Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.
This journal is © The Royal Society of Chemistry 2021

Effect of dendron structures on the luminescent and charge transporting properties of solution processed OLEDs

Mile Gao,[1] Van T. N. Mai,[1] Junhyuk Jang,[1] Chandana Sampath Kumara Ranasinghe,[1] Ronan Chu,[1] Paul L. Burn,[1]* Ian R. Gentle,[1] Almantas Pivrikas,[2] Paul E. Shaw[1]

[1]Centre for Organic Photonics & Electronics, The School of Chemistry and Molecular Biosciences, The University of Queensland, Queensland, Australia, 4072.

[2]Physics Department, Murdoch University, Perth, Western Australia 6150.

*Email: p.burn2@uq.edu.au

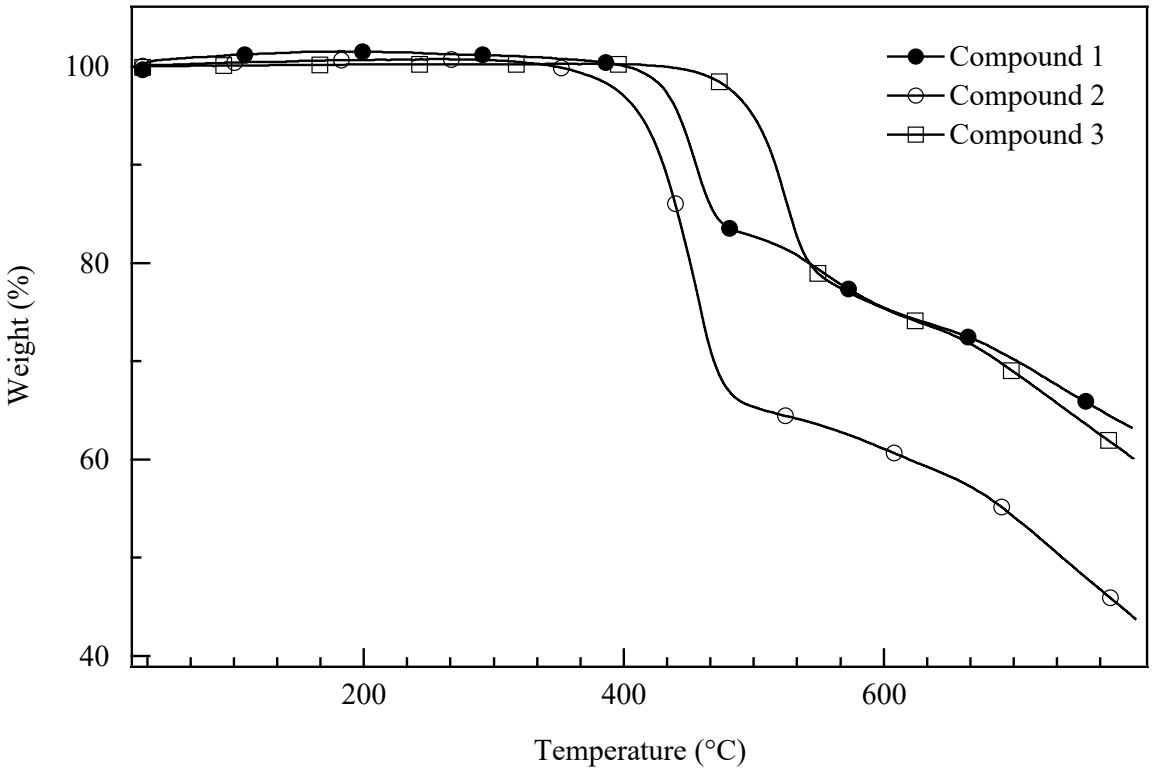


Fig. S1 *Thermogravimetric analysis (TGA) trace of the hosts* ***1****,* ***2****, and* ***3*** *with a heating rate of 10 °C min^{-1} under nitrogen.*

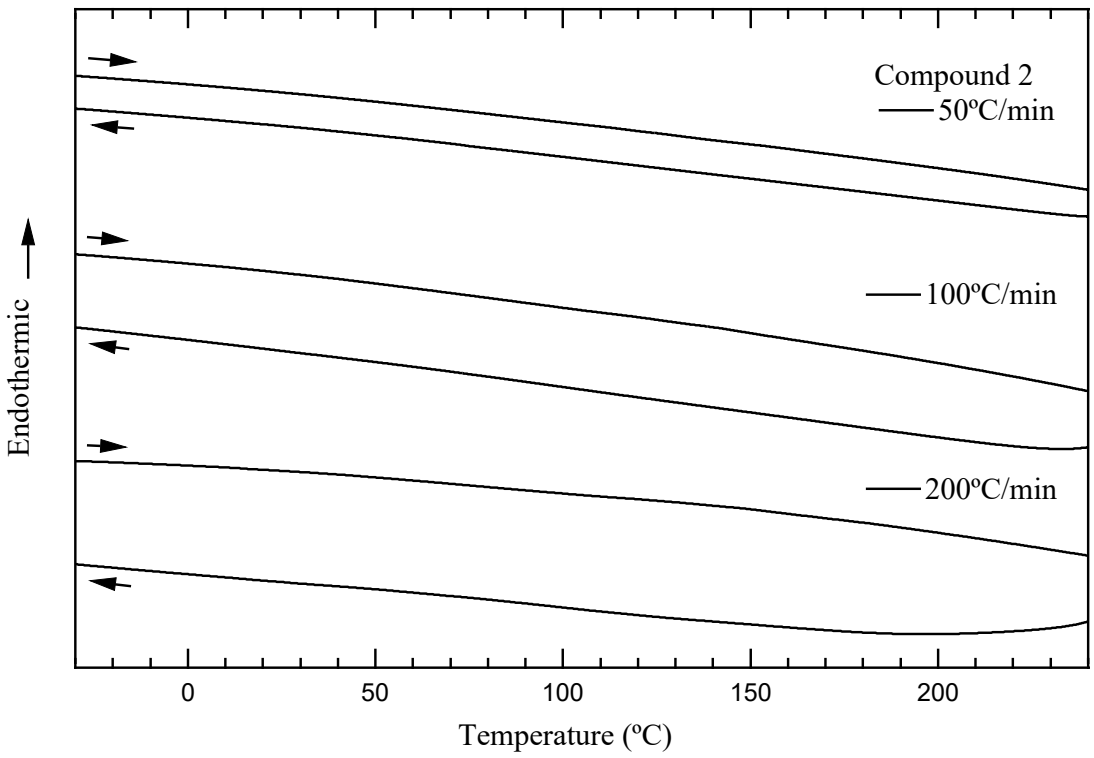


Fig. S2 *Heat flow traces (for the 2nd heating cyle) of* ***2*** *scanned from -30 °C to 240 °C with scan rates of 50 °C min^{-1} and 100 °C min^{-1}.*

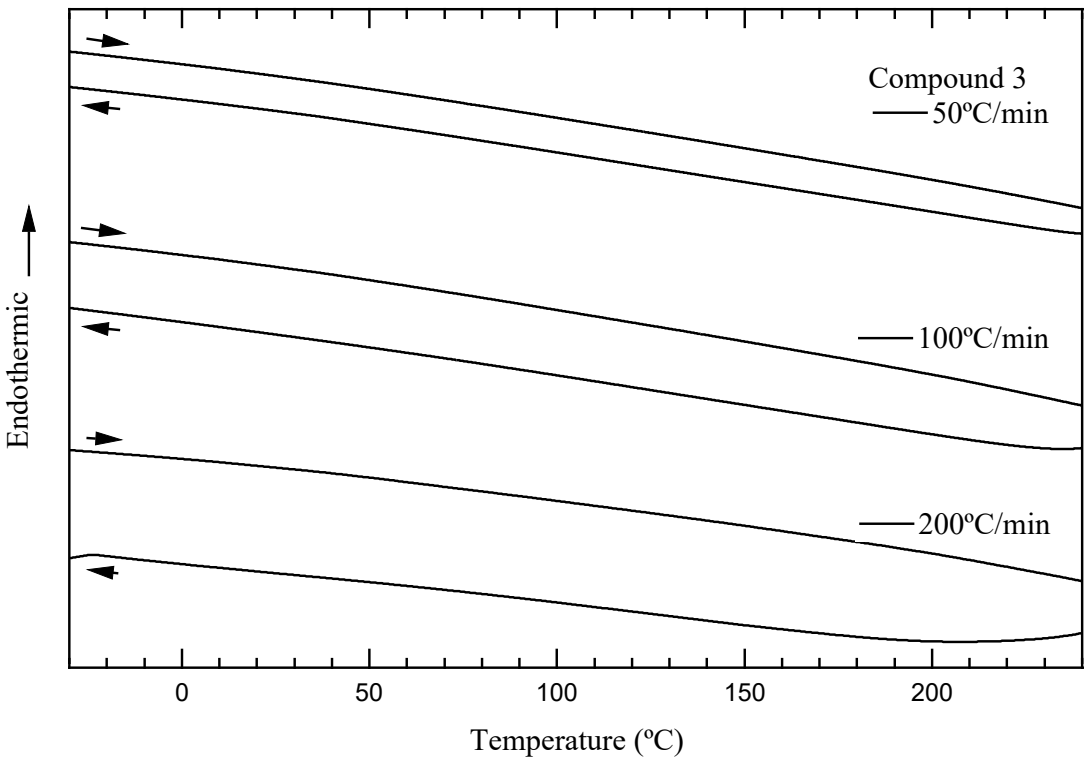


Fig. S3 *Heat flow traces (for the 2nd heating cyle) of* ***3*** *scanned from -30 °C to 240 °C with scan rates of 50 °C min^{-1}, 100 °C min^{-1}, and 200 °C min^{-1}.*

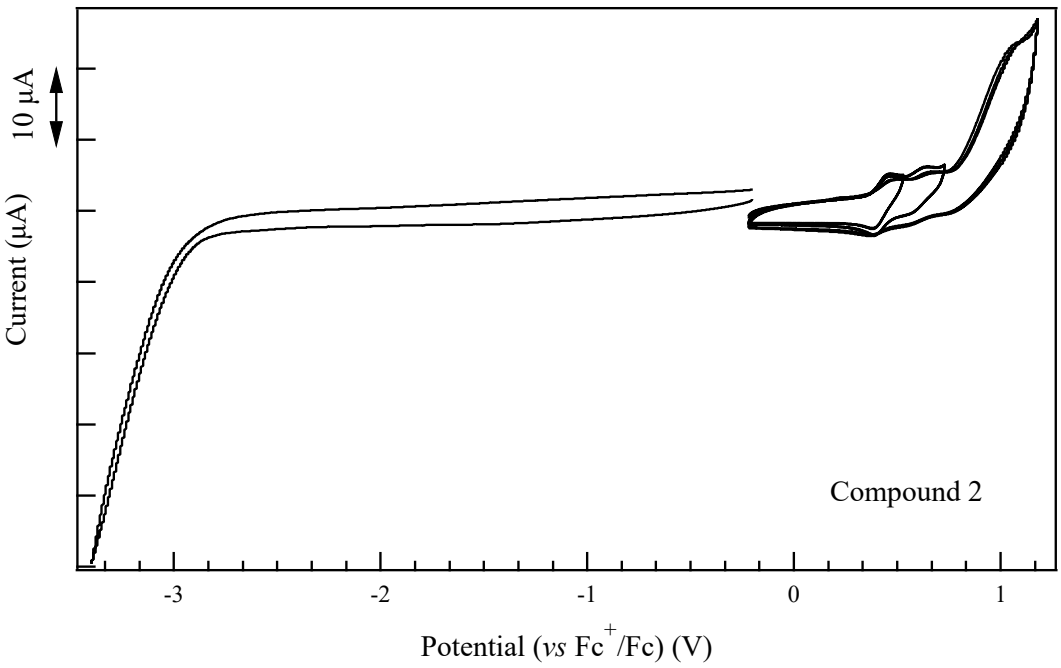


Fig. S4 *Cyclic voltammograms of* ***2*** *referenced to the ferrocene/ferrocenium couple measured in tetrahydrofuran (for reduction) and dichloromethane (for oxidation) at a 1 mM concentration. Measurements were conducted with a 0.1 M tetra-n-butylammonium perchlorate as the electrolyte; working electrode = glassy carbon; reference electrode = 0.01 M* $AgNO_3$ *in acetonitrile; counter electrode = platinum; scan rate = 100 mV* s^{-1} *(for reduction) and 50 mV* s^{-1} *(for oxidation).*

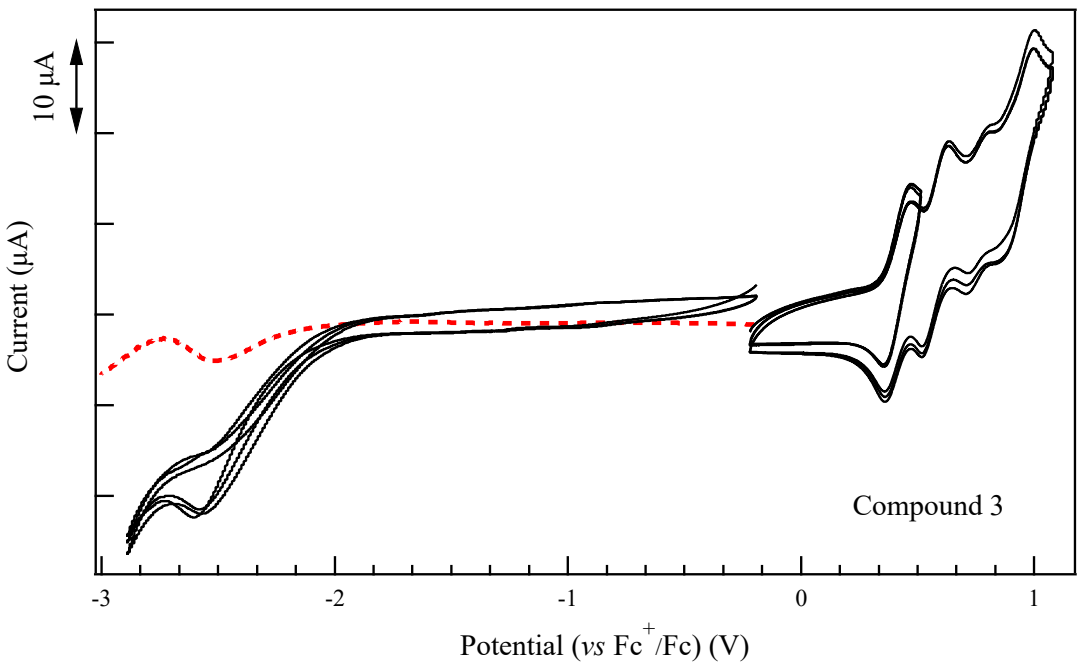


Fig. S5 *Cyclic voltammograms of* ***3*** *referenced to the ferrocene/ferrocenium couple measured in tetrahydrofuran (for reduction) and dichloromethane (for oxidation) at a 1 mM concentration. Measurements were conducted with a 0.1 M tetra-n-butylammonium perchlorate as the electrolyte; working electrode = glassy carbon; reference electrode = 0.01 M* $AgNO_3$ *in acetonitrile; counter electrode = platinum; scan rate = 50 mV* s^{-1} *(for reduction) and 100 mV* s^{-1} *(for oxidation).*

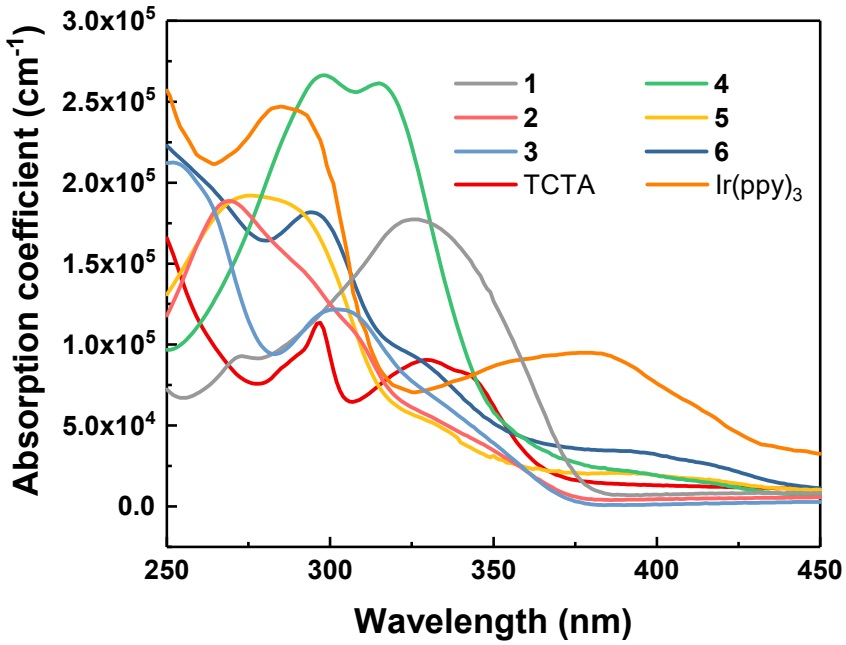
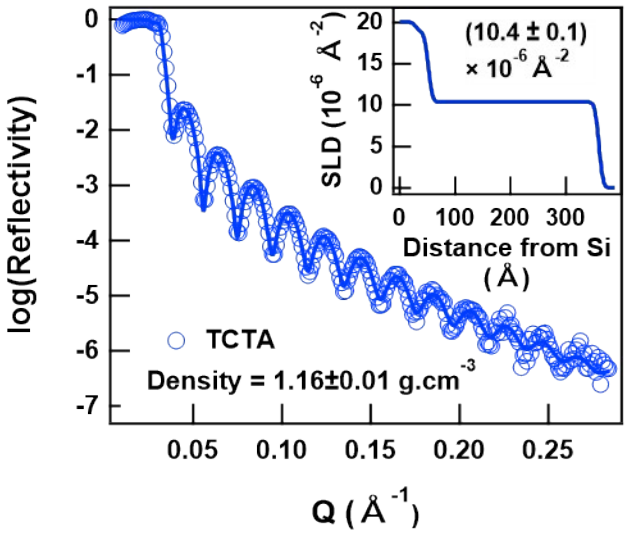
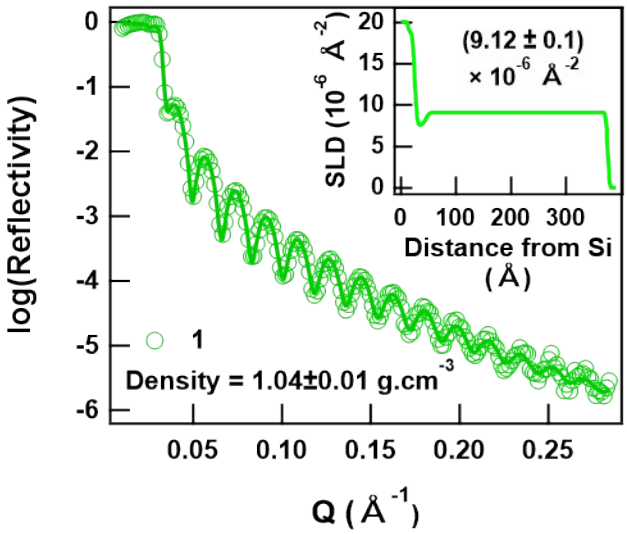


Fig. S6 *Absorption coefficients of the materials.*

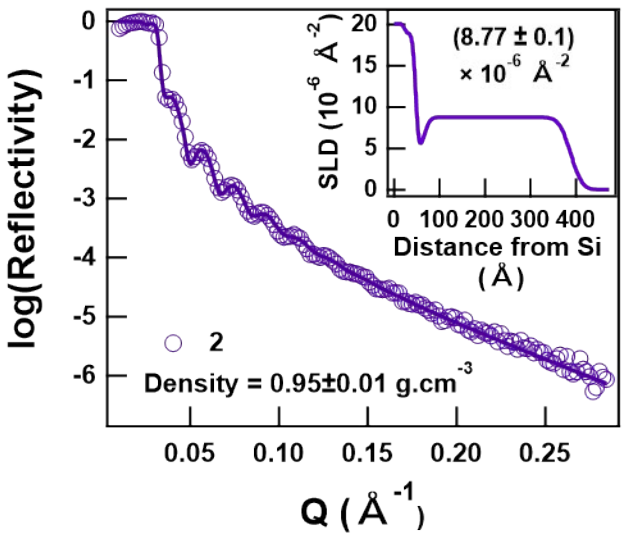
(a)


log(Reflectivity)
Q (Å^{-1})
TCTA
Density = 1.16±0.01 g.cm^{-3}
SLD (10^{-6} Å^{-2})
(10.4 ± 0.1)
× 10^{-6} Å^{-2}
Distance from Si
(Å)

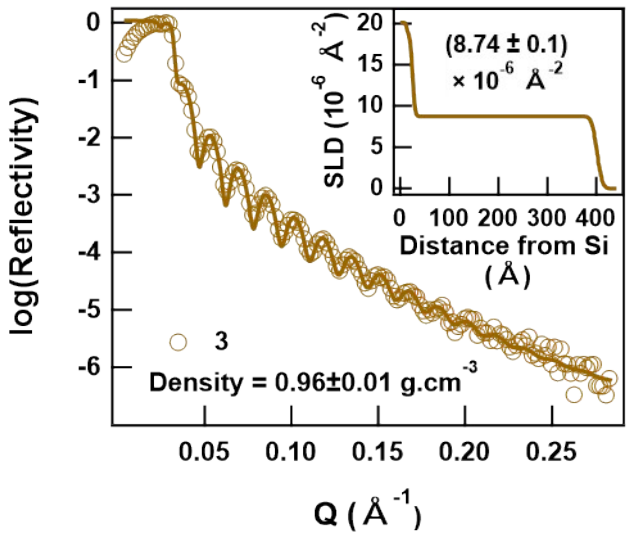
(b)


log(Reflectivity)
Q (Å^{-1})
1
Density = 1.04±0.01 g.cm^{-3}
SLD (10^{-6} Å^{-2})
(9.12 ± 0.1)
× 10^{-6} Å^{-2}
Distance from Si
(Å)

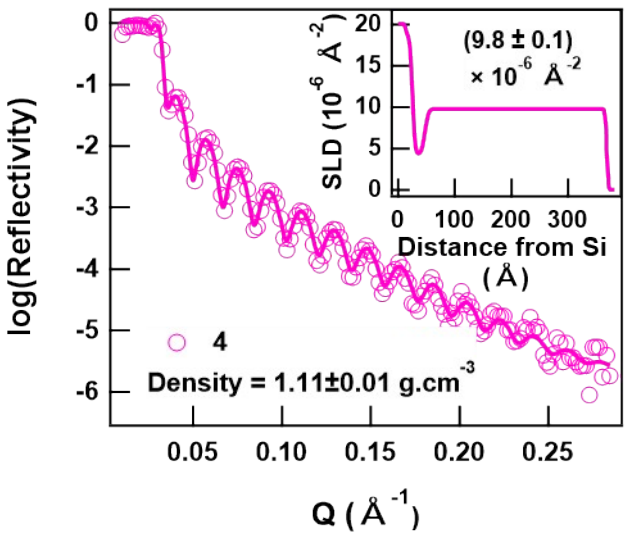
(c)


log(Reflectivity)
Q (Å^{-1})
2
Density = 0.95±0.01 g.cm^{-3}
SLD (10^{-6} Å^{-2})
(8.77 ± 0.1)
× 10^{-6} Å^{-2}
Distance from Si
(Å)

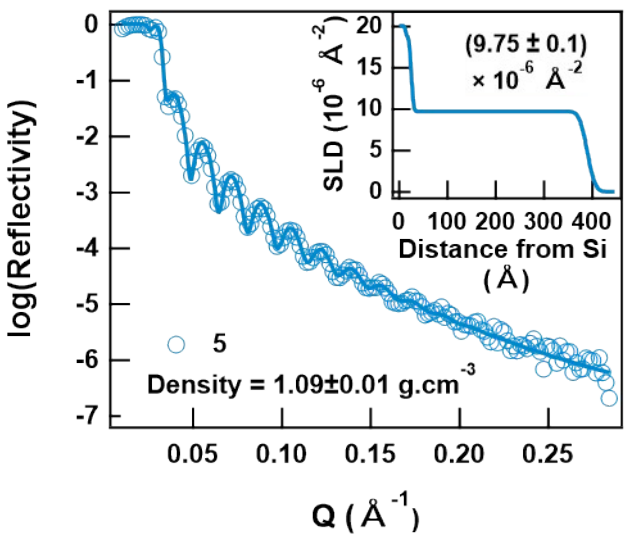
(d)


log(Reflectivity)
Q (Å^{-1})
3
Density = 0.96±0.01 g.cm^{-3}
SLD (10^{-6} Å^{-2})
(8.74 ± 0.1)
× 10^{-6} Å^{-2}
Distance from Si
(Å)

(e)


log(Reflectivity)
Q (Å^{-1})
4
Density = 1.11±0.01 g.cm^{-3}
SLD (10^{-6} Å^{-2})
(9.8 ± 0.1)
× 10^{-6} Å^{-2}
Distance from Si
(Å)

(f)


log(Reflectivity)
Q (Å^{-1})
5
Density = 1.09±0.01 g.cm^{-3}
SLD (10^{-6} Å^{-2})
(9.75 ± 0.1)
× 10^{-6} Å^{-2}
Distance from Si
(Å)

(g)

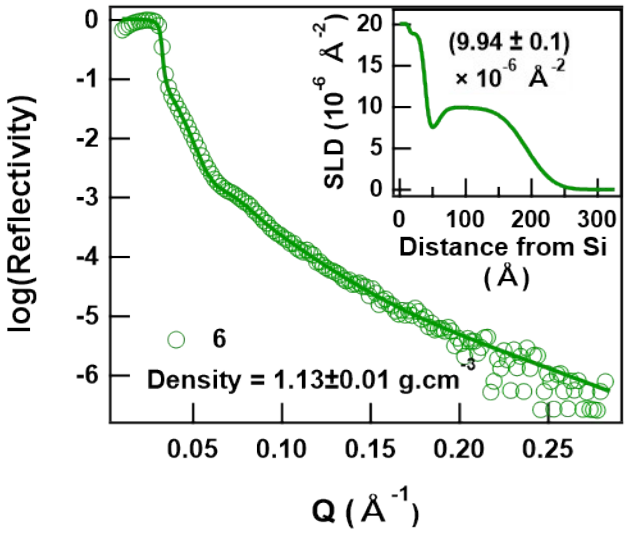
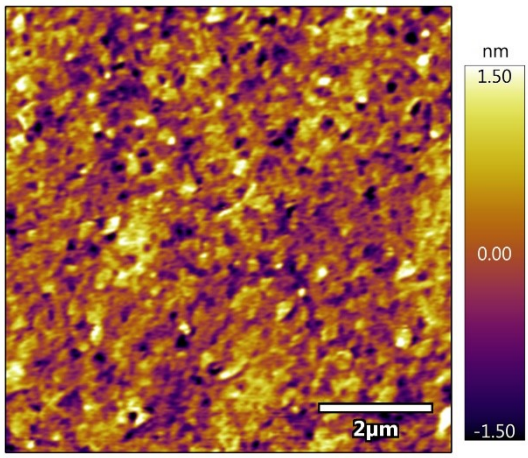
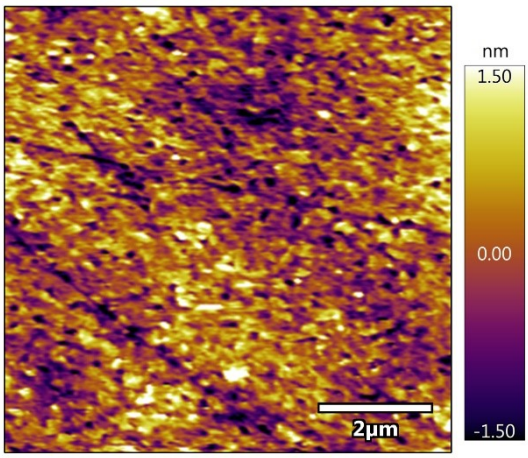


Fig. S7 *X-ray reflectometry (XRR) profiles and corresponding scattering length density (SLD) versus thickness plots (insets) for (a) TCTA, (b)* ***1****, (c)* ***2****, (d)* ***3****, (e)* ***4****, (f)* ***5****, (g)* ***6****. Individual points represent experimental data and solid lines indicate the fitting curves.*

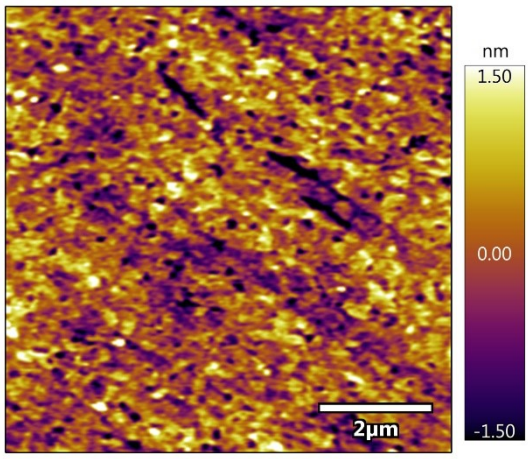
Neat **1**



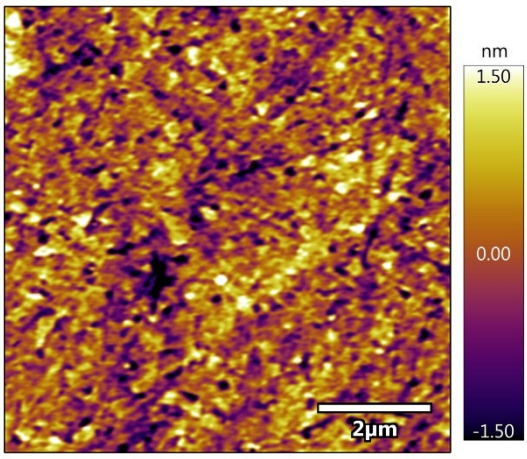
Neat **4**



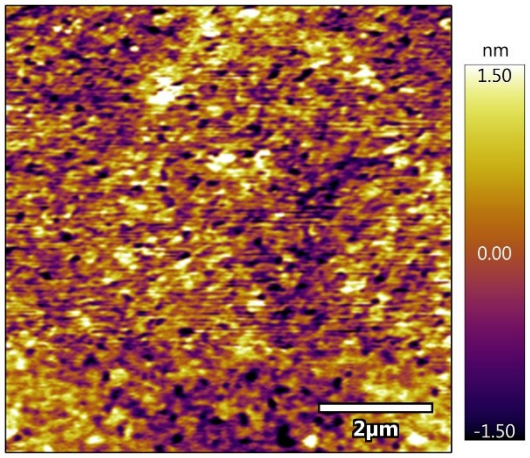
11 mol% **1** & **4** blend



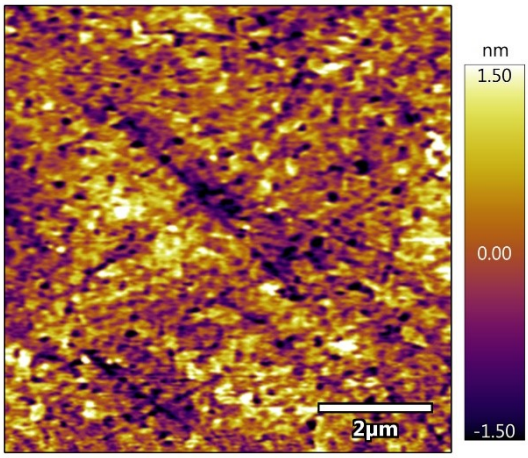
22 mol% **1** & **4** blend



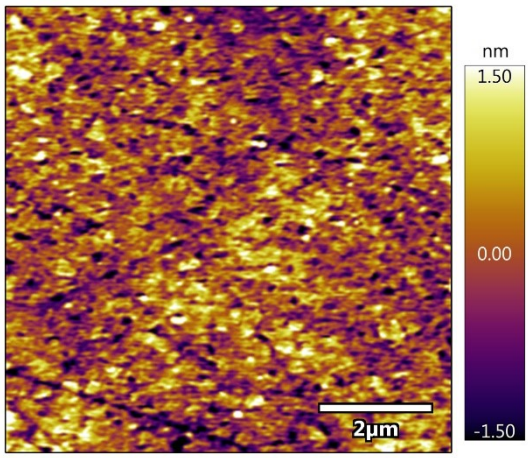
Neat **2**



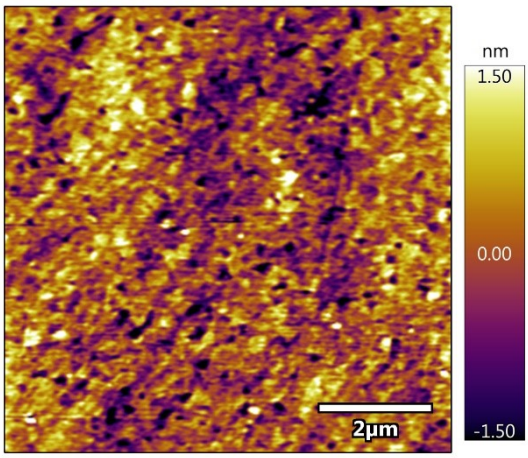
Neat **5**



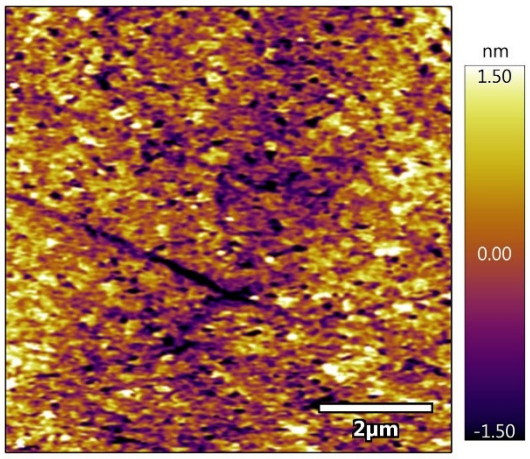
11 mol% **2** & **5** blend



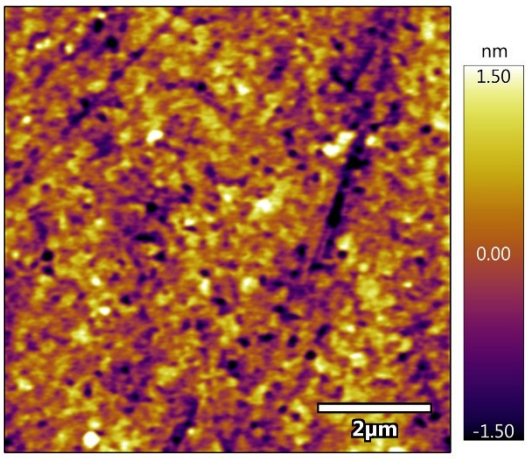
22 mol% **2** & **5** blend



Neat **3**



Neat **6**



11 mol% **3** & **6** blend

22 mol% **3** & **6** blend

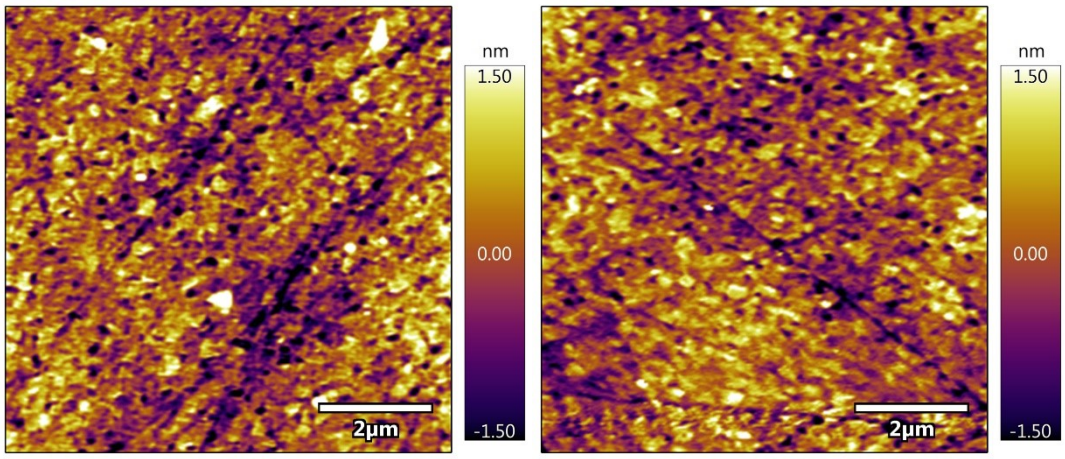


Fig. S8 *AFM images of the neat and blend films.*

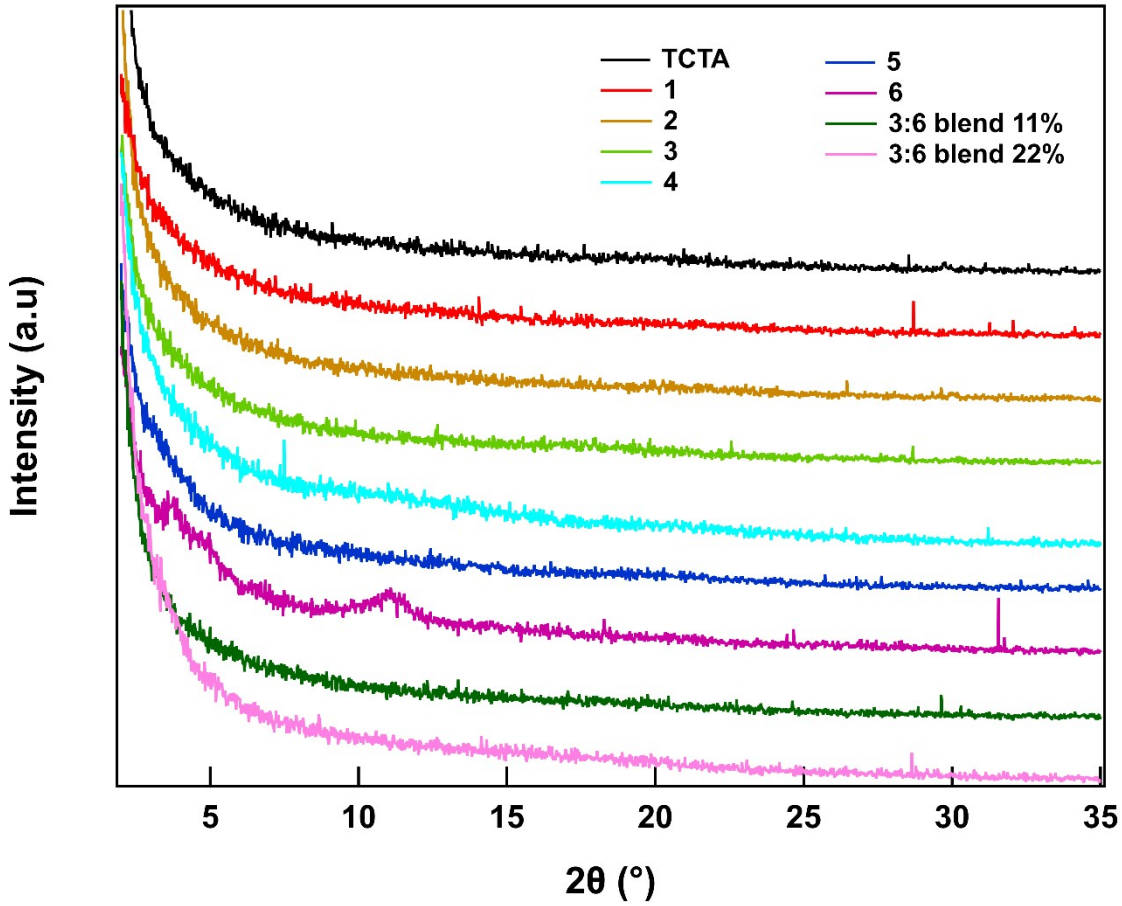


Fig. S9 *Grazing incidence X-ray diffraction spectra of compounds. Data has been offset for clarity and the* ***3****:****6*** *blends are in mol%.*