Supporting Information For Alcohol Soluble Amino-Functionalized Organoplatinum(II) Complex as a Cathode Interlayer for High Efficiency Polymer Solar Cells

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Content

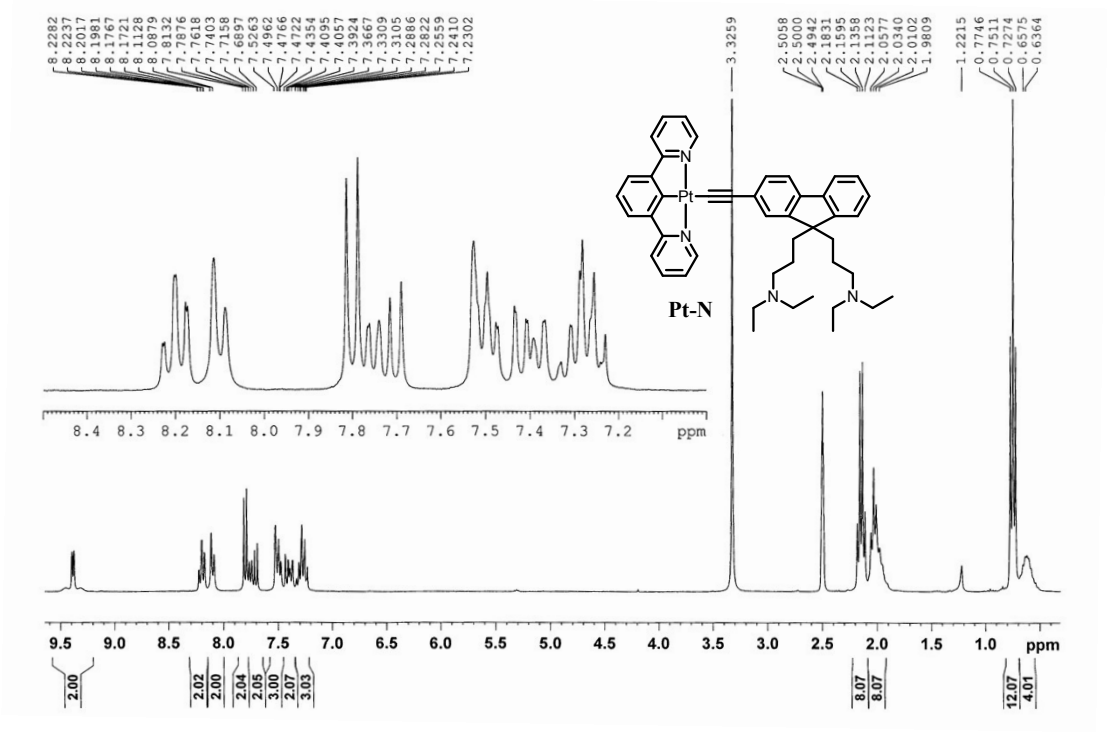

Figure S1. The ^{1}H NMR of the Pt-N.

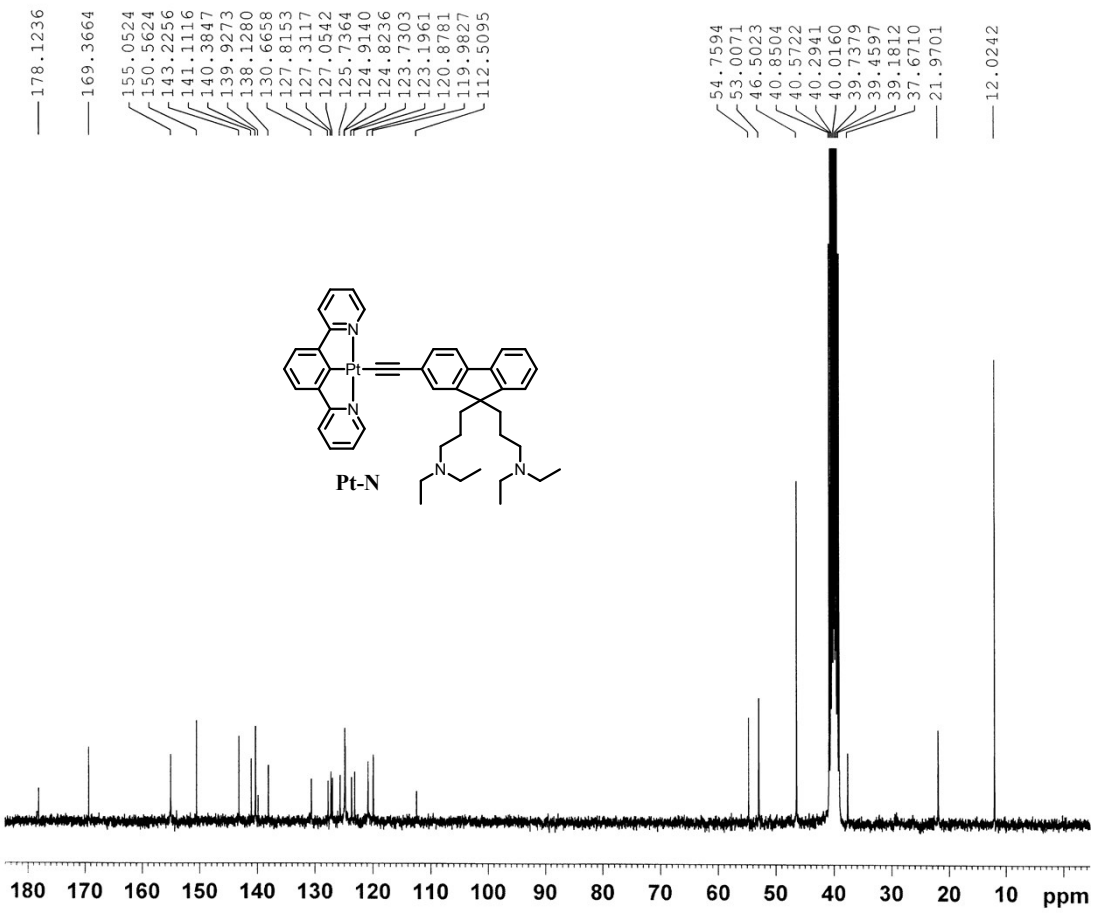

Figure S2. The ^{13}C NMR of the Pt-N

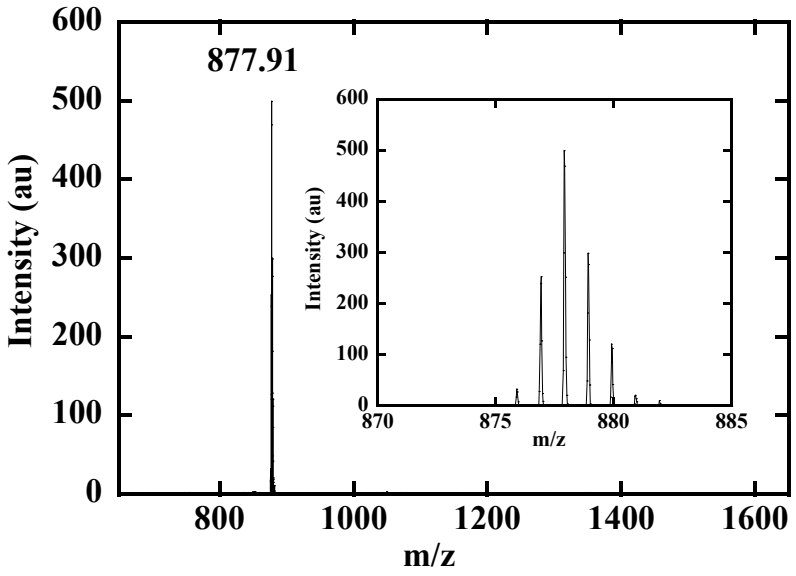

Figure S3. The MALDI-TOF MS of the Pt-N.

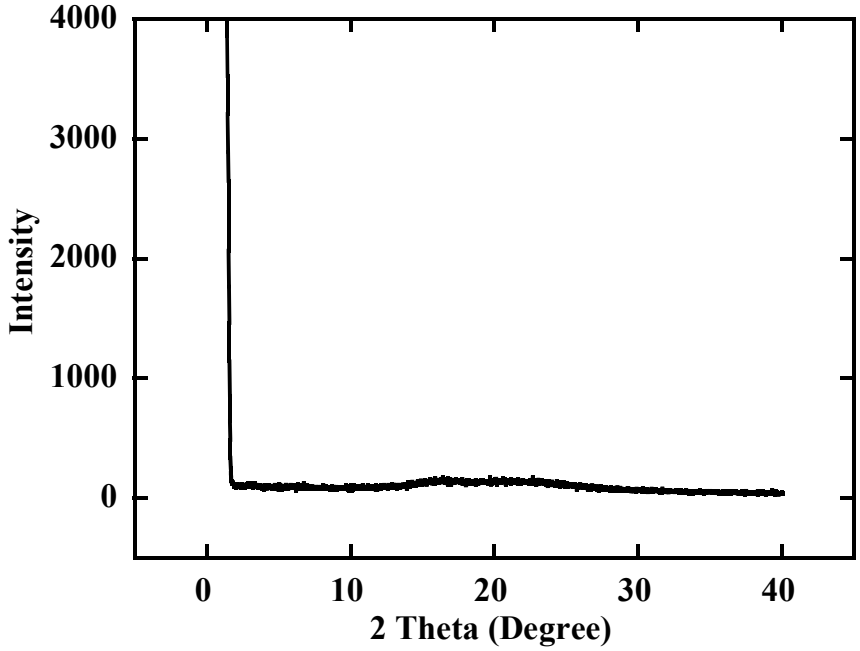

Figure S4. The powder X-ray diffraction curves of the Pt-N.

Table S1. Photovoltaic properties of the PSCs with various interlayers under AM 1.5G irradiation (100 mW cm^{-2}). Device configuration: ITO/PEDOT:PSS/PTB7:$PC_{71}BM$/interlayer/Al. The device performances data generated from 8 devices.

Cathode	PCE (%)	J_{sc} (mA cm^{-2})	V_{oc} (V)	FF (%)
PFN/Al	8.20±0.07	16.18±0.24	0.74±0.01	68.46±1.1
Pt-N/Al	8.89±0.09	16.36±0.26	0.75±0.01	72.39±1.2
CH_3OH/Al	5.54±0.06	16.30±0.25	0.63±0.01	53.96±0.9
Bare Al	3.62±0.04	15.65±0.20	0.53±0.01	43.58±0.8

Table S2. The tested J_{sc} and calculated J_{sc} of the PSCs with various interlayers under AM 1.5G irradiation (100 mW cm^{-2}).

Cathode	Bare Al	CH_3OH	PFN	Pt-N
Tested J_{sc} (mA cm^{-2})[a]	15.65	16.30	16.18	16.36
Calculated J_{sc} (mA cm^{-2})[b]	15.05	15.52	15.56	15.44

[a] J_{sc} deduced from the *J-V* curves (see **Figure 3a**), [b] J_{sc} deduced from the EQE curves (see **Figure 4**).

Electrochemical Cyclic Voltammetry (CV)

Electrochemical cyclic voltammetry measurements were carried out using a CHI800 electro-chemical workstation equipped with an indium tin oxide (ITO) working electrode, a saturated calomel electrode as the reference electrode, and a Pt sheet counter electrode. The measurements were done in anhydrous acetonitrile with tetrabutylammonium hexafluorophosphate (0.1 M) as the supporting electrolyte under an argon atmosphere at a scan rate of 50 mV/s. The potential of the saturated calomel reference electrode was internally calibrated using the ferrocene/ferrocenium redox couple (Fc/Fc^+), which has a known reduction potential of -4.8 eV.[1] The HOMO and LUMO energy levels were calculated by the following equations: $E_{HOMO} = -(E_{ox} + 4.80)$ eV, $E_{LUMO} = (E_{HOMO} + E_g)$ eV.[1]

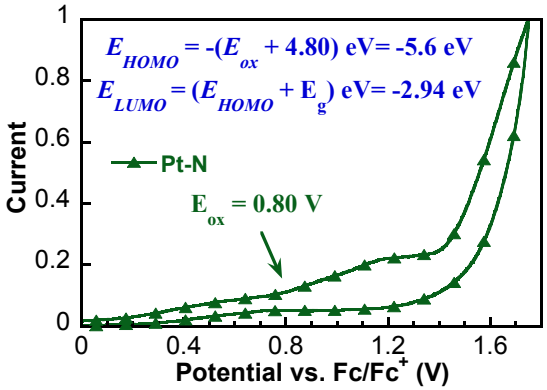

Figure S5: CV curves of the Pt-N measured in 0.1 M Bu4NPF6 versus Fc/Fc^+ in acetonitrile.

Reference:

1. Y. F. Li, Y. Cao, J. Gao, D. L. Wang, G. Yu, A. J. Heeger. *Synth. Met.*, 1999, **99**, 243.