Supporting Information

Investigation of dispersion behavior of fluorinated MWCNTs in various solvents

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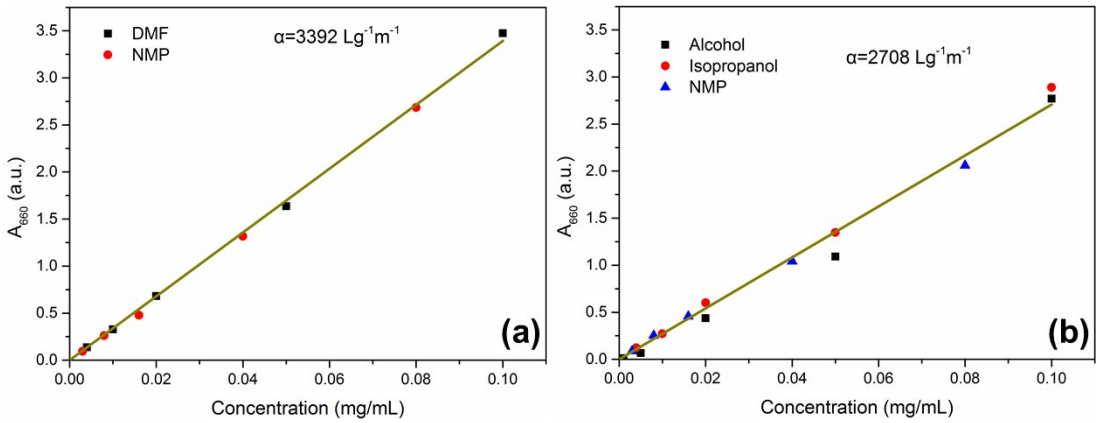

Figure S1. Absorbance at 660 nm as a function of concentration of lF-MWCNTs (a) and hF-MWCNTs (b) in various solvents.

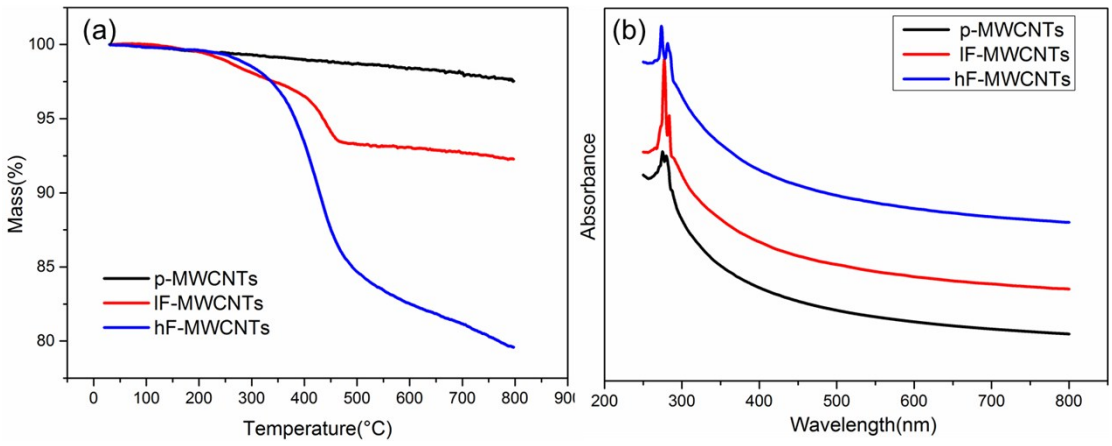

Figure S2. TGA (a) and UV-vis spectrum (b) of p-MWCNTs, lF-MWCNTs, hF-MWCNTs

Figure S2a demonstrates the TGA curves of lF-MWCNTs and hFMWCNTs. An obvious weight loss between 200 ^{o}C and 500 ^{o}C in nitrogen atmosphere is observed for both samples, manifesting the success grafting of fluorine atoms onto MWCNTs. More fluorine atoms are covalently bonded onto the surface of hF-MWCNTs with 20% of weight loss at 800 ^{o}C, while it is only 7% for lF-MWCNTs. UV–vis spectra of p-MWCNTs, lF-MWCNTs and hF-MWCNTs are shown in Figure S2b. The absorption peaks situated in 277nm are attributed to π-π* transitions corresponding to aromatic regions in MWCNTs. It is interesting to find that the aromatic regions remain in hF-MWCNTs. The TGA and UV–vis spectra data primarily demonstrate the co-existence of fluorinated regions and aromatic regions in lF-MWCNTs and hF-MWCNTs.

Table S1. Surface compositions and assignments of C 1s Components for lF-MWCNTs and hF-MWCNTs

component	assignment	p-MWCNTs		lF-MWCNTs		hF-MWCNTs	
		Position (eV)	concentration (%)	position (eV)	concentration (%)	position (eV)	concentration (%)
C(1)	sp^2 C	284.56	72.0	284.6	62.0	284.6	45.0
C(2)	Sp^3 C	285.58	22.3	285.4	21.6	285.6	17.0
C(3)	C-O	286.94	5.7	287.0	7.7	287.0	7.4
C(4)	C=O			288.5	2.2	288.6	8.6
C(5)	C-F			289.6	3.3	289.6	15.8
C(6)	CF_2			291.2	3.2	291.2	6.2

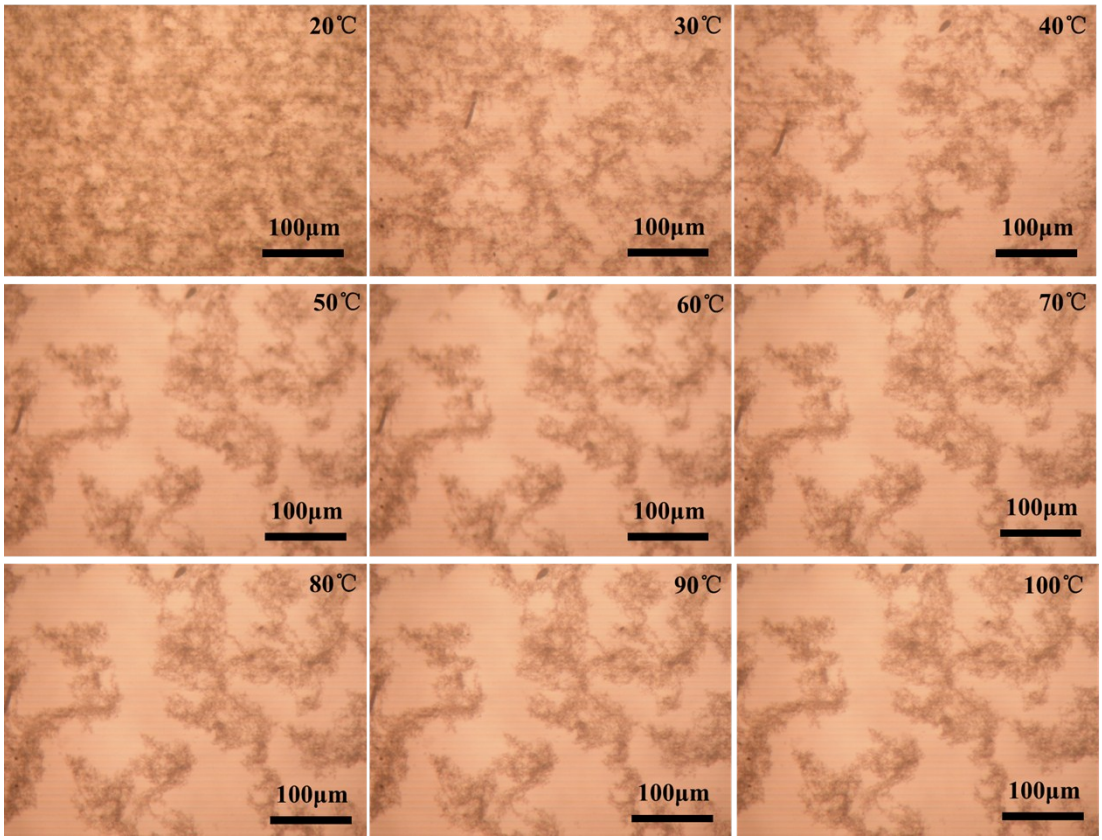

Figure S3. Dispersion state of p-MWCNTs in epoxy at elevated temperature from 20 to 100 °C.