

Supporting Information for

Zero-Charged Catanionic Lamellar Liquid Crystals Doped with Fullerene C₆₀ for Potential Applications in Tribology

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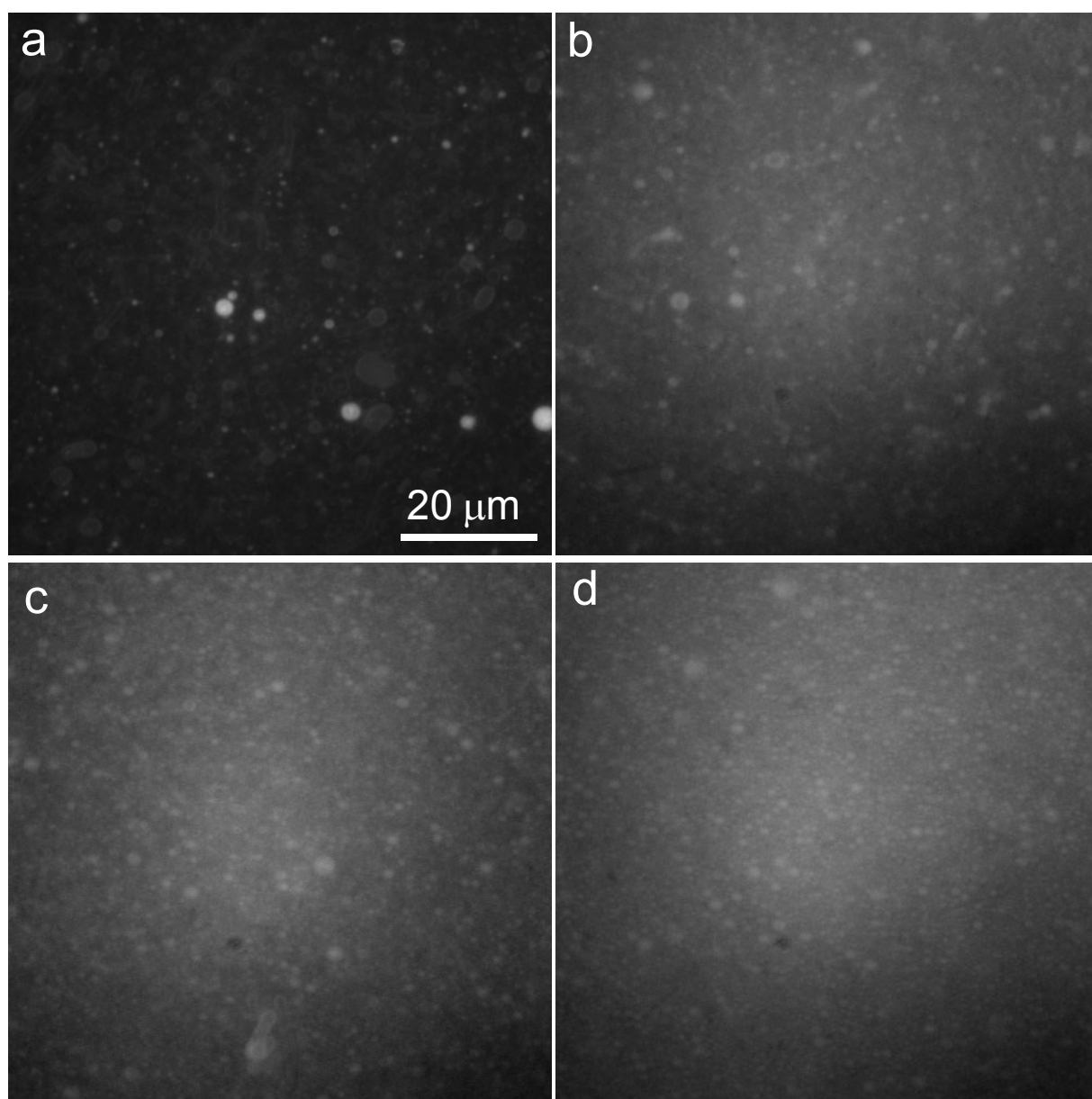


Fig. S1 Fluorescence microscopy images for TTAO aqueous solutions with concentrations to be 0.5 wt% (a), 2.5 wt% (b), 3 wt% (c) and 4 wt% (d), respectively. The magnification of image b-d is the same with image a.

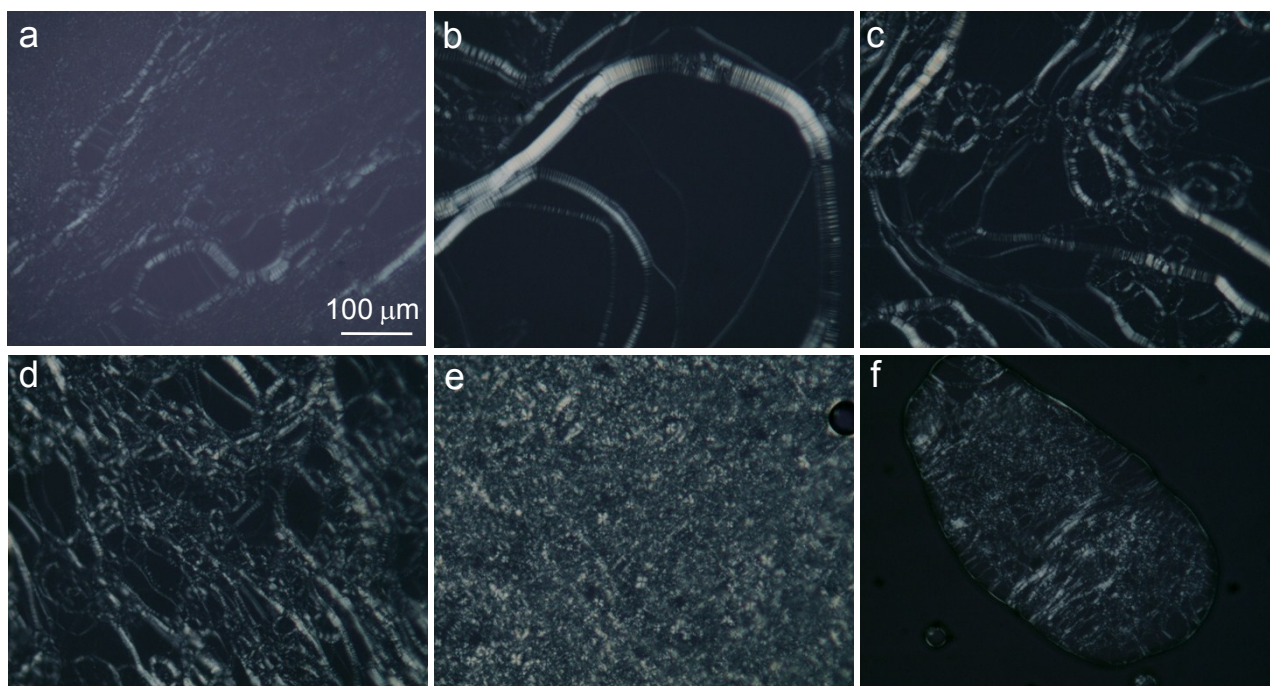


Fig. S2 Polarized microscopy images of the samples with c_{TTA0} to be 40 wt% (a), 60 wt% (b), 70 wt% (c), 80 wt% (d), 90 wt% (e) and 100 wt% (f), respectively. The magnification of image b-f is the same with image a.

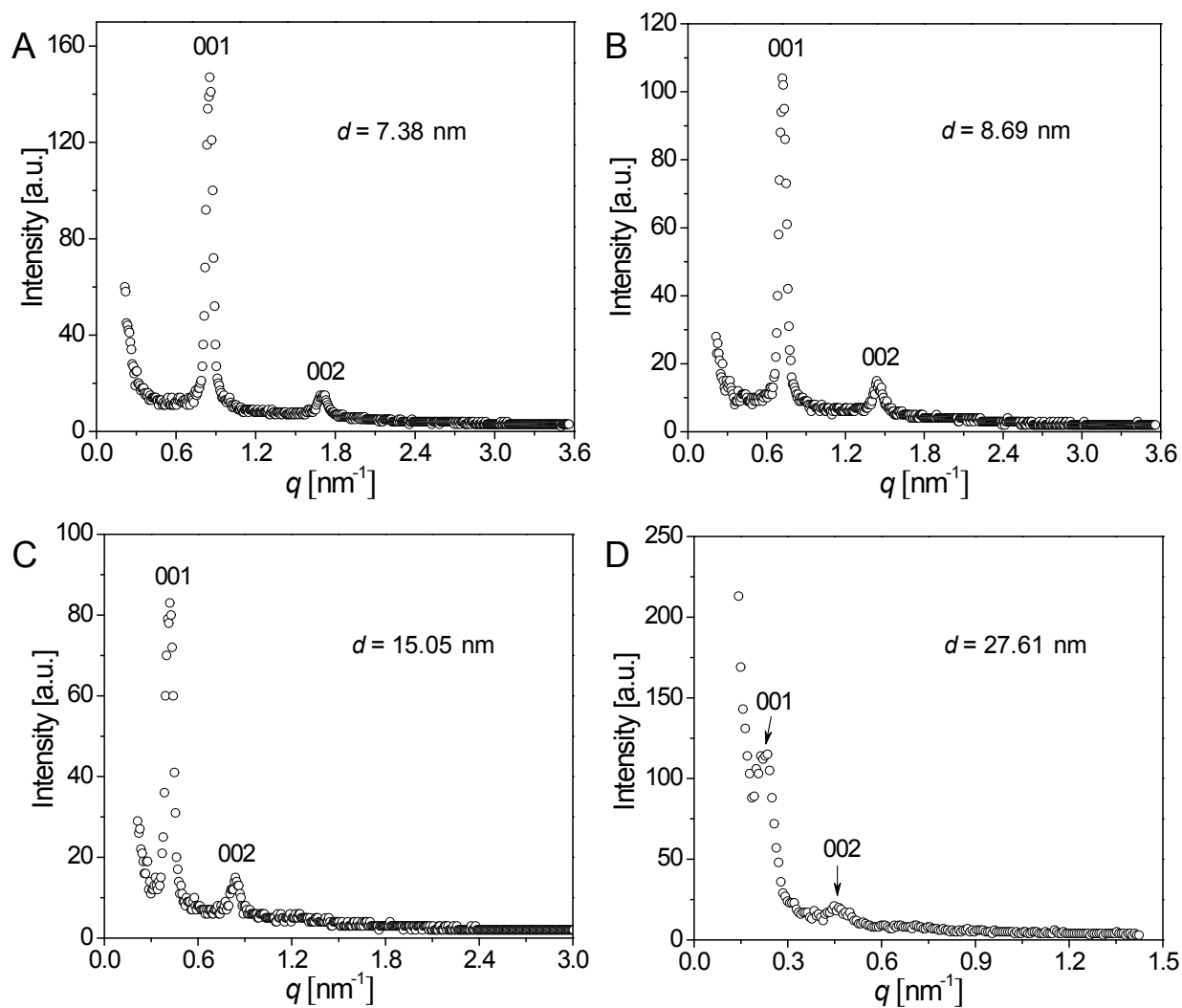


Fig. S3 SAXS results of the LLCs formed by TTAO in water at 40 wt% (A), 30 wt% (B), 20 wt% (C) and 10 wt% (D), respectively.

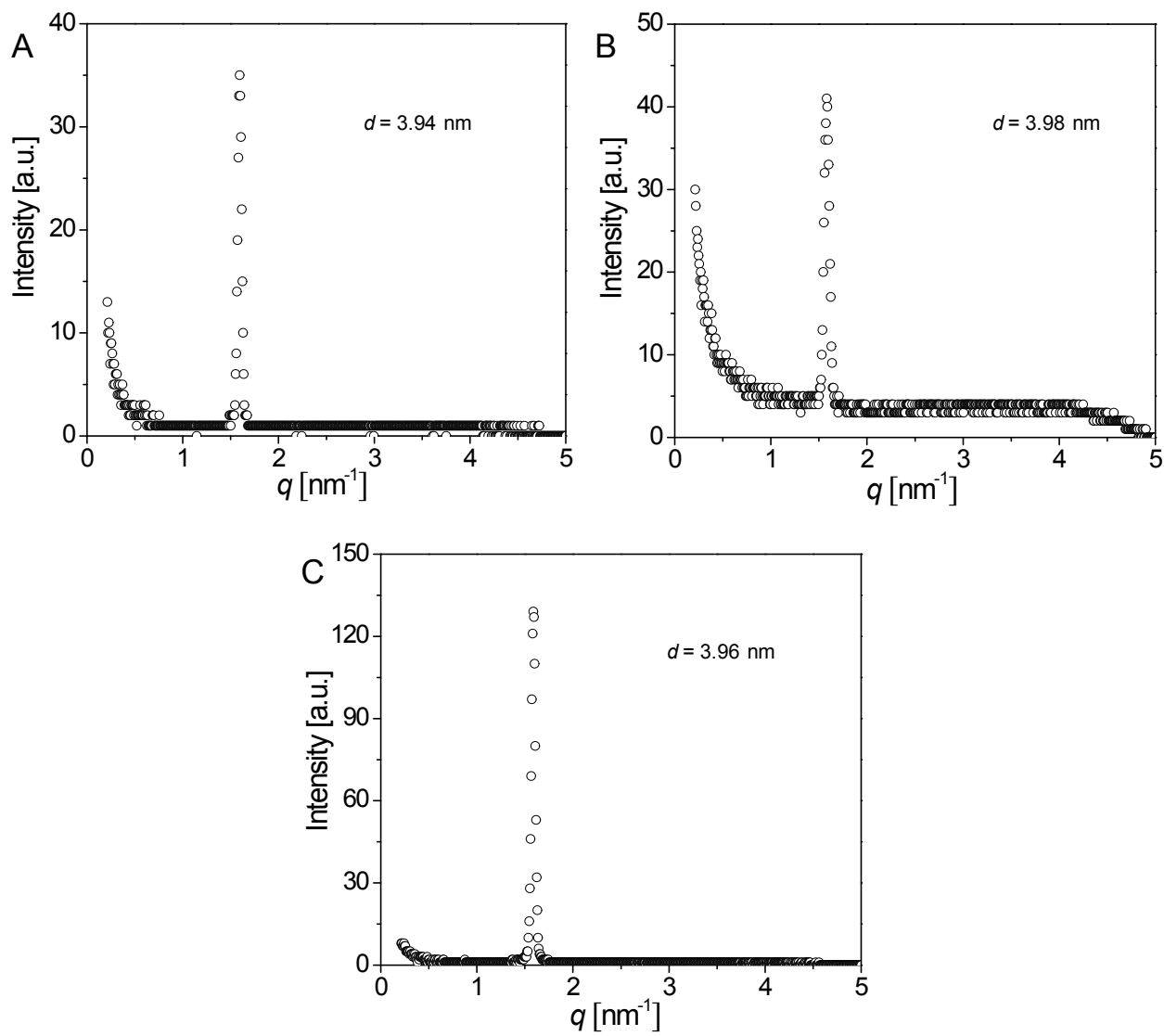
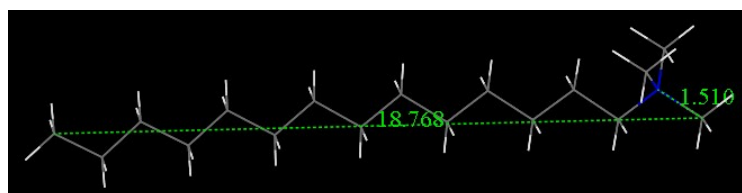
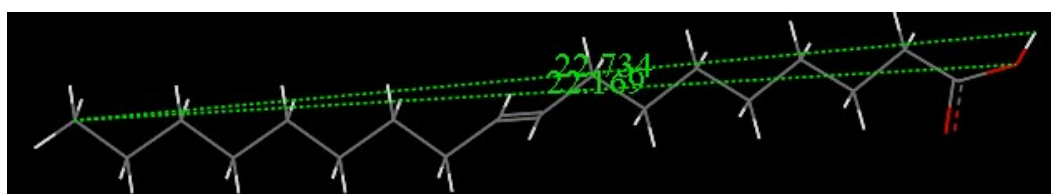


Fig. S4 SAXS results of the LLCs formed by TTAO in water at 80 wt% (A), 90 wt% (B) and 95 wt% (C), respectively.



(A)



(B)

Fig. S5 Optimized conformation of TTAOH (A) and OA (B) obtained by Material Studio.

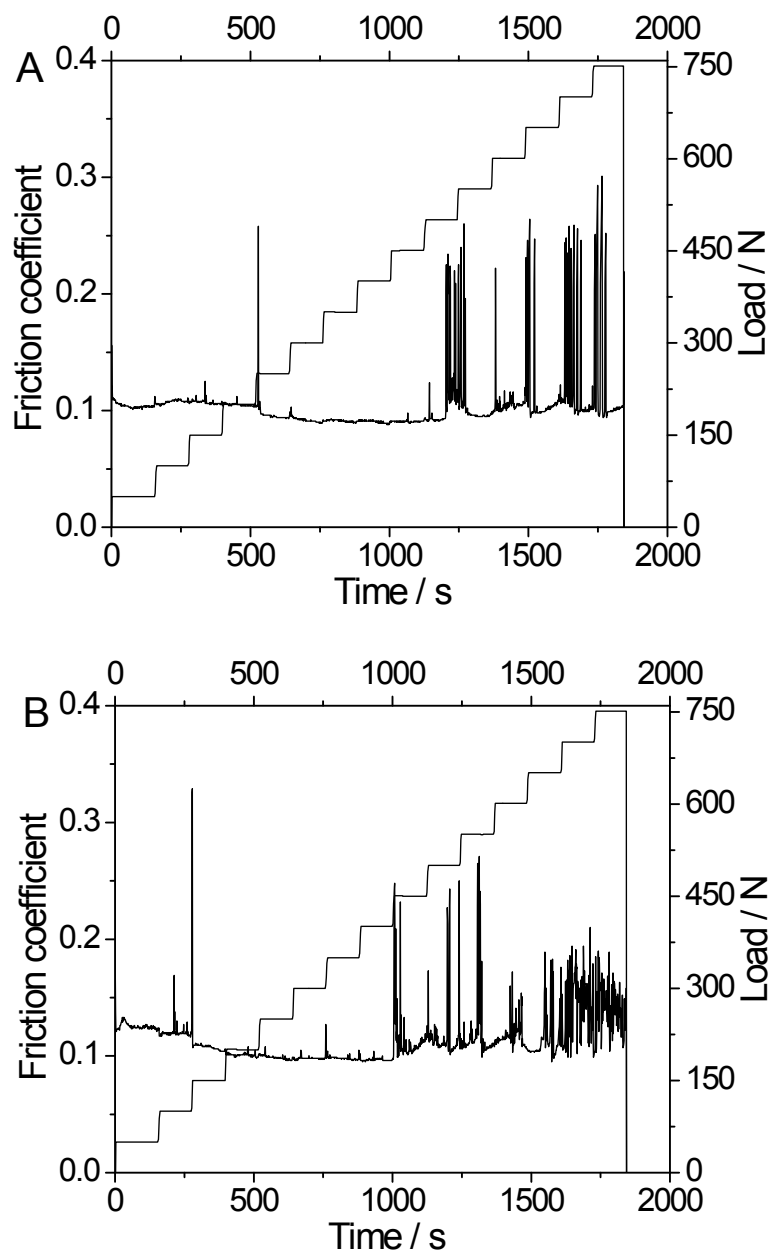


Fig. S6 Variation of the friction coefficient as a function of applied load at a frequency of 25 Hz for the LLCs (80 wt%) without (A) and with C_{60} (B, $W_{C60}/W_{TTAO} = 0.01$).

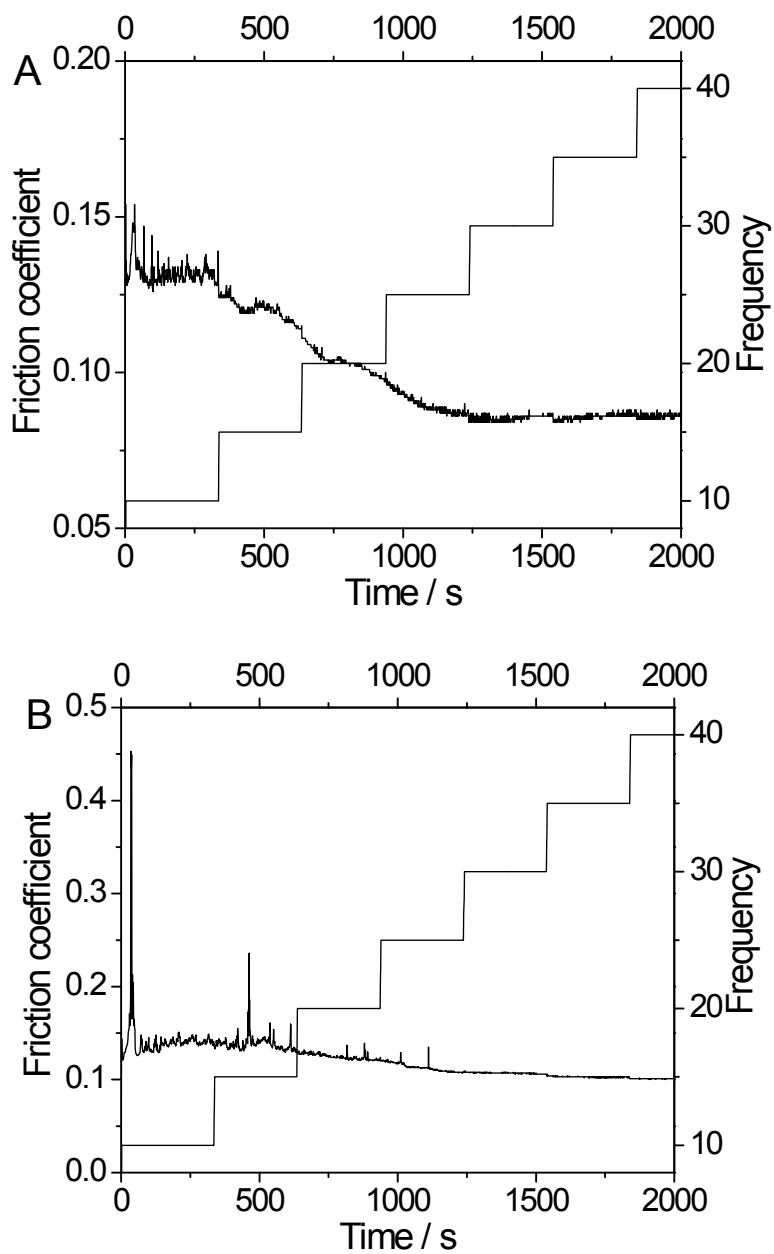


Fig. S7 Variation of the friction coefficient as a function of applied frequency at a load of 100 N for the LLCs (80 wt%) without (A) and with C_{60} (B, $W_{C60}/W_{TTAO} = 0.01$).

Table S1. Binding energies of typical elements from XPS measurements.

W_{C60}/W_{TTAO}	Binding Energy / eV			
	Fe	O	N	C
0	710.62, 724.87	529.74, 531.74	399.99	284.87, 287.49
0.005	710.98, 724.72	529.97, 531.72	399.97	284.85, 287.60
0.01	711.15, 724.65	529.78, 531.65	399.65	284.78, 287.78
0.02	711.11, 724.48	529.98, 531.86	399.86	284.86, 288.36