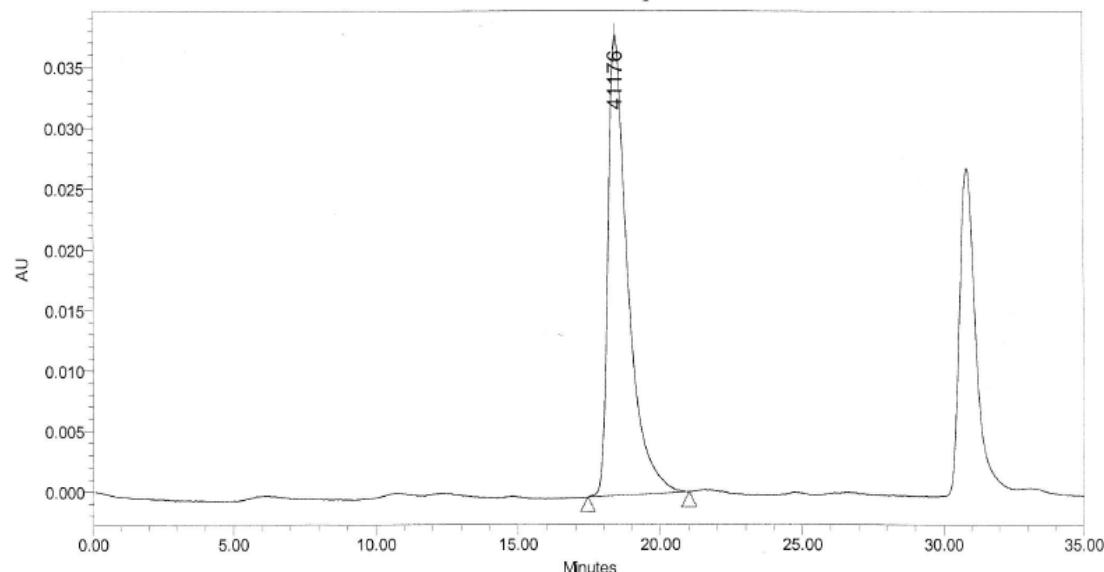


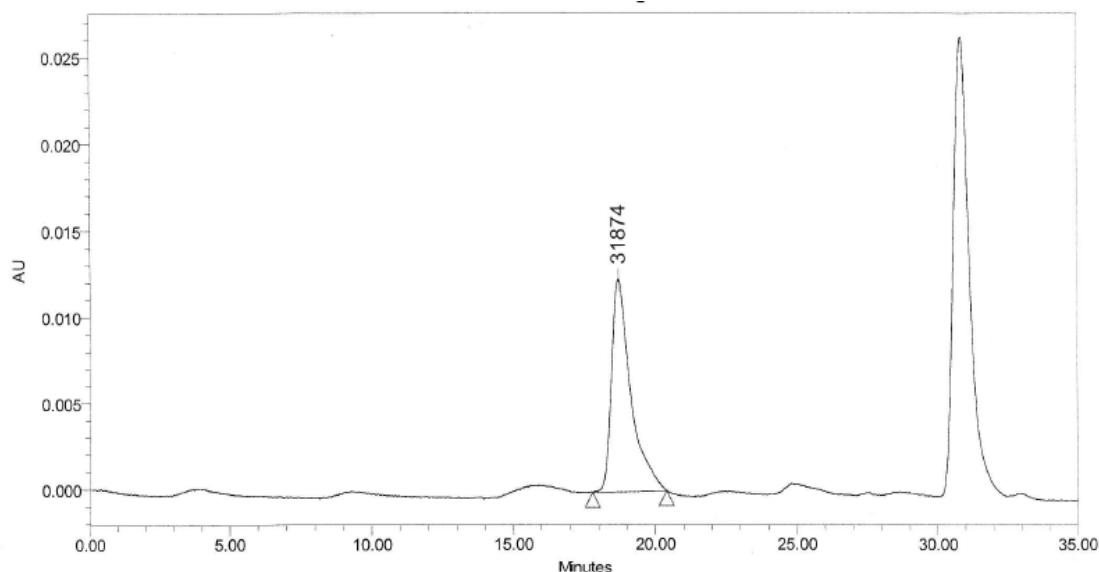
## An All-Conjugated Gradient Copolymer Approach for Morphological Control and Thermally Stable Polymer Solar Cells

Jojo A. Amonoo, Anton Li, Geoffrey E. Purdum, Mathew E. Sykes, Bingyuan Huang, Edmund F. Palermo, Anne J. McNeil, Max Shtein, Yueh-Lin Loo and Peter F. Green\*

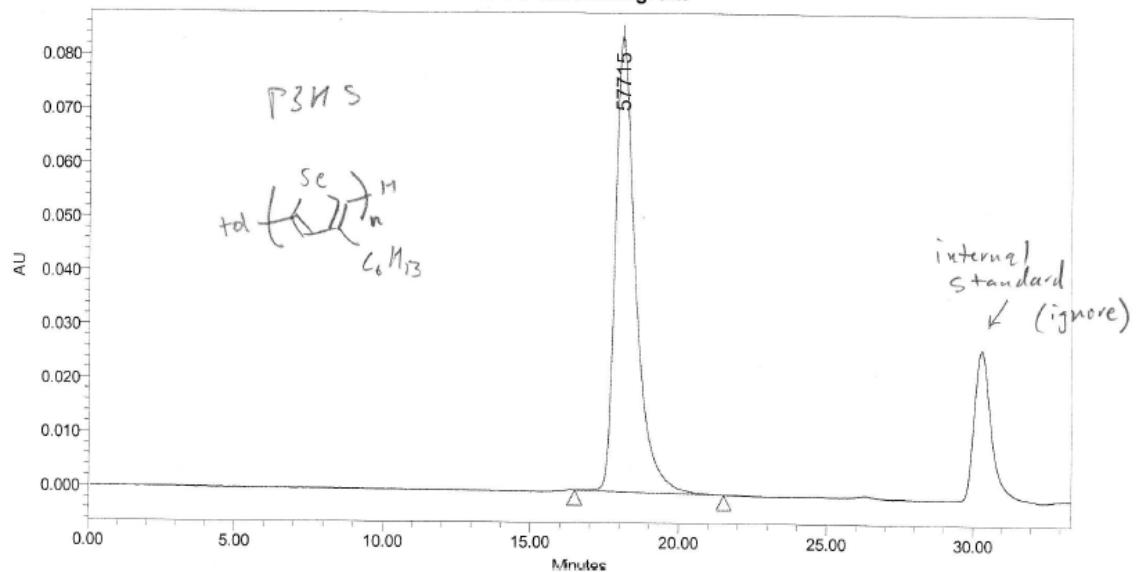
### Electronic Supporting Information (ESI)



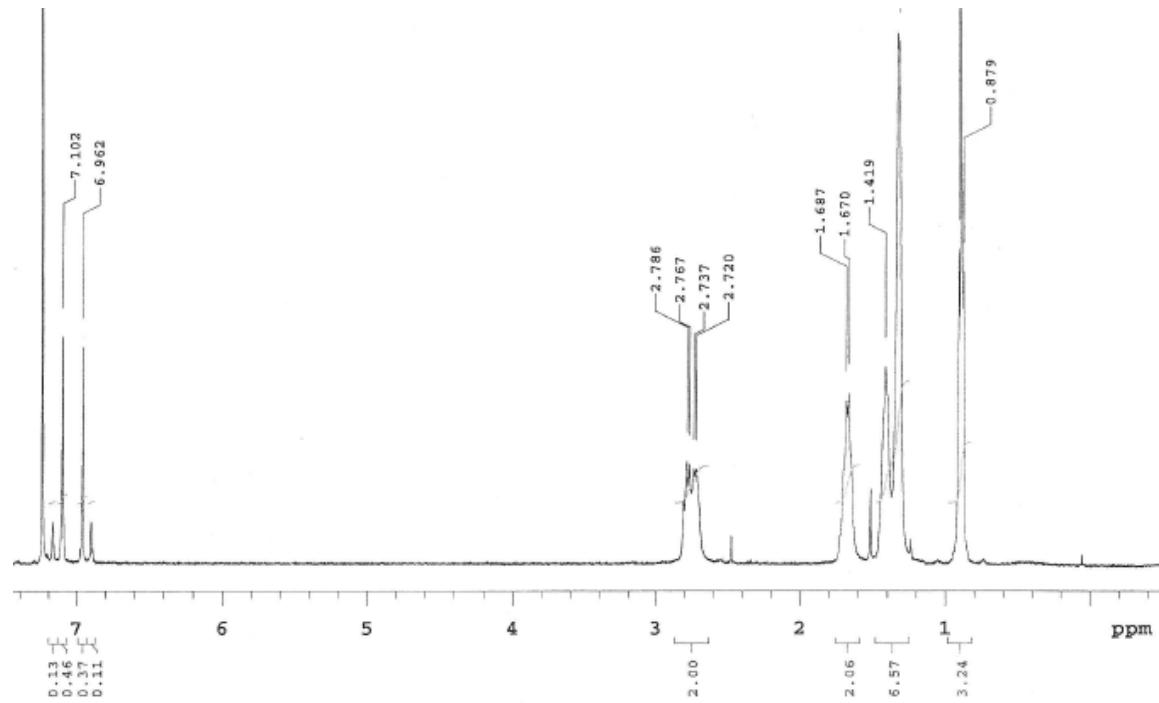
**Fig. S1.** GPC of P(3HS-*g*-3HT)



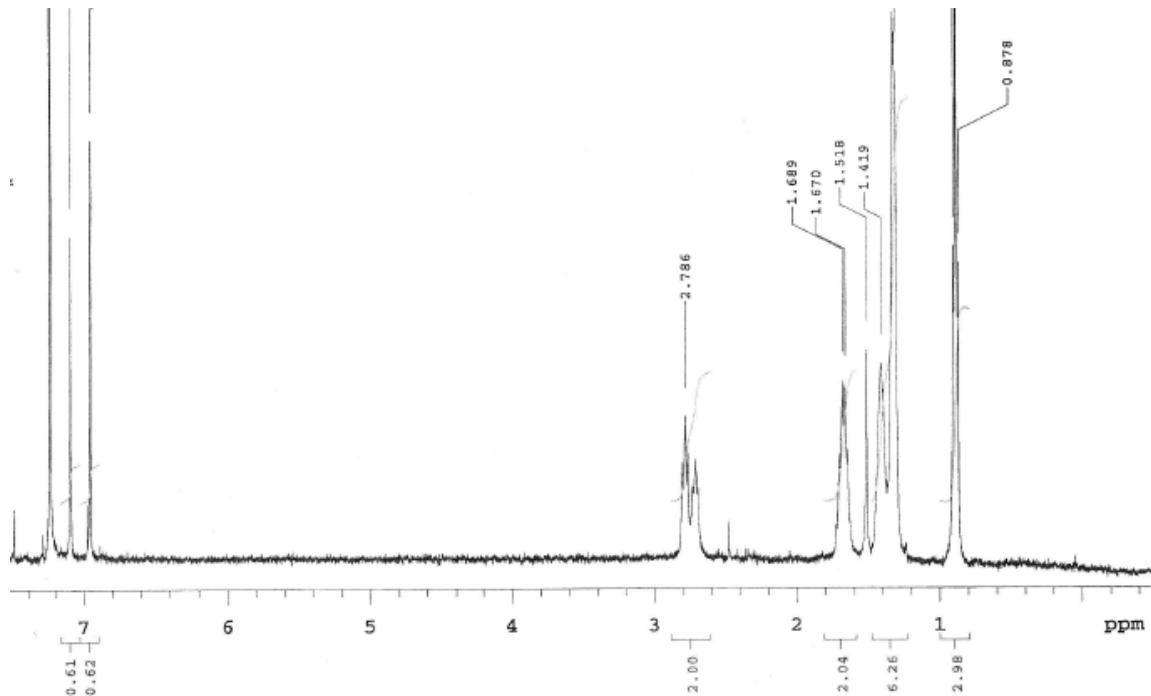
**Fig. S2.** GPC of P(3HS-*b*-3HT)



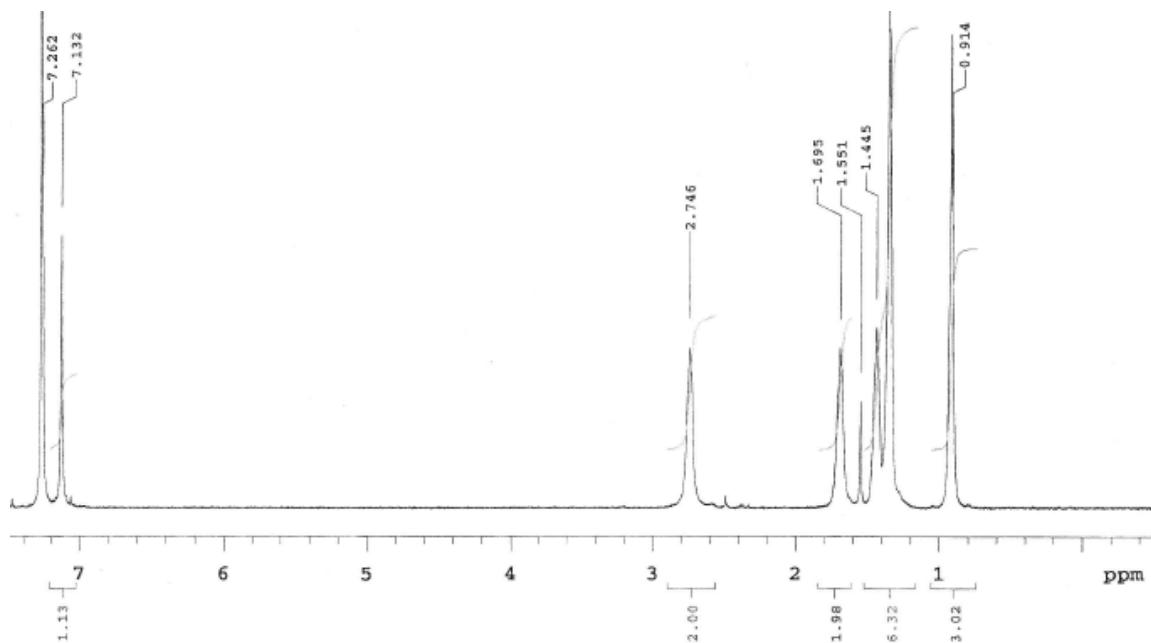
**Fig. S3.** GPC of P3HS



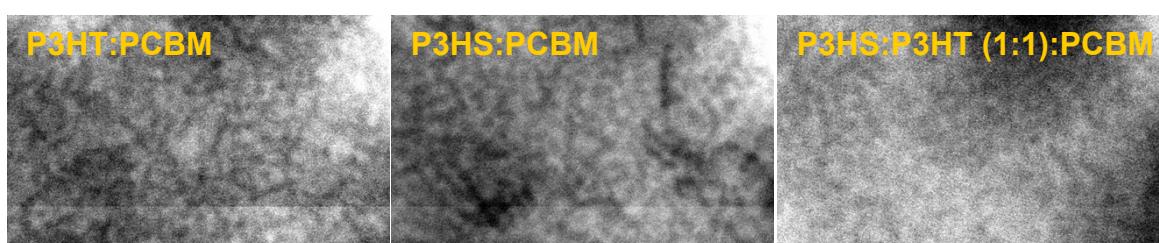
**Fig. S4.**  $^1\text{H}$  NMR spectrum of P(3HS-*g*-3HT)



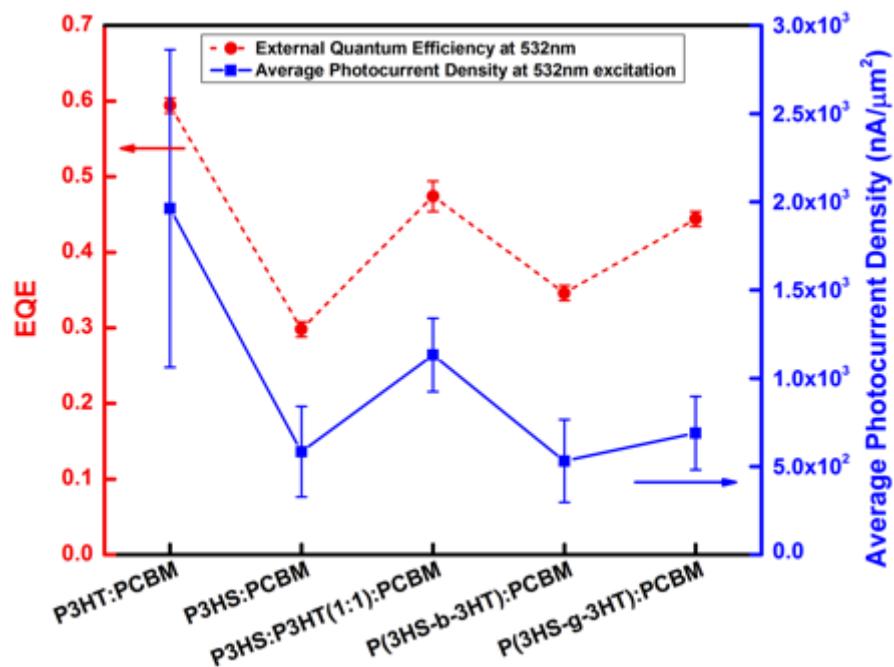
**Fig. S5.**  $^1\text{H}$  NMR spectrum of P(3HS-*b*-3HT)



**Fig. S6.**  $^1\text{H}$  NMR spectrum of P3HS



**Fig. S7.** Higher magnification EFTEM images



**Fig. S8.** External quantum efficiency (EQE) at 532 nm monochromatic illumination is plotted on the left axis for each optimum device. Average photocurrent density from photoconductive AFM measurements is plotted on right.

Polymer	Mn (kDa)	$\mathcal{D}$	% Selenophene	Regioregularity (%)
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P3HT	31.2	1.18	0	97
P3HS	23.4	1.21	100	98
P(3HS- <i>b</i> -3HT)	26.2	1.14	50	97
P(3HS- <i>g</i> -3HT)	32.6	1.18	50	97

**Table S1.** Summary of Chemical Information