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Supplement of

A method for measuring total aerosol oxidative potential (OP) with the dithiothreitol (DTT) assay and comparisons between an urban and roadside site of water-soluble and total OP

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Supplemental Information

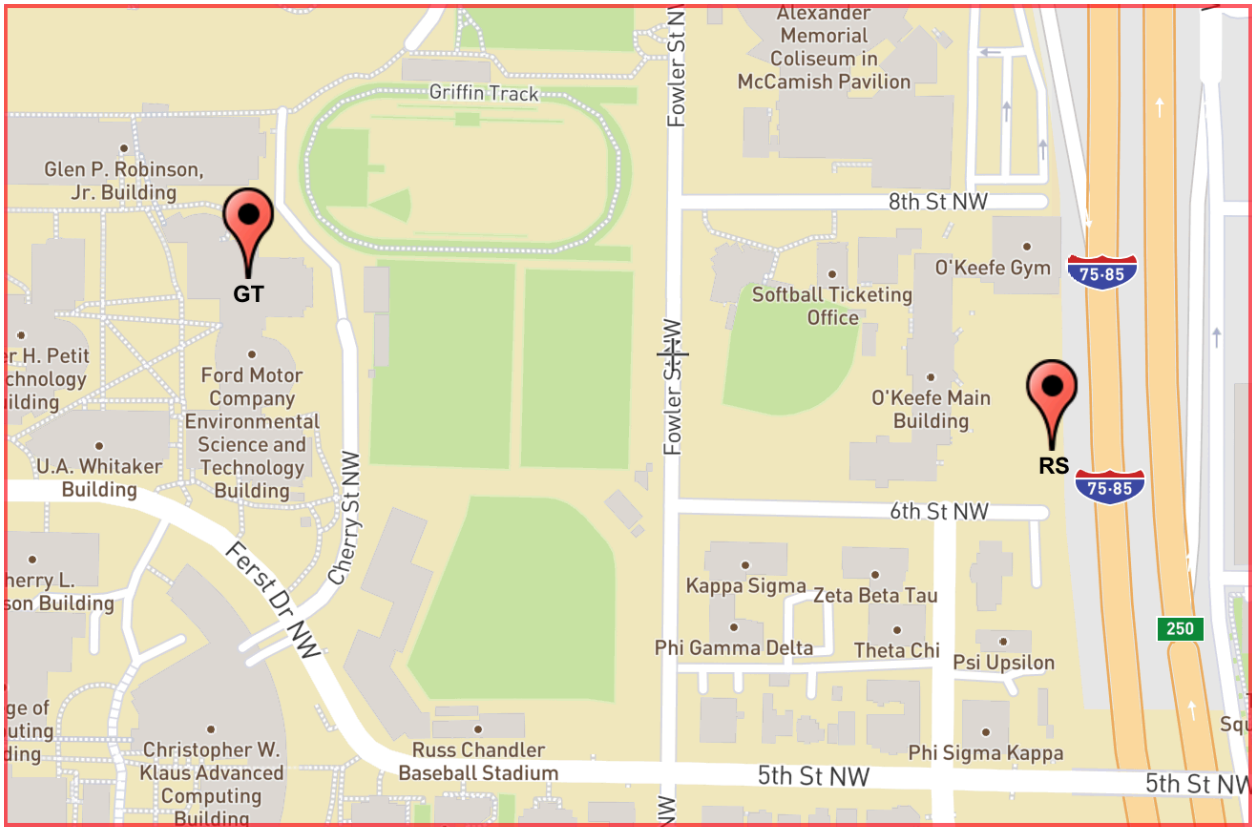

Figure S1. Map of sampling sites (Scale is 1:5000). (Map data ©2016 Google Imagery ©2016, DigitalGlobe, Sanborn, U.S. Geological Survey, USDA Farm Service Agency.)

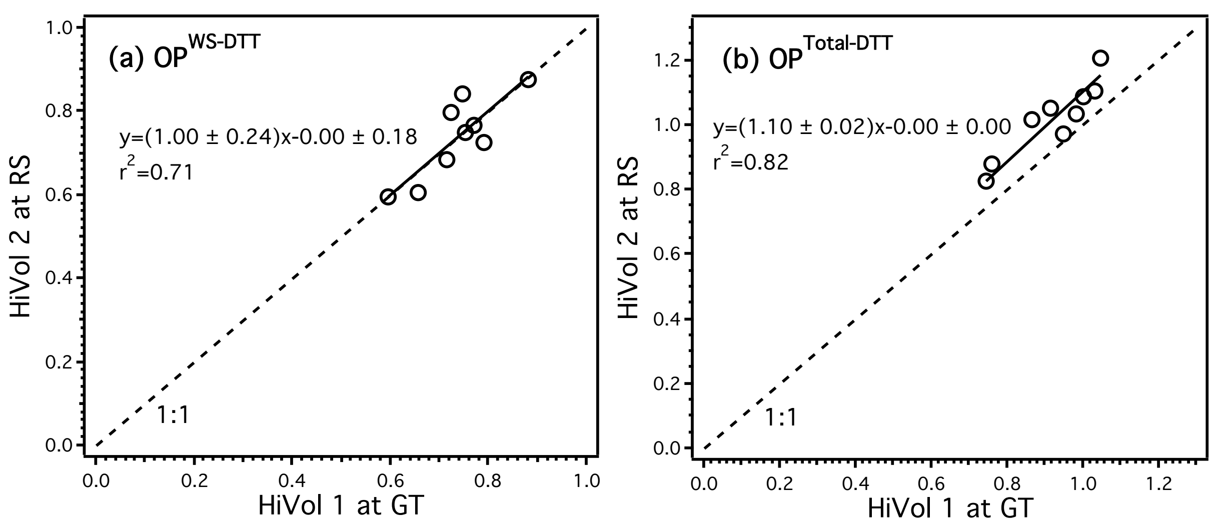

Figure S2. (a) $OP^{WS\text{-}DTT}$ (N=9) and (b) $OP^{Total\text{-}DTT}$ (N=9) comparisons for PM samples collected simultaneously at GT using two HiVol sampler. Regression analysis was done by orthogonal regression. The dotted line is 1:1.

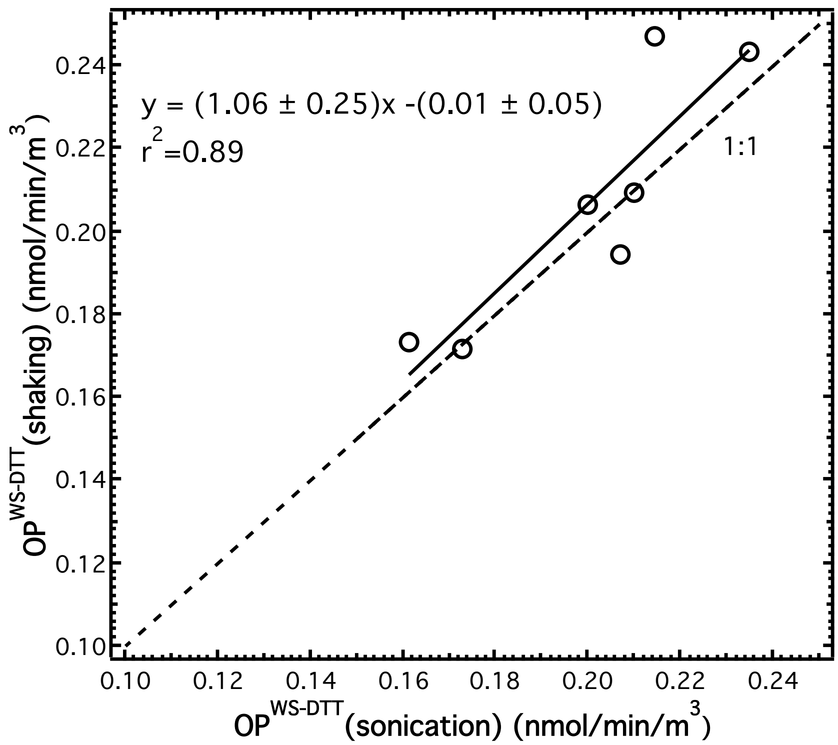

Figure S3. 30-minute sonication vs. 2.5-hour shaking comparison for $OP^{WS\text{-}DTT}$ measurements (N=7). Regression analysis was done by orthogonal regression. The dotted line is 1:1.

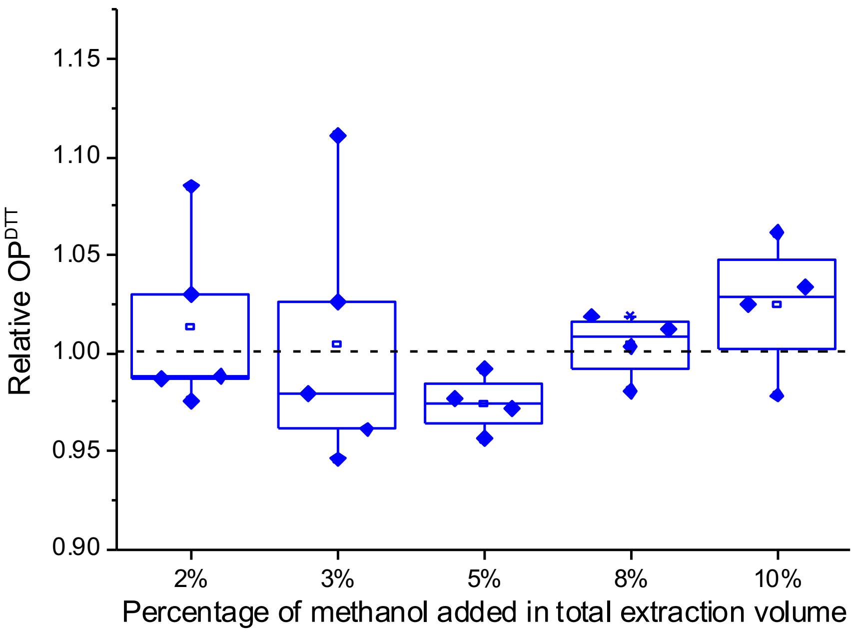

Figure S4. The relative OP^{DTT} response (the ratio of OP^{DTT} extracted by methanol-containing solvent to OP^{DTT} extracted by DI only) to adding small amount of methanol into extraction solvent.

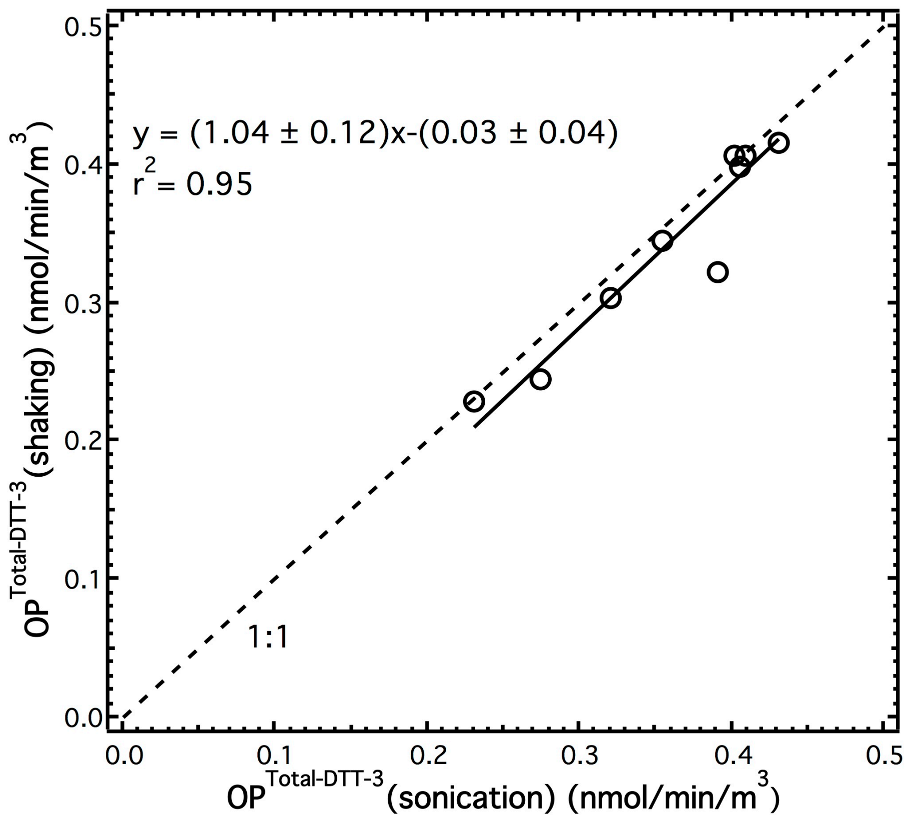

Figure S5. 30-minute sonication vs. 2.5-hour shaking comparison for $OP^{Total\text{-}DTT\text{-}3}$ measurements (N=9). Regression analysis was done by orthogonal regression. The dotted line is 1:1.

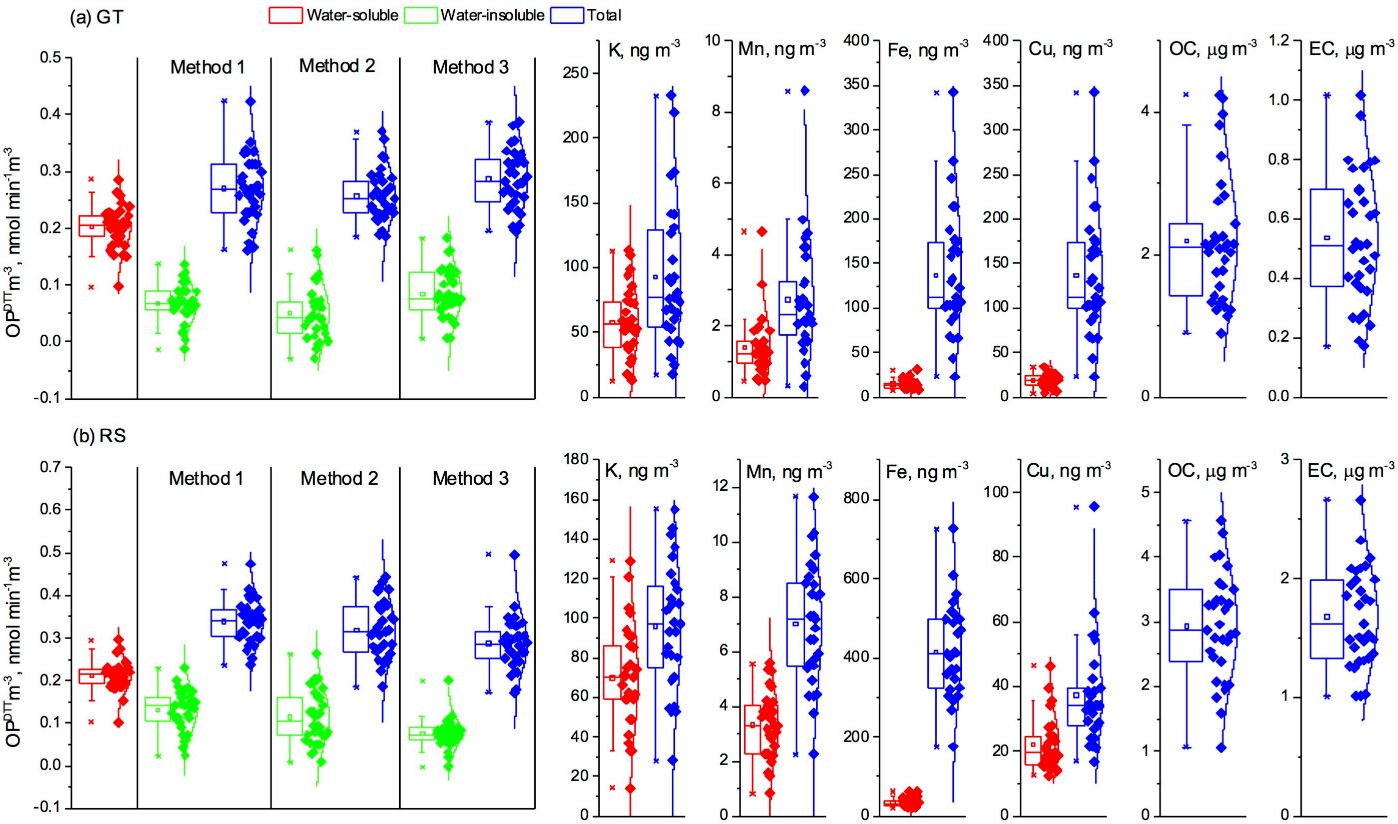

Figure S6. Graphical assessment of data normality.

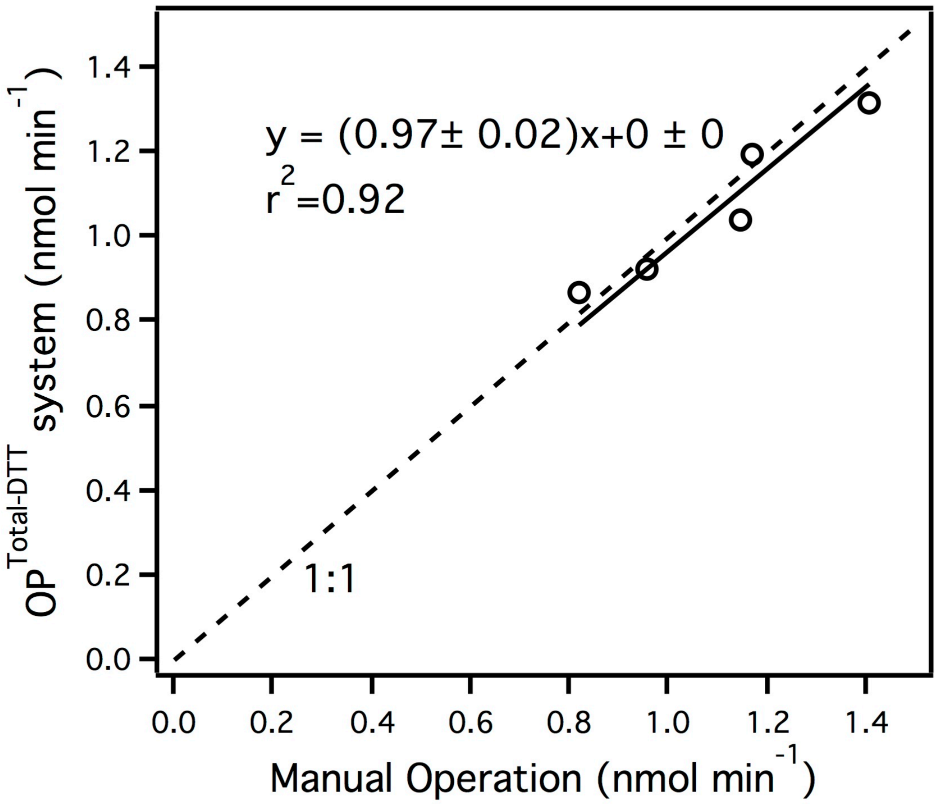

Figure S7. Blank-corrected DTT consumption rate comparison of the automated system to a manual analysis using ambient samples (N=5).

Figure S1. Correlation matrix for the various metals and OP^{DTT} obtained by method 3

GT				Water-soluble					Total					Water-insoluble				
N=35		OC	EC	DTT	K	Mn	Fe	Cu	DTT	K	Mn	Fe	Cu	DTT	K	Mn	Fe	Cu
	EC	**0.83****	**1**															
Water-soluble	DTT	**0.79****	**0.84****	**1**														
	K	0.6**	**0.88****	0.63**	**1**													
	Mn	**0.86****	**0.7****	0.46*	0.54**	**1**												
	Fe	**0.8****	**0.82****	0.49*	0.62**	**0.82****	**1**											
	Cu	**0.7****	**0.78****	**0.77****	**0.71****	**0.72****	0.64**	**1**										
Total	DTT	0.66**	**0.78****	**0.71****	**0.82****	0.69**	0.48*	**0.76****	**1**									
	K	0.67**	**0.84****	0.53**	**0.82****	**0.7****	0.59**	0.52**	0.69**	**1**								
	Mn	0.67**	0.66**	0.43*	0.51**	**0.94****	0.61**	0.65**	**0.73****	**0.7****	**1**							
	Fe	0.53**	0.58**	0.36	0.51**	**0.86****	0.6**	0.62**	**0.71****	0.56**	**0.97****	**1**						
	Cu	**0.72****	**0.78****	**0.78****	0.62**	**0.87****	0.54**	**0.97****	**0.78****	**0.7****	**0.88****	**0.84****	**1**					
Water-insoluble	DTT	0.44*	0.48**	-0.23	0.55**	0.57**	0.26	0.38	**0.87****	0.50*	0.66**	0.63**	0.56**	**1**				
	K	0.6**	0.6**	0.42*	0.61**	**0.76****	0.54**	0.3	0.66**	**0.94****	**0.74****	0.69**	0.61**	0.50*	**1**			
	Mn	0.43*	0.66**	0.31	0.37	**0.79****	0.64**	0.43*	0.62**	0.62**	**0.96****	**0.95****	**0.75****	0.59**	**0.7****	**1**		
	Fe	0.49*	0.57**	0.35*	0.49*	**0.86****	0.57**	0.59**	**0.7****	0.55**	**0.96****	**0.9995****	**0.84****	0.64**	0.69**	**0.95****	**1**	
	Cu	**0.72****	**0.78****	**0.78****	0.61**	**0.88****	0.54**	**0.97****	**0.78****	**0.7****	**0.89****	**0.85****	**0.9999****	0.56**	0.63**	**0.76****	**0.84****	**1**

Note: r>0.70 are bold.

**p<0.01. *p<0.05. Correlation not statistically significant is without superscript.

RS				Water-soluble					Total					Water-insoluble				
		OC	EC	DTT	K	Mn	Fe	Cu	DTT	K	Mn	Fe	Cu	DTT	K	Mn	Fe	Cu
	EC	**0.75****	**1**															
Water-soluble	DTT	**0.83****	**0.79****	**1**														
	K	**0.86****	0.68**	0.67**	**1**													
	Mn	**0.79****	0.63**	0.43*	0.56**	**1**												
	Fe	**0.8****	**0.8****	**0.88****	0.66**	0.45*	**1**											
	Cu	0.64**	**0.78****	0.54**	**0.77****	0.36	0.63**	**1**										
Total	DTT	**0.71****	0.68**	0.56**	0.6**	0.56**	0.49*	0.55**	**1**									
	K	**0.88****	**0.71****	0.69**	**0.9****	0.65**	**0.72****	0.51*	0.67**	**1**								
	Mn	**0.86****	0.69**	0.48*	0.53**	**0.95****	0.56**	0.56**	0.66**	0.61**	**1**							
	Fe	**0.79****	**0.75****	0.57**	0.55**	**0.72****	**0.72****	**0.71****	0.66**	0.6**	**0.9****	**1**						
	Cu	0.66**	**0.72****	0.4	**0.78****	0.65**	0.56**	**0.93****	**0.72****	0.57**	**0.79****	**0.84****	**1**					
Water-insoluble	DTT	-0.34	-0.37	-0.51**	-0.47*	-0.37	-0.40*	-0.40*	**0.84****	-0.43*	0.31	-0.39*	0.43*	**1**				
	K	0.6**	0.47*	0.37	0.4	0.56**	**0.73****	0.28	0.47*	**0.7****	0.63**	0.62**	0.24*	-0.27	**1**			
	Mn	**0.77****	**0.72****	0.42*	0.44*	**0.81****	0.62**	0.65**	0.67**	0.49*	**0.95****	**0.96****	**0.82****	0.31	0.57**	**1**		
	Fe	**0.74****	**0.71****	0.47*	0.49*	**0.71****	0.66**	**0.7****	0.66**	0.54**	**0.9****	**0.998****	**0.84****	-0.36	0.59**	**0.97****	**1**	
	Cu	0.67**	**0.73****	0.25	**0.79****	0.65**	0.56**	**0.92****	**0.73****	0.59**	**0.79****	**0.84****	**0.9996****	0.44*	0.14	**0.82****	**0.84****	**1**

Note: r>0.70 are bold.

**p<0.01. *p<0.05. Correlation not statistically significant is without superscript.

N=31 for corrletions between OP^{DTT}, N=29 for correlations between OP^{DTT} and PM components.

Table S2. Pearson's r between OP^{DTT} m^{-3} and PM chemical components at GT (N=34) and RS (N=29) sites.

GT		OC	EC	WS				Total			
				K	Mn	Fe	Cu	K	Mn	Fe	Cu
Method1	OP^{WS-DTT}	0.79**	0.84**	0.63**	0.46*	0.49*	0.77**	0.53**	0.43*	0.36	0.78**
	OP^{sM-DTT}	0.71**	0.66**	0.28*	0.44**	0.45**	0.4*	0.35*	0.38	0.2	0.37*
	$OP^{Total-DTT-1}$	0.76**	0.81**	0.51**	0.46*	0.54**	0.74**	0.39*	0.41*	0.38*	0.72**
Method2	$OP^{Total-DTT-2}$	0.51**	0.44*	0.27	0.40*	0.09	0.62**	0.15	0.37*	0.23	0.59**
	$OP^{WI-DTT-2}$	0.44*	0.25	-0.31	0.46*	-0.39	0.53**	-0.28	0.32	0.13	0.53**
Method3	$OP^{Total-DTT-3}$	0.66**	0.78**	0.82**	0.69**	0.48*	0.76**	0.69**	0.73**	0.71**	0.78**
	$OP^{WI-DTT-3}$	0.44*	0.48**	0.55**	0.57**	0.26	0.38	0.50*	0.66**	0.63**	0.56**
RS											
Method1	OP^{WS-DTT}	0.83**	0.79**	0.67**	0.43*	0.88**	0.54**	0.69**	0.48*	0.57**	0.40
	OP^{sM_DTT}	0.72**	0.72**	0.48**	0.13	0.73**	0.65**	0.59**	0.18	0.53**	0.38
	$OP^{Total-DTT-1}$	0.77**	0.76**	0.67**	0.28	0.80**	0.63**	0.67**	0.39*	0.61**	0.42*
Method2	$OP^{Total-DTT-2}$	0.68**	0.52**	0.53**	0.45*	0.09	0.44*	0.48*	0.59**	0.57**	0.65**
	$OP^{WI-DTT-2}$	0.68**	0.51**	0.50*	0.48*	0.07	0.42*	0.42*	0.61**	0.66**	0.66**
Method3	$OP^{Total-DTT-3}$	0.71**	0.68**	0.6**	0.56**	0.49*	0.55**	0.67**	0.66**	0.66**	0.72**
	$OP^{WI-DTT-3}$	-0.34	-0.37	-0.47*	-0.37	-0.40*	-0.40*	-0.43*	0.31	-0.39*	0.43*

Note: Water-insoluble OP^{WI-DTT} obtained by method 2 and 3 is calculated by $OP^{WI-DTT} = OP^{Total-DTT} - OP^{WS-DTT}$.
r>0.70 are bold.
**p-value<0.01. *p-value<0.05. The correlation not statistically significant is without superscript and greyed out.

Table S3. OP^{WS-DTT}/m^3 and $OP^{Total-DTT}/m^3$ (nmol/min/m^3)

Filter type	GT			RS		
	OP^{WS-DTT}	$OP^{Total-DTT}$	$\frac{OP^{WS-DTT}}{OP^{Total-DTT}}$	OP^{WS-DTT}	$OP^{Total-DTT}$	$\frac{OP^{WS-DTT}}{OP^{Total-DTT}}$
Quartz	0.20 ± 0.04 N=35	0.32 ± 0.06 N=35	$65 \pm 10\%$ N=35	0.21 ± 0.03 N=32	0.34 ± 0.05 N=33	$62 \pm 12\%$ N=32
Teflon	0.13 ± 0.03 N=23	0.21 ± 0.04 N=23	$65 \pm 14\%$ N=23	0.18 ± 0.02 N=24	0.31 ± 0.04 N=24	$58 \pm 10\%$ N=24

Table S4. The OP variance on Teflon versus quartz filters assessed by the F-test in ANOVA.

	F	$F_{critical}$ for $\alpha = 0.05$
GT-OP^{WS-DTT}	2.082	4.013
RS-OP^{WS-DTT}	0.499	4.020
GT-$OP^{Total-DTT}$	2.084	4.013
RS-$OP^{Total-DTT}$	0.159	4.016

*Null hypothesis assumes that there is no significant difference between Teflon and quartz filters.
*$F < F_{critical}$ when the null hypothesis is true with significance level of 0.05.

Table S5. Summary of concentrations of measured PM components.

	Water-soluble		Total	
	GT	RS	GT	RS
K, ng/m^3	57.49±28.08 N=28	69.79±26.56 N=29	92.54±56.05 N=28	95.97±31.63 N=28
Mn, ng/m^3	1.40±0.85 N=29	3.32±1.20 N=29	2.73±1.64 N=29	7.02±2.21 N=29
Fe, ng/m^3	13.94±5.04 N=29	33.25±11.36 N=29	136.69±70.72 N=29	414.41±116.54 N=29
Cu, ng/m^3	18.17±7.27 N=28	22.03±8.29 N=28	35.23±18.40 N=29	37.20±15.94 N=29
OC, µg/m^3	-	-	2.19±0.90 N=33	2.92±0.82 N=31
EC, µg/m^3	-	-	0.54±0.22 N=32	1.68±0.41 N=31

Table S6. Coefficients of divergence (CODs) for the paired GT-RS site.

	Quartz filters				Teflon filters	
	EC	OC	OP^{WS-DTT}	$OP^{Total-DTT}$	OP^{WS-DTT}	$OP^{Total-DTT}$
Coefficients of divergence (CODs)	0.52	0.18	0.06	0.08	0.19	0.23

Program code for modified automated $OP^{Total-DTT}$ system (Address 1: pump A; Address 2: pump B).

Line	Line Label	Address	Command	Command Data
1		2	CONSTANT <varName> = <float>	dlLarge,12
2		2	CONSTANT <varName> = <float>	AirLarge,5
3		2	CONSTANT <varName> = <float>	WasteLarge,6
4		2	CONSTANT <varName> = <float>	Tris,11
5		2	CONSTANT <varName> = <float>	TCA,10
6		2	CONSTANT <varName> = <float>	LWCC,9
7		2	CONSTANT <varName> = <float>	DTNB,1
8		2	CONSTANT <varName> = <float>	IVLarge,4
9		1	CONSTANT <varName> = <float>	dlSmall,6
10		1	CONSTANT <varName> = <float>	AirSmall,4
11		1	CONSTANT <varName> = <float>	WasteSmall,5
12		1	CONSTANT <varName> = <float>	DTT,3
13		1	CONSTANT <varName> = <float>	IVSmall,2
14		1	CONSTANT <varName> = <float>	RVSmall,1
15				

16				
17	PreloadTCA	2	VALVE_PORT = <int> [CCW]	TCA
18		2	POSITION <float> [IMM or SYNC]	1000
19		2	VALVE_PORT = <int> [CCW]	WasteLarge
20		2	POSITION <float> [IMM or SYNC]	0
21	PreloadTris	2	VALVE_PORT = <int> [CCW]	Tris
22		2	POSITION <float> [IMM or SYNC]	1000
23		2	VALVE_PORT = <int> [CCW]	WasteLarge
24		2	POSITION <float> [IMM or SYNC]	0
25				
26	PreloadDTT	1	VALVE_PORT = <int> [CCW]	DTT
27		1	POSITION <float> [IMM or SYNC]	250
28		1	VALVE_PORT = <int> [CCW]	WasteSmall
29		1	POSITION <float> [IMM or SYNC]	0
30	PreloadDTNB	2	VALVE_PORT = <int> [CCW]	DTNB
31		2	POSITION <float> [IMM or SYNC]	500
32		2	VALVE_PORT = <int> [CCW]	WasteLarge
33		2	POSITION <float> [IMM or SYNC]	0
34				
35	SetHomePosition	1	SET out2 = <bit>	1
36		1	SET out2 = <bit>	0
37		1	SET out2 = <bit>	1
38		1	SET out1 = <bit>	1
39		1	DELAY <float>	1
40				
41			DO	
42	CleanLarge+Small1		DO	
43		2	VALVE_PORT = <int> [CCW]	dILarge
44		2	SET speed = <float>	400
45		2	POSITION <float> [IMM or SYNC]	5000
46		2	VALVE_PORT = <int> [CCW]	WasteLarge
47		2	POSITION <float> [IMM or SYNC]	0
48		1	VALVE_PORT = <int> [CCW]	dISmall
49		1	POSITION <float> [IMM or SYNC]	250
50		1	VALVE_PORT = <int> [CCW]	WasteSmall
51		1	POSITION <float> [IMM or SYNC]	0
52			LOOP <int>	1
53				
54	LoadReactionVial1	1	VALVE_PORT = <int> [CCW]	DTT

55		1	POSITION <float> [IMM or SYNC]	250
56		1	VALVE_PORT = <int> [CCW]	RVSmall
57		1	POSITION <float> [IMM or SYNC]	0
58		1	VALVE_PORT = <int> [CCW]	DTT
59		1	POSITION <float> [IMM or SYNC]	100
60		1	VALVE_PORT = <int> [CCW]	dISmall
61		1	POSITION <float> [IMM or SYNC]	250
62		1	VALVE_PORT = <int> [CCW]	RVSmall
63		1	POSITION <float> [IMM or SYNC]	0
64		1	VALVE_PORT = <int> [CCW]	dISmall
65		1	POSITION <float> [IMM or SYNC]	200
66		1	VALVE_PORT = <int> [CCW]	RVSmall
67		1	POSITION <float> [IMM or SYNC]	0
68		1	SET speed = <float>	100
69			DO	
70		1	VALVE_PORT = <int> [CCW]	AirSmall
71		1	POSITION <float> [IMM or SYNC]	250
72		1	VALVE_PORT = <int> [CCW]	RVSmall
73		1	POSITION <float> [IMM or SYNC]	0
74		1	VALVE_PORT = <int> [CCW]	AirSmall
75		1	POSITION <float> [IMM or SYNC]	250
76		1	VALVE_PORT = <int> [CCW]	RVSmall
77		1	POSITION <float> [IMM or SYNC]	0
78			LOOP <int>	10
79		1	SET speed = <float>	30
80		1	VALVE_PORT = <int> [CCW]	dISmall
81		1	POSITION <float> [IMM or SYNC]	250
82		1	VALVE_PORT = <int> [CCW]	WasteSmall
83		1	POSITION <float> [IMM or SYNC]	0
84		1	VALVE_PORT = <int> [CCW]	dISmall
85		1	POSITION <float> [IMM or SYNC]	250
86		1	VALVE_PORT = <int> [CCW]	WasteSmall
87		1	POSITION <float> [IMM or SYNC]	0
88		2	DELAY <float>	40
89				
90	ChangePort	1	SET out1 = <bit>	0
91		1	SET out1 = <bit>	1
92		2	DELAY <float>	1
93				

94	LoadTCA1		DO	
95		2	VALVE_PORT = <int> [CCW]	TCA//X10 diluted
96		2	SET speed = <float>	400
97		2	POSITION <float> [IMM or SYNC]	1000
98		2	VALVE_PORT = <int> [CCW]	IVLarge
99		2	POSITION <float> [IMM or SYNC]	0
100		2	VALVE_PORT = <int> [CCW]	AirLarge
101		2	POSITION <float> [IMM or SYNC]	1000
102		2	VALVE_PORT = <int> [CCW]	IVLarge
103		2	POSITION <float> [IMM or SYNC]	0
104		2	VALVE_PORT = <int> [CCW]	dILarge
105		2	POSITION <float> [IMM or SYNC]	1500
106		2	VALVE_PORT = <int> [CCW]	WasteLarge
107		2	POSITION <float> [IMM or SYNC]	0
108				
109	CleanLWCC1	2	VALVE_PORT = <int> [CCW]	dILarge
110		2	POSITION <float> [IMM or SYNC]	5000
111		2	VALVE_PORT = <int> [CCW]	LWCC
112		2	POSITION <float> [IMM or SYNC]	0
113				
114				
115	Draw	1	VALVE_PORT = <int> [CCW]	RVSmall
116		1	SET speed = <float>	30
117		1	POSITION <float> [IMM or SYNC]	250
118		1	VALVE_PORT = <int> [CCW]	WasteSmall
119		1	POSITION <float> [IMM or SYNC]	0
120		1	VALVE_PORT = <int> [CCW]	RVSmall
121		1	POSITION <float> [IMM or SYNC]	250
122		1	VALVE_PORT = <int> [CCW]	WasteSmall
123		1	POSITION <float> [IMM or SYNC]	0
124		1	VALVE_PORT = <int> [CCW]	RVSmall
125		1	SET speed = <float>	5
126		1	POSITION <float> [IMM or SYNC]	250
127		1	DELAY <float>	5
128		1	VALVE_PORT = <int> [CCW]	WasteSmall
129		1	SET speed = <float>	40
130		1	POSITION <float> [IMM or SYNC]	0
131			DO	

132		1	VALVE_PORT = <int> [CCW]	RVSmall
133		1	SET speed = <float>	5
134		1	POSITION <float> [IMM or SYNC]	250
135		1	DELAY <float>	15
136		1	VALVE_PORT = <int> [CCW]	WasteSmall
137		1	SET speed = <float>	40
138		1	POSITION <float> [IMM or SYNC]	0
139			LOOP <int>	3
140		1	VALVE_PORT = <int> [CCW]	RVSmall
141		1	SET speed = <float>	5
142		1	POSITION <float> [IMM or SYNC]	250
143		1	VALVE_PORT = <int> [CCW]	WasteSmall
144		1	POSITION <float> [IMM or SYNC]	180
145		1	VALVE_PORT = <int> [CCW]	IVSmall
146		1	POSITION <float> [IMM or SYNC]	80
147		1	VALVE_PORT = <int> [CCW]	RVSmall
148		1	POSITION <float> [IMM or SYNC]	0
149		1	SET speed = <float>	40
150			DO	
151		1	VALVE_PORT = <int> [CCW]	AirSmall
152		1	POSITION <float> [IMM or SYNC]	250
153		1	VALVE_PORT = <int> [CCW]	RVSmall
154		1	POSITION <float> [IMM or SYNC]	0
155		1	VALVE_PORT = <int> [CCW]	AirSmall
156		1	POSITION <float> [IMM or SYNC]	250
157		1	VALVE_PORT = <int> [CCW]	RVSmall
158		1	POSITION <float> [IMM or SYNC]	0
159		1	VALVE_PORT = <int> [CCW]	AirSmall
160		1	POSITION <float> [IMM or SYNC]	250
161		1	VALVE_PORT = <int> [CCW]	IVSmall
162		1	POSITION <float> [IMM or SYNC]	0
163			LOOP <int>	3
164				
165	LoadTris1	2	VALVE_PORT = <int> [CCW]	Tris//X5 diluted
166		2	POSITION <float> [IMM or SYNC]	2000
167		2	VALVE_PORT = <int> [CCW]	IVLarge
168		2	POSITION <float> [IMM or SYNC]	0
169		2	VALVE_PORT = <int> [CCW]	AirLarge
170		2	POSITION <float> [IMM or SYNC]	1000

171		2	VALVE_PORT = <int> [CCW]	IVLarge
172		2	POSITION <float> [IMM or SYNC]	0
173		2	VALVE_PORT = <int> [CCW]	dILarge
174		2	POSITION <float> [IMM or SYNC]	5000
175		2	VALVE_PORT = <int> [CCW]	WasteLarge
176		2	POSITION <float> [IMM or SYNC]	0
177				
178	LoadDTNB1	2	VALVE_PORT = <int> [CCW]	DTNB//X50 diluted
179		2	POSITION <float> [IMM or SYNC]	500
180		2	VALVE_PORT = <int> [CCW]	IVLarge
181		2	POSITION <float> [IMM or SYNC]	0
182		2	VALVE_PORT = <int> [CCW]	IVLarge
183		2	POSITION <float> [IMM or SYNC]	5000
184		2	VALVE_PORT = <int> [CCW]	IVLarge
185		2	POSITION <float> [IMM or SYNC]	0
186		2	VALVE_PORT = <int> [CCW]	AirLarge
187		2	POSITION <float> [IMM or SYNC]	5000
188		2	VALVE_PORT = <int> [CCW]	IVLarge
189		2	POSITION <float> [IMM or SYNC]	0
190				
191	IVtoLWCC1	2	VALVE_PORT = <int> [CCW]	IVLarge
192		2	POSITION <float> [IMM or SYNC]	4700
193		2	VALVE_PORT = <int> [CCW]	WasteLarge
194		2	POSITION <float> [IMM or SYNC]	4000
195		2	VALVE_PORT = <int> [CCW]	LWCC
196		2	SET speed = <float>	400
197		2	POSITION <float> [IMM or SYNC]	0
198				
199	RinseIV1	2	VALVE_PORT = <int> [CCW]	IVLarge
200		2	SET speed = <float>	400
201		2	POSITION <float> [IMM or SYNC]	5000
202		2	VALVE_PORT = <int> [CCW]	WasteLarge
203		2	POSITION <float> [IMM or SYNC]	0
204			DO	
205		2	VALVE_PORT = <int> [CCW]	dILarge
206		2	POSITION <float> [IMM or SYNC]	5000
207		2	VALVE_PORT = <int> [CCW]	IVLarge
208		2	POSITION <float> [IMM or SYNC]	0

209		2	VALVE_PORT = <int> [CCW]	dILarge
210		2	POSITION <float> [IMM or SYNC]	2000
211		2	VALVE_PORT = <int> [CCW]	IVLarge
212		2	POSITION <float> [IMM or SYNC]	0
213		2	VALVE_PORT = <int> [CCW]	IVLarge
214		2	POSITION <float> [IMM or SYNC]	5000
215		2	VALVE_PORT = <int> [CCW]	WasteLarge
216		2	POSITION <float> [IMM or SYNC]	0
217		2	VALVE_PORT = <int> [CCW]	IVLarge
218		2	POSITION <float> [IMM or SYNC]	5000
219		2	VALVE_PORT = <int> [CCW]	WasteLarge
220		2	POSITION <float> [IMM or SYNC]	0
221			LOOP <int>	2
222			LOOP <int>	5
223				
224	RinseRV1		DO	
225			DO	
226		1	VALVE_PORT = <int> [CCW]	dISmall
227		1	POSITION <float> [IMM or SYNC]	250
228		1	VALVE_PORT = <int> [CCW]	RVSmall
229		1	POSITION <float> [IMM or SYNC]	0
230			LOOP <int>	4
231			DO	
232		1	VALVE_PORT = <int> [CCW]	AirSmall
233		1	POSITION <float> [IMM or SYNC]	250
234		1	VALVE_PORT = <int> [CCW]	RVSmall
235		1	POSITION <float> [IMM or SYNC]	0
236			LOOP <int>	4
237			LOOP <int>	2
238				
239	RecleanLWCC1	2	VALVE_PORT = <int> [CCW]	dILarge
240		2	POSITION <float> [IMM or SYNC]	5000
241		2	VALVE_PORT = <int> [CCW]	LWCC
242		2	POSITION <float> [IMM or SYNC]	0
243				
244				
245	ChangeSample	1	SET out1 = <bit>	0
246		1	SET out1 = <bit>	1
247			LOOP <int>	8