Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Building a hybrid nanocomposite assembly of gold nanowires and thienyl-derivative fullerenes to enhance electron transfer in photovoltaics

Supporting Information

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Table S1. The Au $4f_{7/2}$ binding energy of Au NW only and ThCBM-adsorbed Au NW.

	Elements	Binding Energy [eV]
Au NW only	C 1s	285.00
	Au $4f_{7/2}$	83.77
ThCBM-adsorbed Au NW	C 1s	285.00
	Au $4f_{7/2}$	83.94

Table S2. Summarized photovoltaic parameters of bulk heterojunction solar cells using P3HT:ThCBM-adsorbed Au NW with variable concentrations of gold nanowires under AM 1.5G illumination conditions.

Photoactive layers	J_{SC} (mA/cm^2)	V_{OC} (V)	FF (%)	PCE (%)
P3HT:ThCBM-adsorbed Au NW (ca. 1 x 10^7 /ml)	7.24	0.59	66.2	2.81
P3HT:ThCBM-adsorbed Au NW (ca. 1 x 10^8 /ml)	7.66	0.61	67.2	3.12
P3HT:ThCBM-adsorbed Au NW (ca. 1 x 10^9 /ml)	7.31	0.61	66.5	2.95

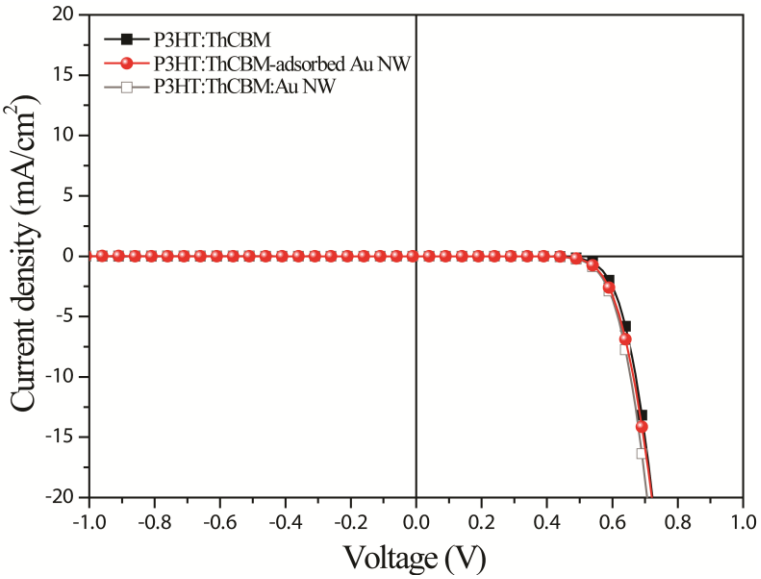

Figure S1. *J-V* characteristics of bulk heterojunction solar cells using P3HT:ThCBM, P3HT:ThCBM-adsorbed Au NW and P3HT:ThCBM:Au NW under dark conditions.

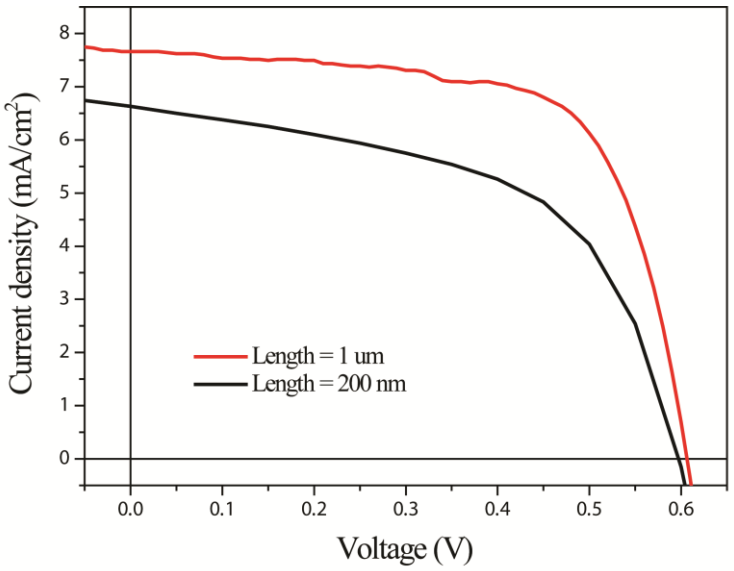

Figure S2. *J-V* characteristics of bulk heterojunction solar cells using P3HT:ThCBM-adsorbed Au NW with 1 μm and 200 nm length under illumination conditions.

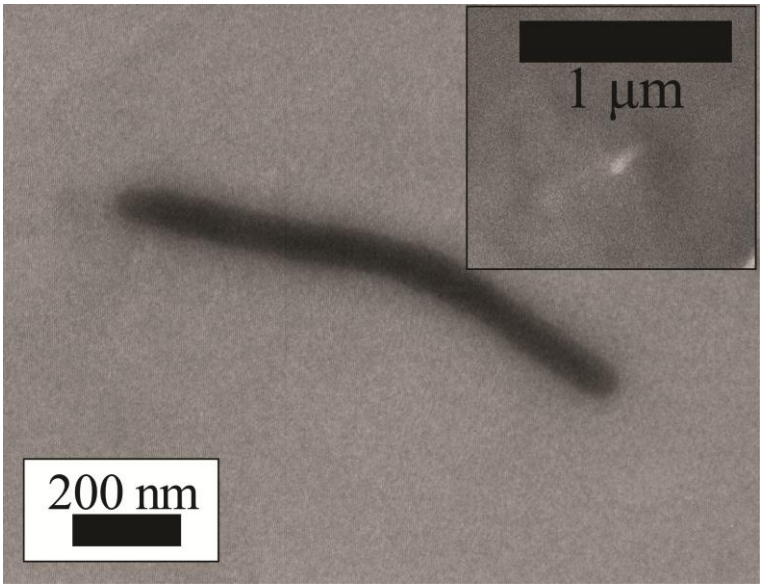

Figure S3. TEM image for the photoactive layer using P3HT:ThCBM-adsorbed Au NW; inset is its top-viewed SEM image.

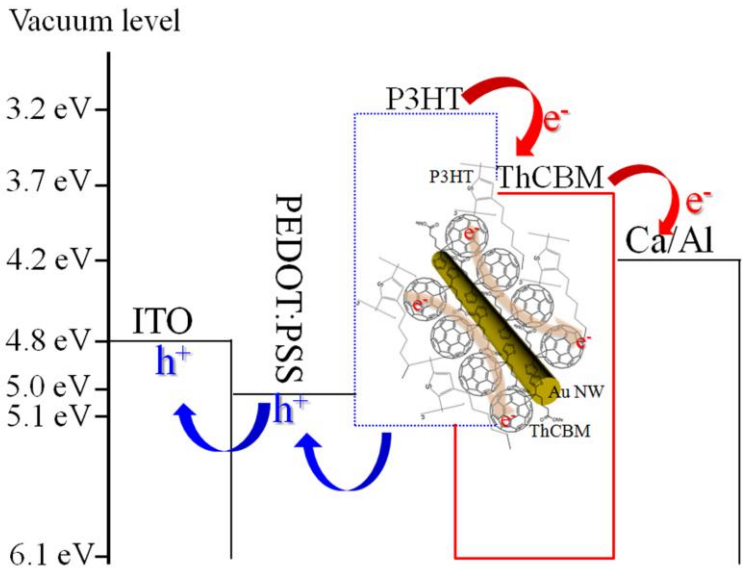

Figure S4. Energy level diagram of our bulk heterojunction solar cell using ThCBM-adsorbed Au NW nanocomposites.