SUPPORTING INFORMATION

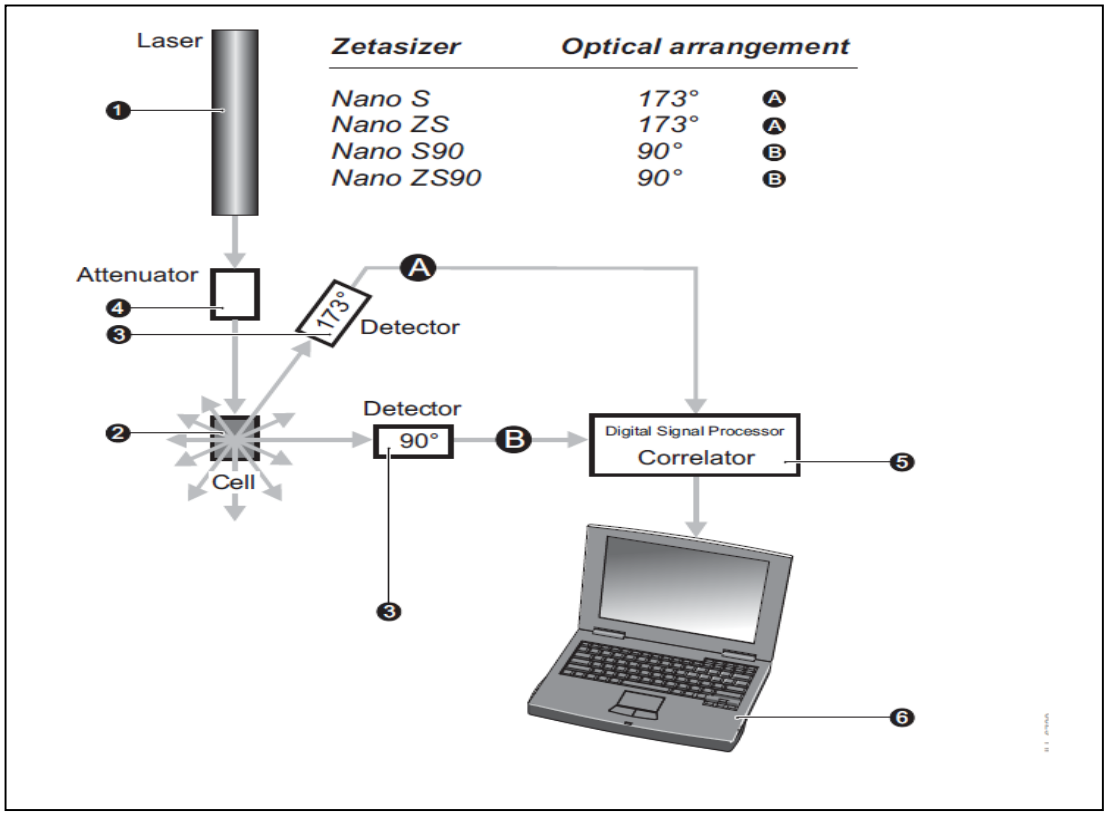

Figure SI 1. Sketch of Zetasizer set up. **(**Malvern Instruments (2004). Zetasizer Nano Series User Manual. MAN0317, Issue 2.1. http://www.nbtc.cornell.edu/facilities/downloads/Zetasizer%20Manual.pdf. Accessed on 12-6-2010)

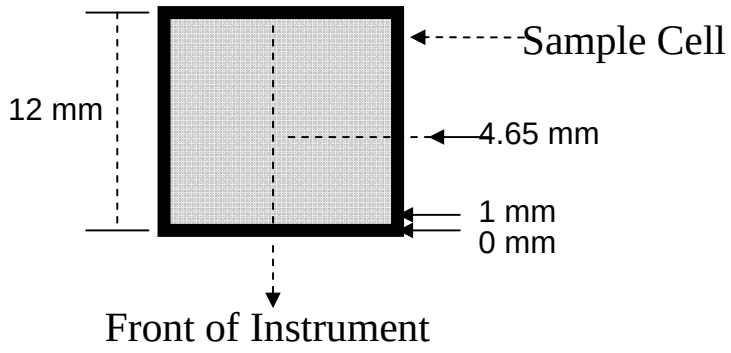

Figure SI 2. Schematic indicating the measurement position in the sample cell. A lower number indicates a position closer to the cell wall and a higher number indicates a position closer to the center of the sample cell. (Malvern Instruments (2004). Zetasizer Nano Series User Manual. MAN0317, Issue 2.1. http://www.nbtc.cornell.edu/facilities/downloads/Zetasizer%20Manual.pdf. Accessed on 12-6-2010)

Table SI 1. Percent of laser power (4.0 mW) used at various attenuator indices by Zetasizer.

Attenuator Index	Transmission (% Nominal)
0	0
1	0.0003
2	0.003
3	0.01
4	0.03
5	0.1
6	0.3
7	1
8	3
9	10
10	30
11	100

Electronic Supplementary Material (ESI) for Journal of Environmental Monitoring

I. Oneway ANOVA Test Data

Oneway for Factor = Day

ANOVA

kCPS

SampleID		Sum of Squares	df	Mean Square	F	Sig.
.10	Between Groups	2.707	1	2.707	.271	.614
	Within Groups	100.022	10	10.002		
	Total	102.729	11			
.25	Between Groups	1.763	1	1.763	.481	.504
	Within Groups	36.623	10	3.662		
	Total	38.387	11			
.50	Between Groups	5.741	1	5.741	.479	.504
	Within Groups	119.742	10	11.974		
	Total	125.482	11			
.75	Between Groups	39.241	1	39.241	4.796	.053
	Within Groups	81.828	10	8.183		
	Total	121.069	11			
1.00	Between Groups	104.430	1	104.430	20.734	.001
	Within Groups	50.367	10	5.037		
	Total	154.797	11			

Oneway for Factor = Analyst

ANOVA

kCPS

SampleID		Sum of Squares	df	Mean Square	F	Sig.
.10	Between Groups	40.701	1	40.701	6.562	.028
	Within Groups	62.028	10	6.203		
	Total	102.729	11			
.25	Between Groups	.563	1	.563	.149	.708
	Within Groups	37.823	10	3.782		
	Total	38.387	11			
.50	Between Groups	2.707	1	2.707	.221	.649
	Within Groups	122.775	10	12.277		
	Total	125.482	11			
.75	Between Groups	.041	1	.041	.003	.955
	Within Groups	121.028	10	12.103		
	Total	121.069	11			
1.00	Between Groups	5.070	1	5.070	.339	.574
	Within Groups	149.727	10	14.973		
	Total	154.797	11			

II. Photon Count Rates (kCPS) for Filtered Wastewater Effluents after 2.5 and 5 minutes of Equilibration Time during Preliminary Screening Studies

% Wastewater in the Sample	2.5 Minute Equilibration		5 Minute Equilibration	
	Photon Count Rate (kCPS)	Sample Quality*	Photon Count Rate (kCPS)	Sample Quality
100 % (No Dilution)	83.7	Good	87.7	Poor
50 %	48.5	Poor	49.7	Good
25 %	32.3	Poor	32.3	Good
12.5 %	29.5	Poor	27.3	Poor
10 %	27	Poor	28	Good

*** - Based on Zetasizer Internal QA Criteria**

III. Summary of Particle Size Distribution and QA Data during Detailed DLS Analyses of Filtered Wastewater Effluent from OCSD

Parameter	Range	Average	Median	QA Criteria	Result
Polydispersity Index (PdI)	0.168 to 0.758	0.297	0.272	< 1	Met the QA Criteria
Correlation Intercept	0.282 to 0.752	0.57	0.617	0.1 to 0.9	Met the QA Criteria
In-range Value (%)	68.2 to 95.7	86.9	88.3	> 90%	Did Not Meet the QA Criteria
Intensity Mean (d. nm)	63.8 to 812	245	163	NA	NA
Volume Mean (d. nm)	30.5 to 832	168	88	NA	NA
Number Mean (d. nm)	16.6 to 85	43	42	NA	NA

NA – Not Applicable

IV. Nanoscale Particle Size Distribution for filtered OCSD effluent, nano silica stock suspension, and the spike sample containing both in 1:1 (v:v) dilution.

The wastewater contained a significantly lower number of particles (40 kCPS) and at lower average particle size (~ 50 nm). The silica suspension contained larger number of particles (~ 564) and larger size particles (aggregated size of approximately 200 nm). Upon mixing the same in equal volume the resulting sample had a particle size distribution similar to that of the nanosilica suspension.