SVF (ppm)	**0.01-0.06**	**0.06-0.11**	**0.11-0.13**
BC (µg m^{-3})	**0.02-0.11**	**0.11-0.20**	**0.20-0.25**
PPS (10-20 nm)	11.73 (SD=6.75, N=43)	(N=0)	(N=0)
PPS (20-30 nm)	8.82 (SD=7.59, N=30)	14.31 (SD=8.14, N=18)	(N=0)
PPS (30-40 nm)	5.44 (SD=0.52, N=6)	6.16 (SD=3.64, N=19)	6.80 (SD=2.47, N=3)
PPS (40-50 nm)	2.14 (N=1)	6.31 (SD=2.84, N=10)	13.11 (SD=5.44, N=8)
PPS (50-60 nm)	(N=0)	(N=0)	13.42 (SD=0.8, N=2)

Table S1: Normalized PA:LII ratios for the Toronto measurements as a function of different PPS ranges. Data are separated based on different concentration ranges. The BC mass concentration is calculated from the SVF measurements with the assumption of BC material density of 1.9 g cm^{-3}. All measurements are in 5 minute resolution.

SVF (ppm)	**0.12-0.30**	**0.30-0.60**	**0.60-2.00**
BC (µg m^{-3})	**0.23-0.57**	**0.57-1.14**	**1.14-3.80**
PPS (40-50 nm)	(N=0)	0.71 (N=1)	1.70 (SD=0.48, N=13)
PPS (50-60 nm)	0.48 (N=1)	2.44 (SD=0.86, N=5)	2.31 (SD=1.11, N=8)

Table S2: Normalized PA:LII ratios for the Ottawa street canyon measurements as a function of different PPS ranges. Data are separated based on different concentration ranges. The BC mass concentration is calculated from the SVF measurements with the assumption of BC material density of 1.9 g cm^{-3}. All measurements are in 5 minute resolution.

SVF (ppm)	**0.12-0.30**	**0.30-0.60**	**0.60-2.00**
BC (µg m^{-3})	**0.23-0.57**	**0.57-1.14**	**1.14-3.80**
PPS (40-50 nm)	(N=0)	(N=0)	(N=0)
PPS (50-60 nm)	(N=0)	0.73 (SD=0.55, N=3)	1.19 (SD=0.25, N=2)
PPS (60-70 nm)	1.36 (SD=0.84, N=7)	0.76 (SD=0.57, N=6)	(N=0)
PPS (70-80 nm)	0.77 (SD=0.28, N=6)	0.80 (SD=0.26, N=2)	(N=0)

Table S3: Normalized PA:LII ratios for the Ottawa near highway measurements as a function of different PPS ranges. Data are separated based on different concentration ranges. The BC mass concentration is calculated from the SVF measurements with the assumption of BC material density of 1.9 g cm^{-3}. All measurements are in 5 minute resolution.

SVF (ppt)	**0.02-0.05**	**0.05-0.11**	**0.11-0.37**	**0.37-1.00**
BC (µg m^{-3})	**0.04-0.10**	**0.10-0.20**	**0.20-0.70**	**0.70-1.90**
PPS (45-50 nm)	0.57 (SD=0.15, N=3)	1.50 (N=1)	0.56 (N=1)	0.22 (SD=0.22, N=3)
PPS (50-55 nm)	0.77 (SD=1.22, N=10)	0.80 (SD=0.44, N=12)	0.48 (SD=0.34, N=19)	0.45 (SD=0.38, N=43)
PPS (55-60 nm)	0.85 (SD=0.67, N=11)	0.68 (SD=0.50, N=34)	0.57 (SD=0.36, N=96)	0.33 (SD=0.21, N=40)
PPS (60-65 nm)	0.63 (SD=0.46, N=7)	0.69 (SD=0.42, N=73)	0.50 (SD=0.24, N=107)	0.38 (SD=0.34, N=15)
PPS (65-70 nm)	0.26 (SD=0.40, N=11)	0.54 (SD=0.30, N=53)	0.44 (SD=0.22, N=69)	0.27 (SD=0.13, N=23)
PPS (70-75 nm)	0.58 (SD=0.90, N=24)	0.65 (SD=0.49, N=20)	0.37 (SD=0.21, N=58)	0.38 (SD=0.13, N=19)
PPS (75-80 nm)	0.56 (SD=0.72, N=24)	0.49 (SD=0.51, N=29)	0.43 (SD=0.27, N=81)	0.44 (SD=0.17, N=23)
PPS (80-85 nm)	1.03 (SD=0.87, N=24)	0.65 (SD=0.64, N=39)	0.43 (SD=0.27, N=73)	0.45 (SD=0.18, N=7)
PPS (85-90 nm)	0.63 (SD=0.61, N=36)	0.57 (SD=0.40, N=67)	0.42 (SD=0.20, N=81)	0.64 (N=1)
PPS (90-95 nm)	0.68 (SD=0.40, N=31)	0.66 (SD=0.34, N=65)	0.50 (SD=0.19, N=53)	(N=0)
PPS (95-100 nm)	1.06 (SD=1.84, N=7)	0.54 (SD=0.39, N=25)	0.55 (SD=0.22, N=26)	0.54 (N=1)
PPS (100-105 nm)	1.46 (N=1)	0.56 (SD=0.14, N=5)	0.62 (SD=0.15, N=4)	(N=0)

Table S4: Normalized PA:LII ratios for the Windsor BAQS-Met measurements as a function of different PPS ranges. Data are separated based on different concentration ranges. The BC mass concentration is calculated from the SVF measurements with the assumption of BC material density of 1.9 g cm^{-3}. Measurements are in a mixture of 2, 5, 10, and 15 minute resolutions.

SVF (ppt)	**0.01-0.06**	**0.06-0.11**	**0.11-0.13**
BC (µg m^{-3})	**0.02-0.11**	**0.11-0.20**	**0.20-0.25**
PPS (10-20 nm)	21.01 (SD=11.20, N=43)	(N=0)	(N=0)
PPS (20-30 nm)	23.07 (SD=9.04, N=30)	17.19 (SD=6.56, N=18)	(N=0)
PPS (30-40 nm)	28.56 (SD=2.74, N=6)	25.03 (SD=4.00, N=19)	22.48 (SD=10.35, N=3)
PPS (40-50 nm)	13.52 (N=1)	30.50 (SD=3.21, N=10)	22.73 (SD=4.30, N=8)
PPS (50-60 nm)	(N=0)	(N=0)	15.39 (SD=1.08, N=2)

Table S5: SAC values for the Toronto measurements as a function of different PPS ranges. Data are separated based on different concentration ranges. The BC mass concentration is calculated from the SVF measurements with the assumption of BC material density of 1.9 g cm^{-3}. All measurements are in 5 minute resolution.

SVF (ppt)	**0.12-0.30**	**0.30-0.60**	**0.60-2.00**
BC (µg m^{-3})	**0.23-0.57**	**0.57-1.14**	**1.14-3.80**
PPS (40-50 nm)	(N=0)	3.87 (N=1)	10.13 (SD=3.67, N=13)
PPS (50-60 nm)	2.37 (N=1)	12.57 (SD=3.60, N=5)	14.77 (SD=6.65, N=8)

Table S6: SAC values for the Ottawa street canyon measurements as a function of different PPS ranges. Data are separated based on different concentration ranges. The BC mass concentration is calculated from the SVF measurements with the assumption of BC material density of 1.9 g cm^{-3}. All measurements are in 5 minute resolution.

SVF (ppt)	**0.12-0.30**	**0.30-0.60**	**0.60-2.00**
BC (µg m^{-3})	**0.23-0.57**	**0.57-1.14**	**1.14-3.80**
PPS (40-50 nm)	(N=0)	(N=0)	(N=0)
PPS (50-60 nm)	(N=0)	4.89 (SD=3.61, N=3)	8.37 (SD=2.15, N=2)
PPS (60-70 nm)	8.91 (SD=5.31, N=7)	4.68 (SD=3.18, N=6)	(N=0)
PPS (70-80 nm)	4.70 (SD=2.03, N=6)	4.99 (SD=0.54, N=2)	(N=0)

Table S7: SAC values for the Ottawa near highway measurements as a function of different PPS ranges. Data are separated based on different concentration ranges. The BC mass concentration is calculated from the SVF measurements with the assumption of BC material density of 1.9 g cm^{-3}. All measurements are in 5 minute resolution.

SVF (ppt)	**0.02-0.05**	**0.05-0.11**	**0.11-0.37**	**0.37-1.00**
BC (µg m^{-3})	**0.04-0.10**	**0.10-0.20**	**0.20-0.70**	**0.70-1.90**
PPS (45-50 nm)	1.90 (SD=0.49, N=3)	2.86 (N=1)	1.56 (N=1)	0.74 (SD=0.56, N=3)
PPS (50-55 nm)	3.16 (SD=3.39, N=10)	2.82 (SD=1.82, N=12)	1.98 (SD=1.17, N=19)	2.41 (SD=2.06, N=43)
PPS (55-60 nm)	2.56 (SD=2.06, N=11)	2.49 (SD=1.71, N=34)	2.35 (SD=1.16, N=96)	2.20 (SD=0.81, N=40)
PPS (60-65 nm)	2.38 (SD=1.61, N=7)	2.93 (SD=1.60, N=73)	2.45 (SD=0.99, N=107)	2.39 (SD=0.69, N=15)
PPS (65-70 nm)	2.70 (SD=2.50, N=11)	2.48 (SD=1.19, N=53)	2.35 (SD=0.72, N=69)	2.23 (SD=0.89, N=23)
PPS (70-75 nm)	2.88 (SD=2.75, N=24)	2.56 (SD=1.44, N=20)	2.50 (SD=0.88, N=58)	2.52 (SD=0.43, N=19)
PPS (75-80 nm)	2.73 (SD=2.15, N=24)	2.73 (SD=1.43, N=29)	2.73 (SD=0.76, N=81)	2.58 (SD=0.62, N=23)
PPS (80-85 nm)	3.59 (SD=1.75, N=24)	3.24 (SD=2.05, N=39)	2.72 (SD=0.84, N=73)	2.41 (SD=0.59, N=7)
PPS (85-90 nm)	2.64 (SD=2.24, N=36)	2.63 (SD=1.07, N=67)	2.77 (SD=0.57, N=81)	2.22 (N=1)
PPS (90-95 nm)	3.57 (SD=2.18, N=31)	2.87 (SD=1.02, N=65)	2.79 (SD=0.73, N=53)	(N=0)
PPS (95-100 nm)	3.33 (SD=3.46, N=7)	2.50 (SD=1.42, N=25)	2.92 (SD=0.80, N=26)	1.71 (N=1)
PPS (100-105 nm)	(N=0)	2.92 (SD=1.21, N=5)	2.31 (SD=0.85, N=4)	(N=0)

Table S8: SAC values for the Windsor BAQS-Met measurements as a function of different PPS ranges. Data are separated based on different concentration ranges. The BC mass concentration is calculated from the SVF measurements with the assumption of BC material density of 1.9 g cm^{-3}. Measurements are in a mixture of 2, 5, 10, and 15 minute resolution.