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Electronic Supplementary Information

Surface properties of amphiphilic carbon nanotubes and study of their applicability as basic catalysts

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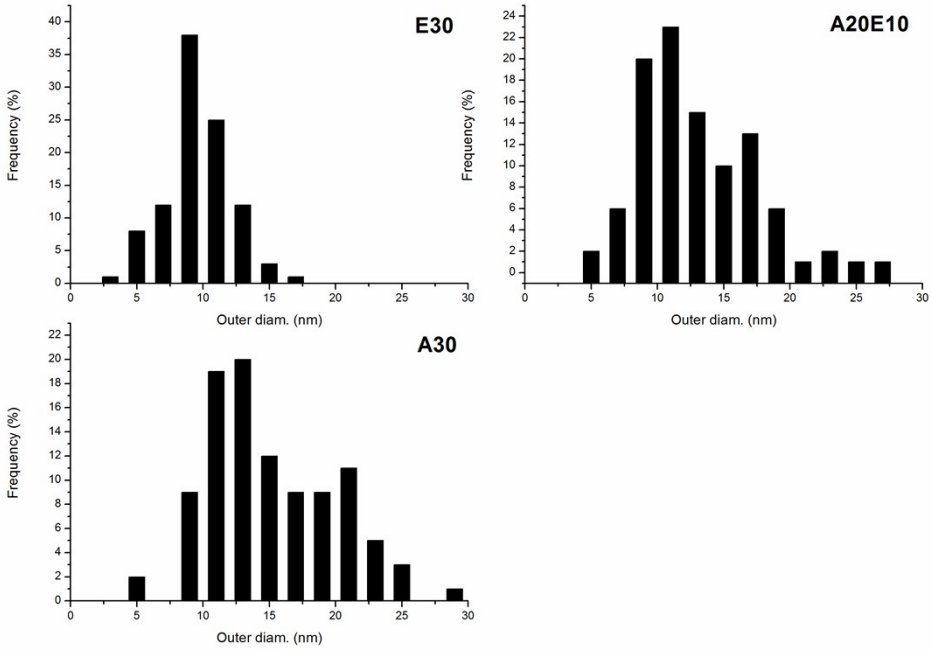


Figure S1: Histograms of outer diameter CNT size distribution

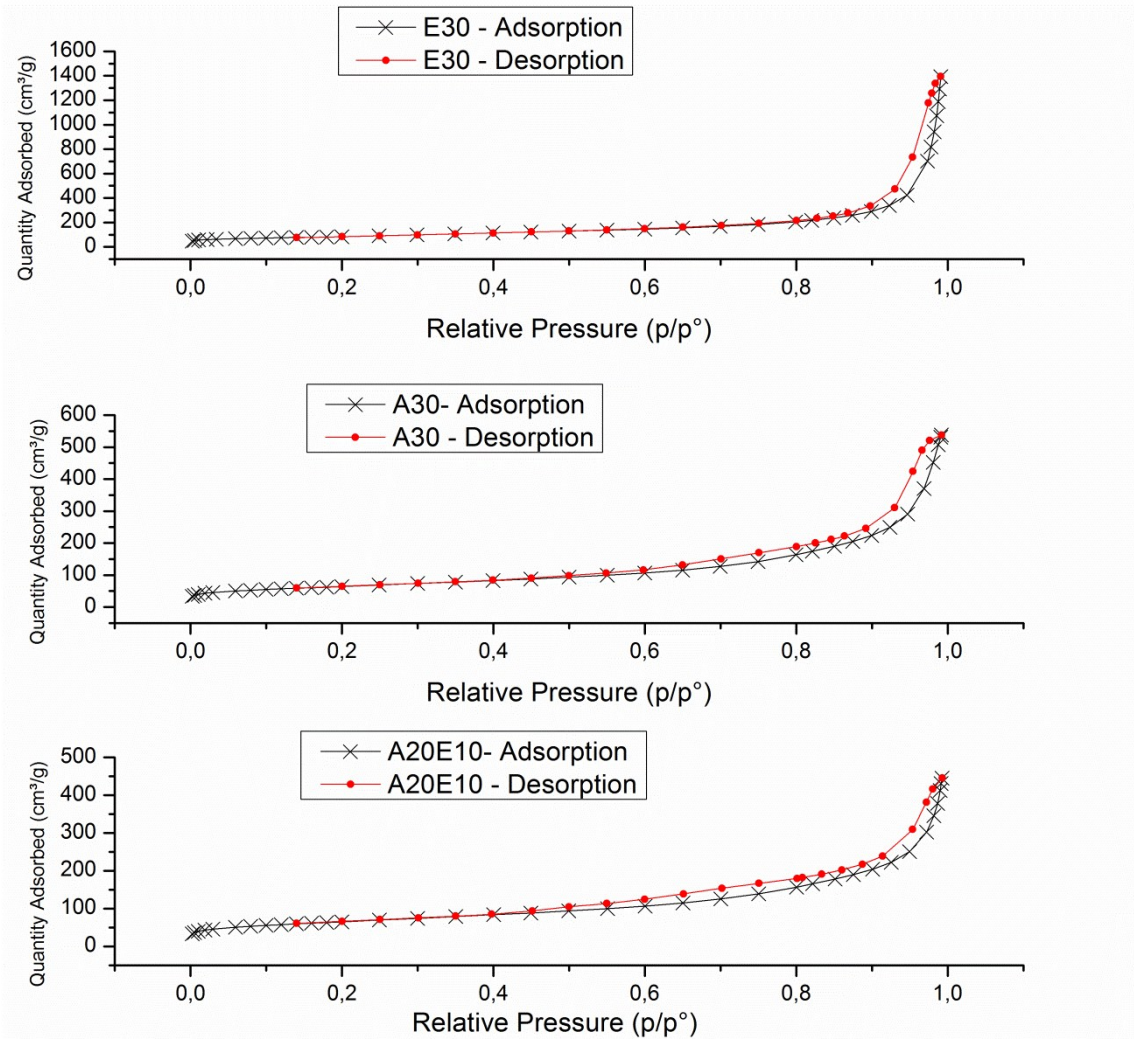


Figure S2: Nitrogen adsorption isotherm of the E30, A30 and A20E10 samples at 77K.

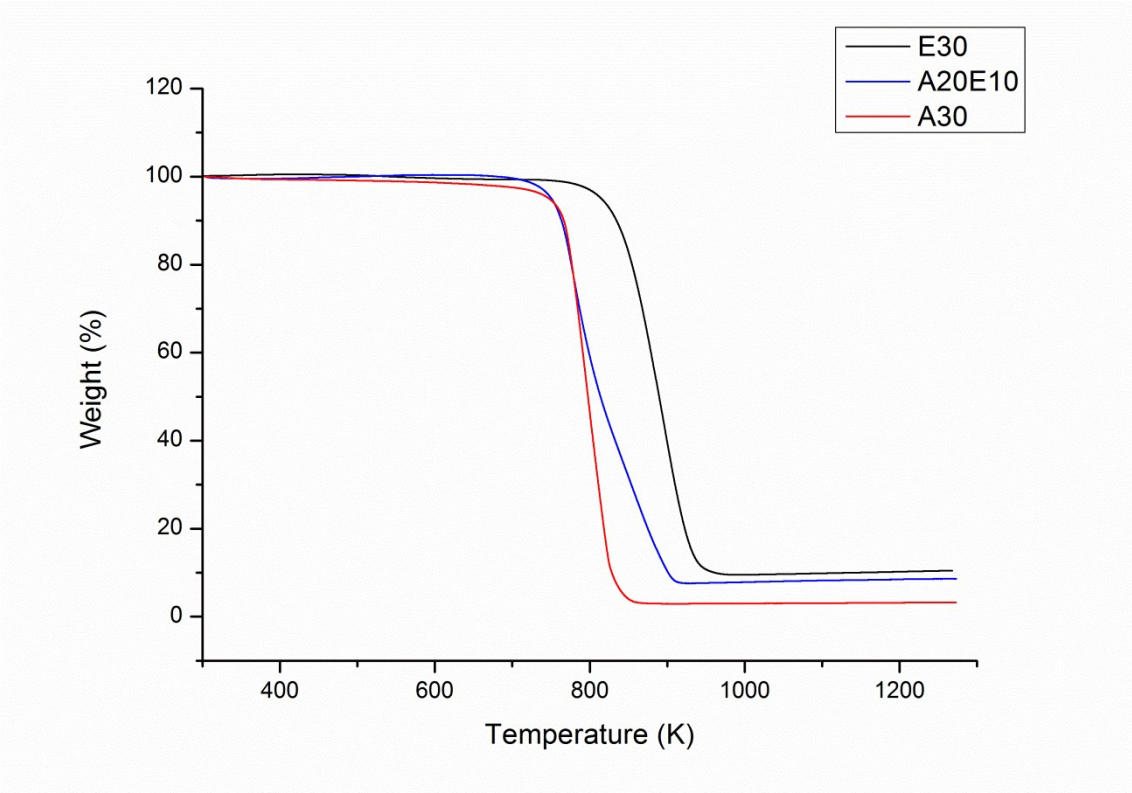


Figure S3. TGA analyses under air for (a) E30; (b) A30; and (c) A20E10.

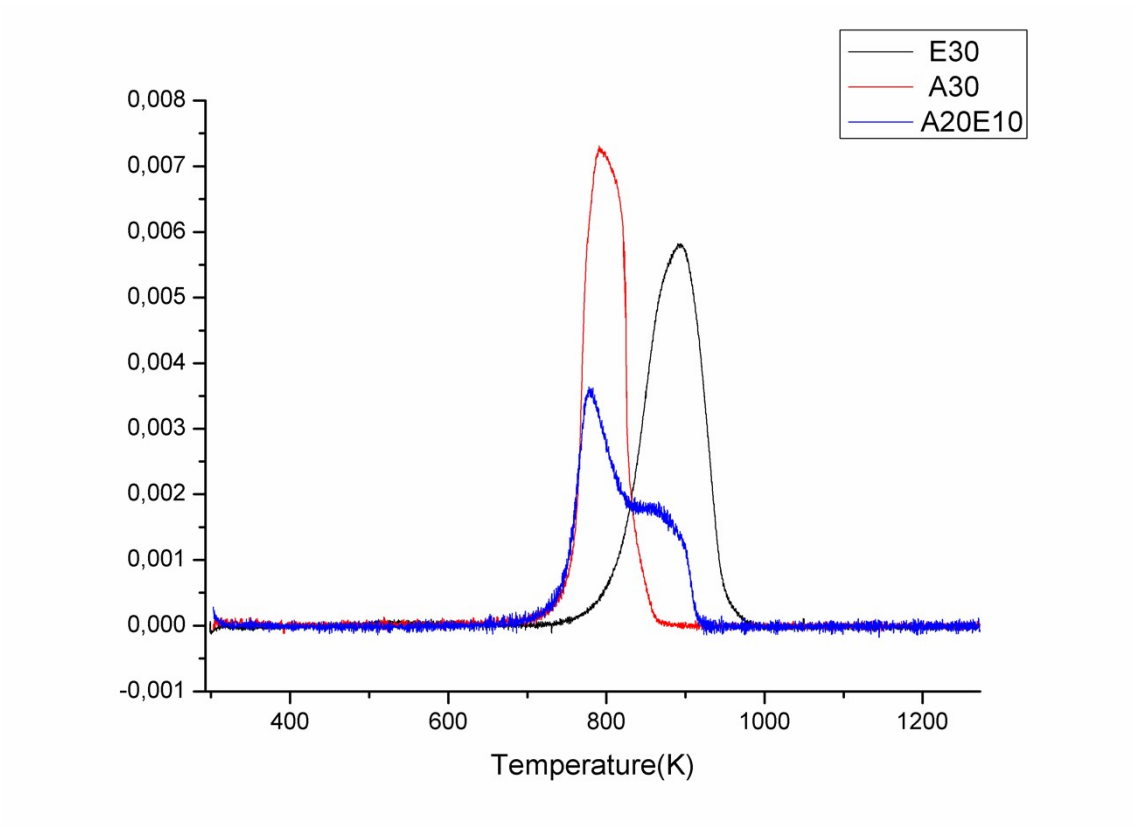


Figure S4. DTG analyses under air for (a) E30; (b) A30; and (c) A20E10.

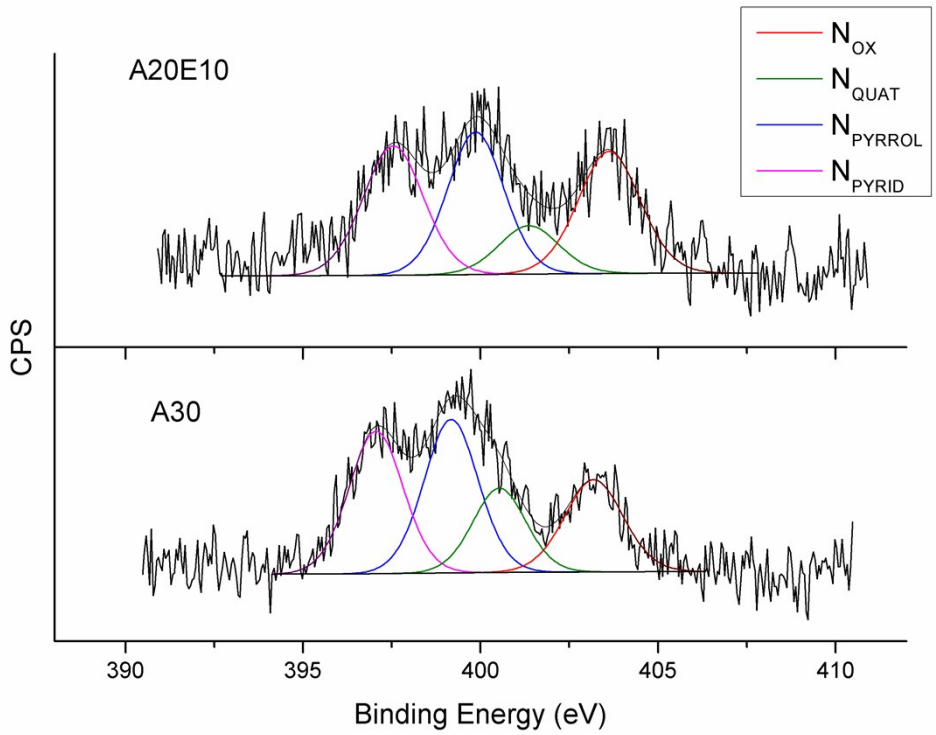


Figure S5. XPS spectra of the N 1s region for (a) A30 and (b) A20E10.

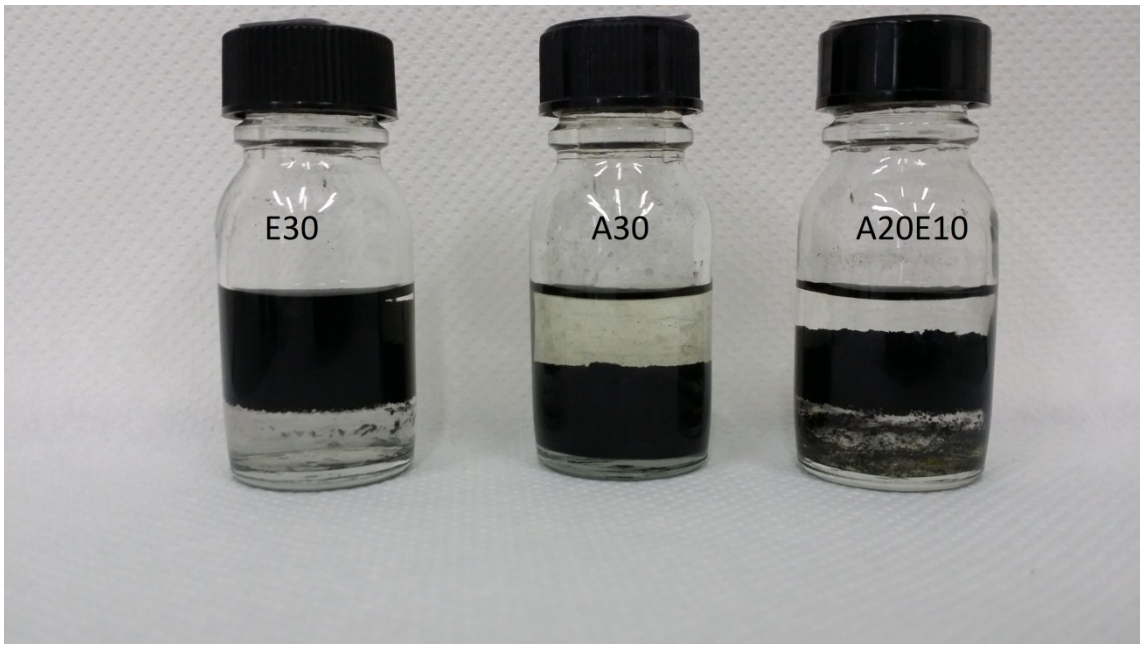
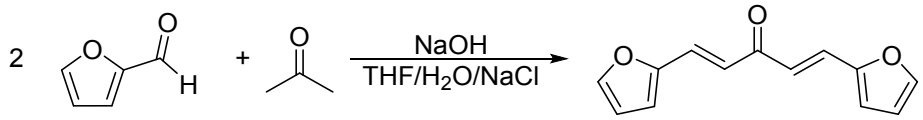


Figure S6. Photographs of water$_{(NaCl\ sat)}$/ THF biphasic systems (1:1, v/v) with E30, A30 and A20E10 samples.

Synthesis of 1,5-bis(2-furanyl)-1,4-pentadien-3-one



1,5-bis(2-furanyl)-1,4-pentadien-3-one was synthesized by aldol condensation of furfural and acetone:
Furfural (2,94 g, 30.6 mmol, 1.0 equiv.) and acetone (0.886 g, 15.3 mmol, 0.5 equiv.) were dissolved in THF (22 mL) in a round-bottomed flask. NaOH (2.80 g, 70 mmol, 2.3 equiv.) was dissolved in a saturated solution of NaCl (11 mL). The solutions were mixed and stirred at room temperature 24 hrs.
The reaction mixture was then neutralized with HCl (5,8 mL, 12.0 M). The aqueous layer was extracted with dichloromethane (3 x 20 mL), dried over anhydrous Na_2SO_4 and the solvent removed under vacuum.
The resulting crude material was purified by silica-gel column chromatography with cyclohexane:dichloromethane (80:20) yielding 850,1 mg of 1,5-bis(2-furanyl)-1,4-pentadien-3-one as a brown powder (26 %, un-optimized yield)

GC/ FID was used to quantified the main impurity 4-(2-furanyl)-3-Buten-2-one (2.1 wt %)

IR (KBr): 3135, 3027, 1640, 1619, 1583, 1548, 1343, 1299, 1262, 1216, 1190, 1142 cm^{-1}.

^{1}H NMR (300 MHz, $CDCl_3$) δ: 7.51- 7.45 (m, 4 H), 6.91 (d, *J* = 15.6 Hz, 2 H) 6.68 (d, *J* = 3.6 Hz, 2 H), 6.49 (dd, *J* = 1.8, 3.6 Hz, 2 H)

^{13}C NMR (75 MHz, $CDCl_3$) δ: 188.2, 151.7, 145.1, 129.3, 123.3, 116.0, 112.8.