Electronic Supplementary Material (ESI) for Dalton Transactions.
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Supplementary Information

SI 1. PEI density of grafting

Theoretical calculation for 1:1 (w:w) ratio (w = 2mg):

Tube specific surface: 121 m^2/g (measured by BET)
m PEI = m tube = 2 mg correspond to 2.42E+17 nm^2 (=121 m^2/g * 2 mg)
M PEI = 1,800 g/Mol
n PEI = 0.002/1,800 = 1.1111E-06 Mol
Number of PEI units = n PEI * $N_{Avogadro}$ = 1.1111E-06*6.02E+23 = 6.69E+17 PEI
Theoretical grafting density (PEI/nm^2) = 6.69E+17/2.42E+17 = 2.76 PEI/nm^2

Experimental density of grafting:

TiONts:PEI (w:w)	Theoretical grafting density (PEI/nm^2)	Experimental binding efficiency (%)	Experimental grafting density (PEI/nm^2)
1:0.01	0.03	60.9	0.02
1:0.05	0.14	75.5	0.10
1:0.1	0.28	58.3	0.16
1:0.3	0.83	21.0	0.17
1:0.5	1.38	18.9	0.26
1:1	2.76	15.2	0.42
1:10	27.65	nd	nd

nd: not determined

SI 2. PEG density of grafting

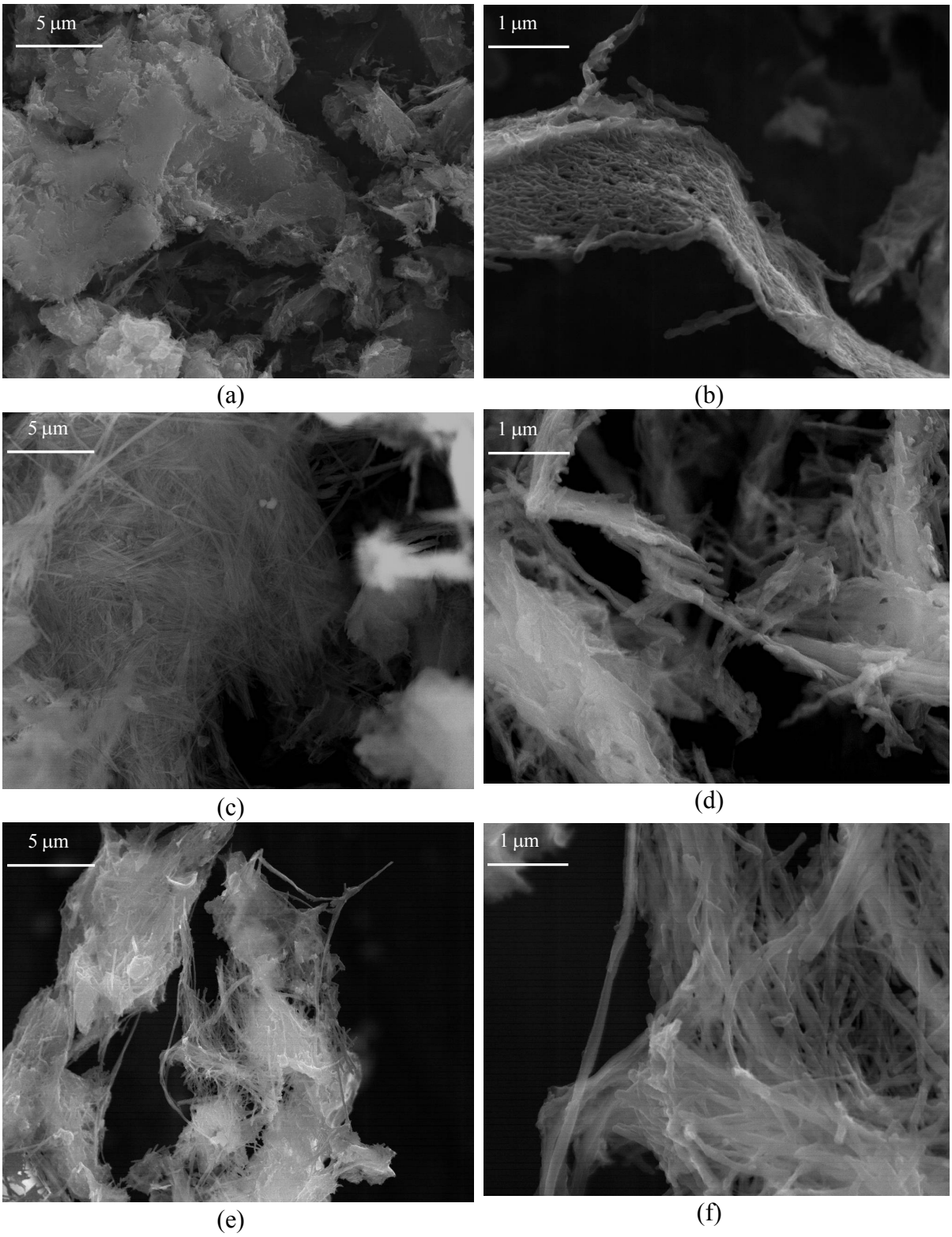
Theoretical calculation for TiONts-PEG_{2000}:

The TiONts:PEG ratio used for the functionalization was 1:30 (w:w).
Tube specific surface: 121 m^2/g (measured by BET)
m tube = 1 mg correspond to 1.21E+17 nm^2
M PEG = 2000 g/Mol
n PEG = 0.03/2000 = 1.5E-05 Mol
Number of PEG units = n PEG * $N_{Avogadro}$ = 1.5E-05*6.02E+23 = 9.03E+18 PEG
Theoretical grafting density (PEG/nm^2) = 9.03E+18/1.21E+17 = 7.47E+01 PEG/nm^2

Experimental density of grafting for TiONts-PEG_{2000}:

The mass percetage, due to PEG decomposition, between 125°C and 650°C was 17.2%.

Number of PEG units $= N_{PEG} = \frac{(\Delta m_{exp}).N_A}{M_{PEG}.S_{BET}.10^{18}}$

= 17.2*6.02E+23 / (2000*121 E+18) = 0.43 PEG/nm^2

SI 3. SEM images of (a-b) bare titanate nanotubes, (c-d) TiONts/Si-mPEG$_{2000}$ nanohybrids, (e-f) TiONts/PEI$_{1800}$ (1:1, w:w) nanohybrids.