Electronic Supplementary Material (ESI) for Environmental Science: Nano.

Supplementary information

Fate of Single Walled Carbon Nanotubes in Wetland Ecosystems

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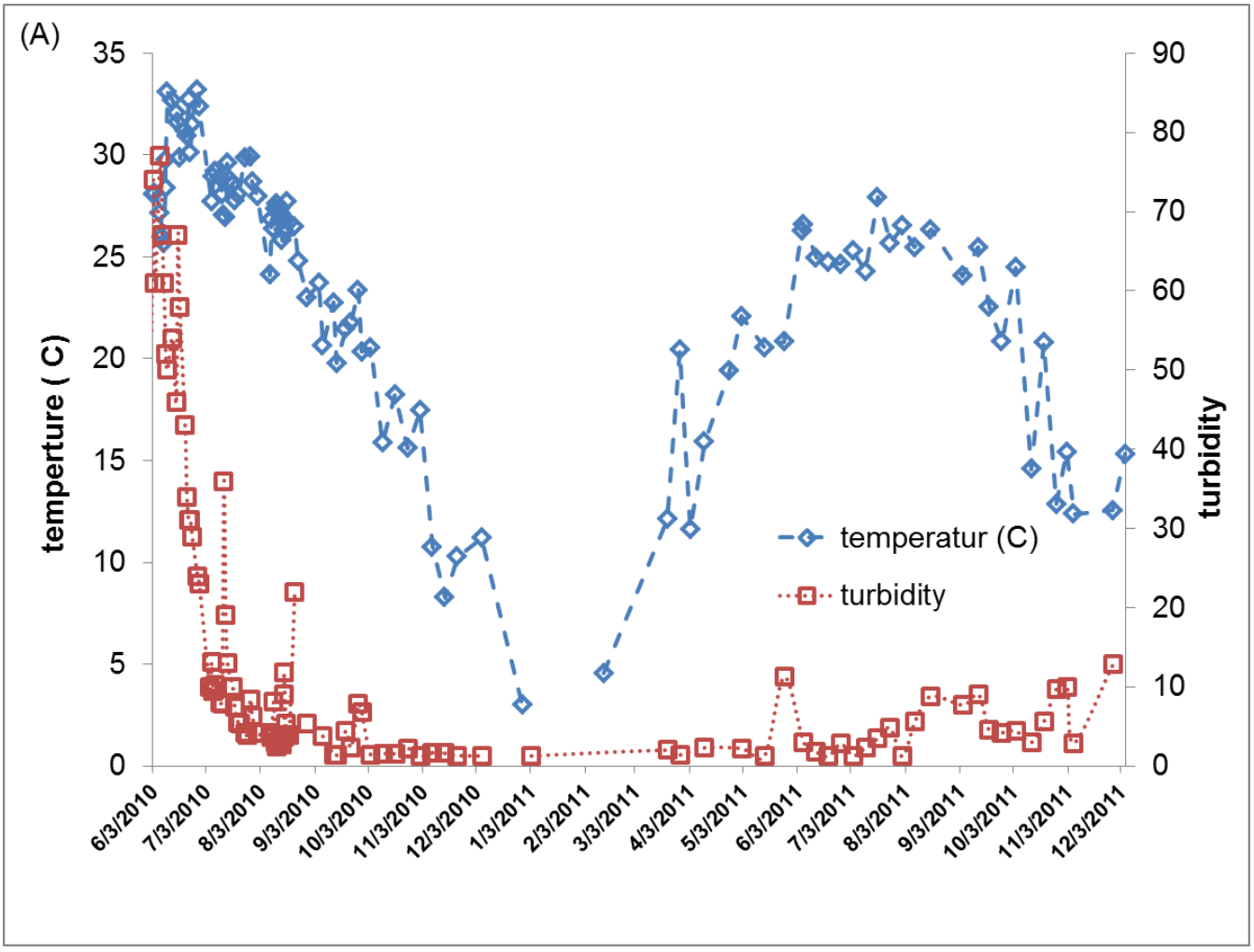
(A)
temperture (C)
turbidity
temperatur (C)
turbidity
35
30
25
20
15
10
5
0
90
80
70
60
50
40
30
20
10
0
6/3/2010
7/3/2010
8/3/2010
9/3/2010
10/3/2010
11/3/2010
12/3/2010
1/3/2011
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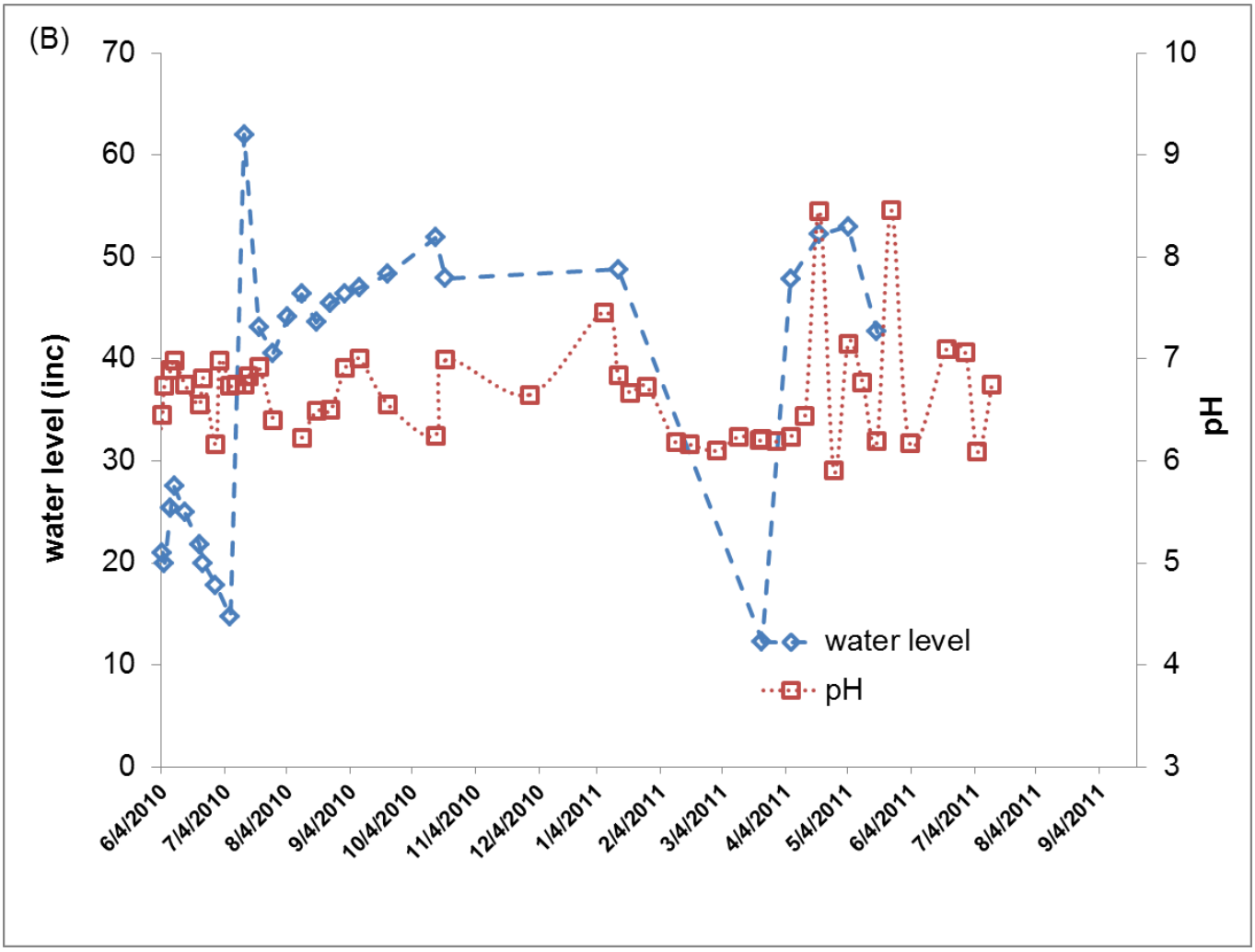

Figure SI-1: Water temperature and turbidity (A) and water level and pH (B) in SWNT mesocosm treatment pre and post-dosage. The experiment was initiated on August 16, 2010 by dosing SWNT SG65 suspended in 0.5% gum Arabic in the water column.

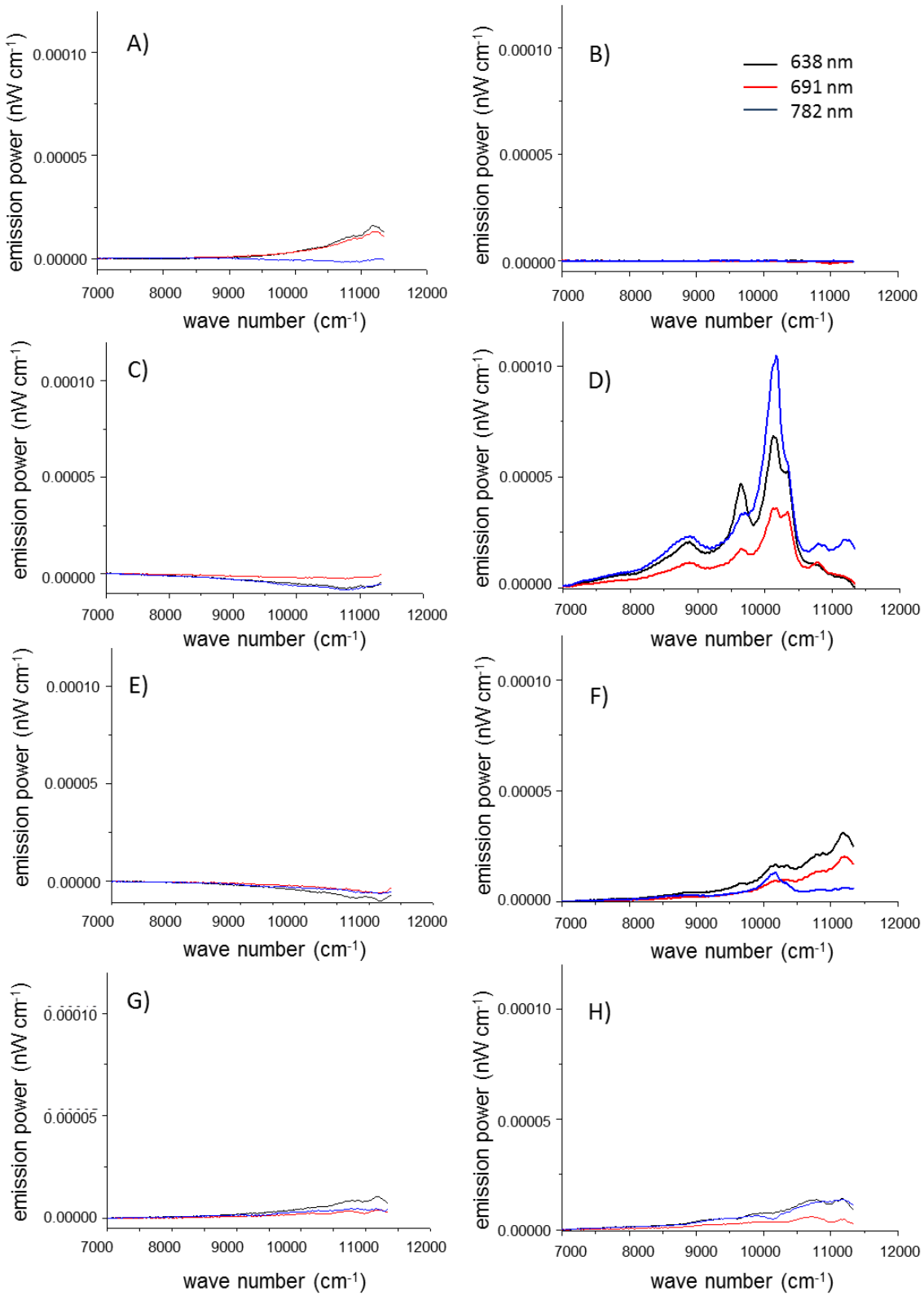
A)
B)
C)
D)
E)
F)
G)
H)
638 nm
691 nm
782 nm
emission power (nW cm-1)
wave number (cm-1)
0.00010
0.00005
0.00000
7000
8000
9000
10000
11000
12000

Figure SI2: Representative NIRF-spectra of extracted sediment cores sections at in the aquatic (left) and terrestrial compartment (right) at water column (A,B 1-0 cm); depth 0- -1cm (C,D) ; -1 to -2 cm (E,F) and -2-3 cm (G,J) below sediment-water interface. Distribution of SWNT in aquatic and terrestrial sediment cores after 10 months.

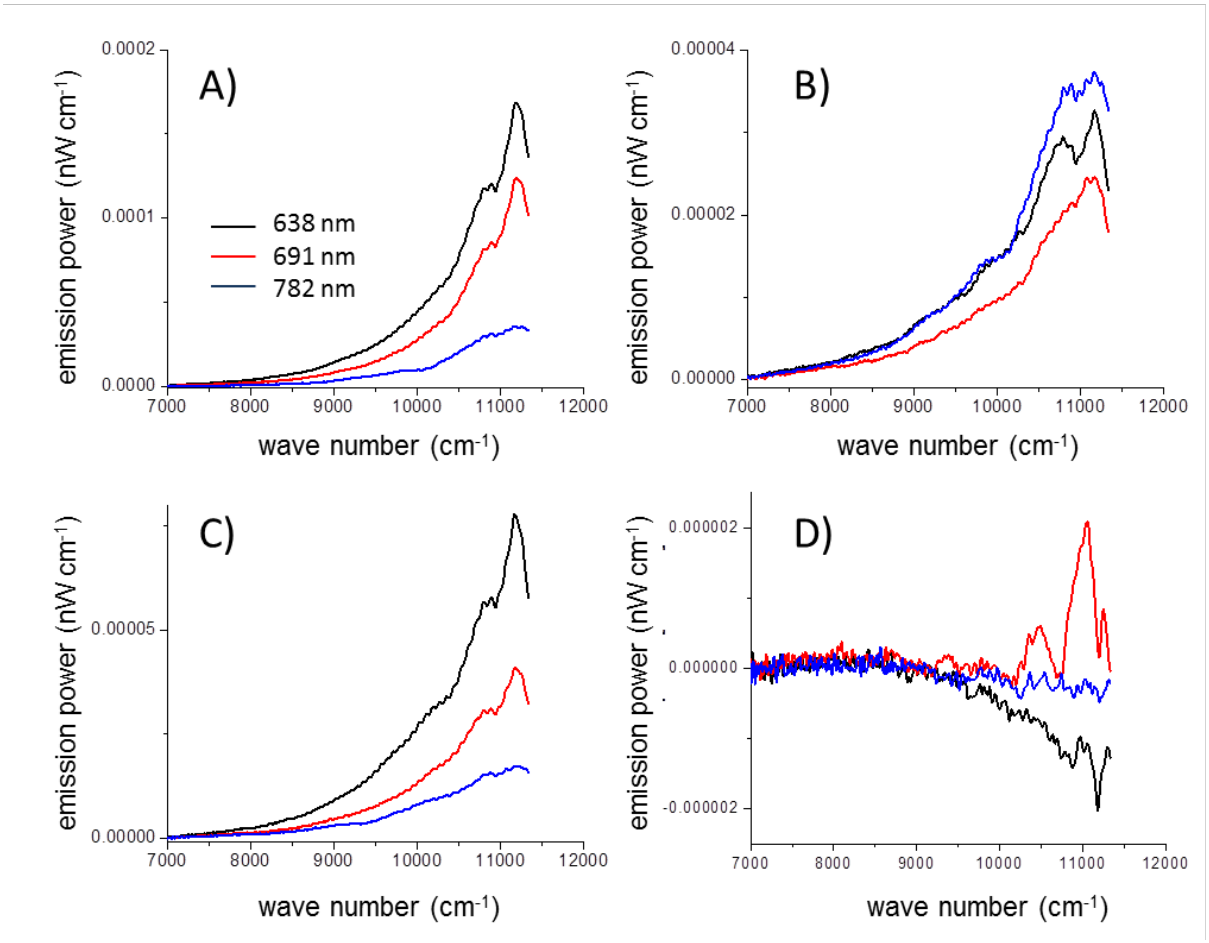

Figure SI3: NIRF spectra of aquatic plant Elodea (waterweed) extracts (A) and Lemna (duckweed) (B), biofilm extracts (C) and mosquito fish extracts (D). NIRF spectra of plant samples show an elevated background signal possibly due to internal filter effects.

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Table SI1: Limits of quantification for different matricies for NIRF, Co and Mo (by ICP-MS)

matrix	MDL_{SWNT} ng g^{-1}	MDL_{Co} ng g^{-1}	MDL_{Mo} ng g^{-1}	MDL µg L^{-1}
sediment/soil	500	*(1.8)***	*(0.03)***	
plants*	1140	16	340	
biofilm*	250	7	140	
fish*	780	30	630	
water				5

*Normalized to wet weight (ng g^{-1} wet weight)

**Values reflect Co and Mo concentration in the sediment

Table 2: SWNT concentration in surficial-sediment in the aquatic compartment [depth: 0- 1 cm] at 8, 10, and 12 months post SWNT amendment (n=3-8, from different locations), *NIRF spectra showed indication for presence of SWNT, but the concentration were below limit of quantification, sampling locations were assigned randomly, sediment cores C5-1, C5-2 and C5-3 were retrieved within 10 cm radius.

sampling date	April 2011 8 months		June 2011 10 months		August 2011 12 months	
Replicate Core	m_{SWNT}/m_{sed} [µg/g dry sediment]	SD	m_{SWNT}/m_{sed} [µg/g dry sediment]	SD	m_{SWNT}/m_{sed} [µg/g dry sediment]	SD
C1	9.4	1.4	2.7	0.9	25.1	6.3
C2	5.1	1.4	20.2	11.8	6.2	3.6
C3	13.5	4.0	61.2	8.8	17.7	6.0
C4			<LOQ*		<LOQ*	
C5 -1			10.3	2.1	<LOQ*	
C5 -2			5.8	1		
C5 -3			6.9*	3		
C6			1.9	0.5		