

## Supporting Information

### **Modification of the surface chemistry of single- and multi-walled carbon nanotubes by HNO<sub>3</sub> and H<sub>2</sub>SO<sub>4</sub> hydrothermal oxidation for application in direct contact membrane distillation**

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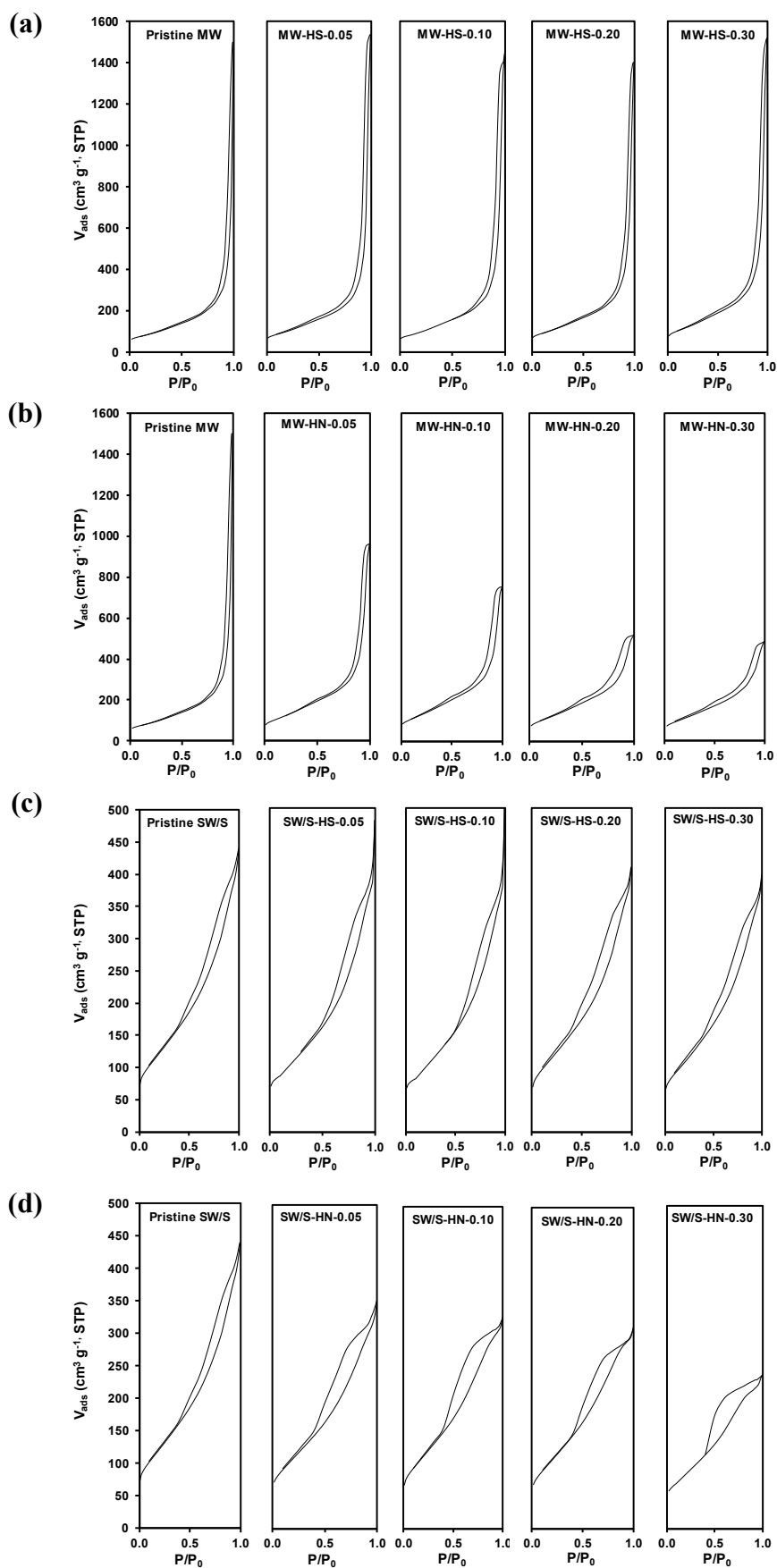
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**Table S1.** Results obtained from the deconvolution of CO<sub>2</sub> TPD spectra for the CNTs treated with different oxidizing agents at 0.30 mol L<sup>-1</sup>.  $T_M$ ,  $W$  and  $A$  correspond to the temperature, half-height and area of the peak, respectively.  $P_{\#x}$  is the percentage of the area of the peak  $\#x$  with respect to the total area of the spectrum.

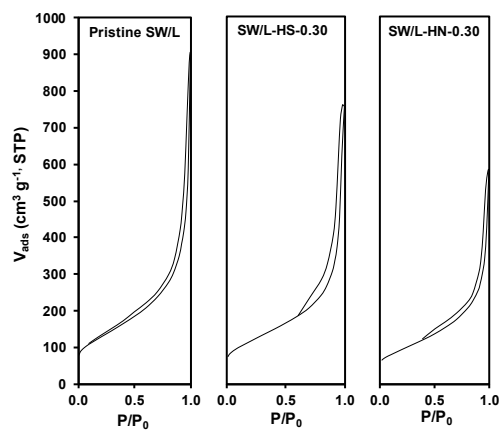
Sample	Peak #1				Peak #2					Peak #3				Peak #4			
	$T_M$ (K)	$W$ (K)	$A$ ( $\mu\text{mol g}^{-1}$ )	$P_{\#1}$ (%)	$T_M$ (K)	$W$ (K)	$A$ ( $\mu\text{mol g}^{-1}$ )	$P_{\#2}$ (%)	$P_{\#1+2}$ (%)	$T_M$ (K)	$W$ (K)	$A$ ( $\mu\text{mol g}^{-1}$ )	$P_{\#3}$ (%)	$T_M$ (K)	$W$ (K)	$A$ ( $\mu\text{mol g}^{-1}$ )	$P_{\#4}$ (%)
MW-HN-0.30	536	94	443	36	644	100	206	17	53	762	138	214	18	920	138	354	29
MW-HS-0.30	542	95	148	31	630	78	65	14	45	738	170	130	28	942	170	128	27
SW/S-HN-0.30	529	99	300	42	656	107	147	20	62	797	127	102	14	933	127	177	24
SW/S-HS-0.30	534	147	150	43	656	80	25	7	50	766	162	73	21	950	162	99	29
SW/L-HN-0.30	532	115	238	40	650	101	77	13	53	753	156	105	17	926	156	180	30
SW/L-HS-0.30	547	124	159	41	665	78	36	9	50	762	143	84	22	961	143	106	28

**Table S2.** Results obtained from the deconvolution of CO TPD spectra for the CNTs treated with different oxidizing agents at 0.30 mol L<sup>-1</sup>.  $T_M$ ,  $W$  and  $A$  correspond to the temperature, half-height and area of the peak, respectively.  $P_{\#x}$  is the percentage of the area of the peak  $\#x$  with respect to the total area of the spectrum.

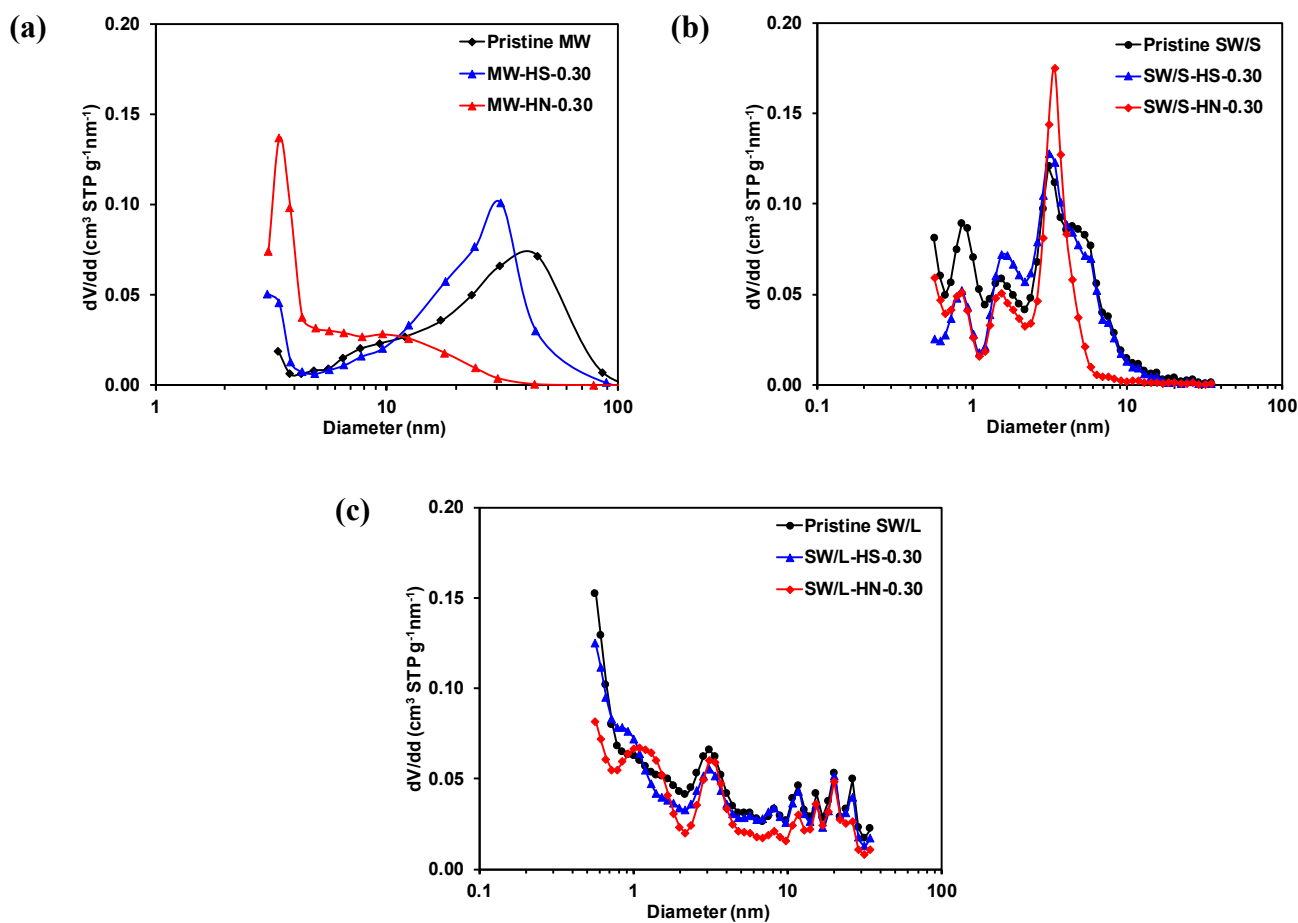
Sample	Peak #1 & #2				Peak #3				Peak #4				Peak #5 & #6			
	$T_M$ (K)	$W$ (K)	$A$ ( $\mu\text{mol g}^{-1}$ )	$P_{\#1+\#2}$ (%)	$T_M$ (K)	$W$ (K)	$A$ ( $\mu\text{mol g}^{-1}$ )	$P_{\#3}$ (%)	$T_M$ (K)	$W$ (K)	$A$ ( $\mu\text{mol g}^{-1}$ )	$P_{\#4}$ (%)	$T_M$ (K)	$W$ (K)	$A$ ( $\mu\text{mol g}^{-1}$ )	$P_{\#5+\#6}$ (%)
MW-HN-0.30	536	94	23	1	762	138	214	6	987	161	2927	88	1146	161	157	5
	644	100	15													
MW-HS-0.30	542	95	22	2	738	170	130	10	936	189	614	47	1099	189	532	41
	630	78	13													
SW/S-HN-0.30	529	99	28	4	797	127	102	4	991	142	1878	74	1178	142	291	18
	656	107	72										1370	179	158	
SW/S-HS-0.30	534	147	6.5	3	766	162	73	6	984	218	860	76	1177	218	169	15
	656	80	25													
SW/L-HN-0.30	532	115	46	4	753	156	105	7	978	175	1000	62	1116	175	372	27
	650	101	13										1356	119	66	
SW/L-HS-0.30	547	124	7.3	7	762	143	84	10	959	148	488	56	1129	148	237	27
	665	78	51													



**Figure S1.** Nitrogen adsorption-desorption isotherms at 77 K for (a, b) MW and (c, d) SW/S treated with different (a, c)  $\text{H}_2\text{SO}_4$  or (b, d)  $\text{HNO}_3$  concentrations.



**Figure S2.** Nitrogen adsorption-desorption isotherms at 77 K for pristine SW/L and treated with  $\text{H}_2\text{SO}_4$  or  $\text{HNO}_3$  at  $0.30 \text{ mol L}^{-1}$  concentration.



**Figure S3.** Pore size distributions for (a) pristine MW, (b) pristine SW/S and (c) pristine SW/L and, respectively, for samples treated with  $\text{H}_2\text{SO}_4$  or  $\text{HNO}_3$  at  $0.30 \text{ mol L}^{-1}$ . PSDs obtained by (a) BJH or (b, c) QSDFT methods.