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Supplementary material

Quantification of nitroaromatic compounds in atmospheric fine particulate matter in Hong Kong over 3 years: field measurement evidence for secondary formation derived from biomass burning emissions

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Table S1. Matrix effects on sensitivities of individual nitroaromatic compounds (slope ± standard error (correlation coefficient, R^2))

Standard (STD), 4-nitrocatechol (4NC), 4-methyl-5-nitrocatechol (4M5NC), 4-nitroguaiacol (4NG), 4-nitrophenol (4NP), 3-methyl-4-nitrophenol (3M4NP), 2-methyl-4-nitrophenol (2M4NP), 2,6-dimethyl-4-nitrophenol (26D4NP)

Compound	Summer sample		Winter sample	
	STD	STD + matrix	STD	STD + matrix
4NC	0.0083 ± 0.0002 (0.999)	0.0084 ± 0.0004 (0.994)	0.0100 ± 0.0001 (1.000)	0.0088 ± 0.0005 (0.992)
4M5NC	0.0099 ± 0.0002 (0.999)	0.0115 ± 0.0004 (0.996)	0.0121 ± 0.0001 (1.000)	0.0143 ± 0.0003 (0.999)
4NG	0.0054 ± 0.0002 (0.997)	0.0108 ± 0.0008 (0.984)	0.0012 ± 0.0001 (1.000)	0.0066 ± 0.0003 (0.993)
4NP	0.0088 ± 0.0002 (0.998)	0.0097 ± 0.0002 (0.998)	0.0100 ± 0.0000 (1.000)	0.0110 ± 0.0002 (0.999)
3M4NP	0.0134 ± 0.0002 (1.000)	0.0155 ± 0.0003 (0.999)	0.0144 ± 0.0000 (1.000)	0.0164 ± 0.0001 (1.000)
2M4NP	0.0163 ± 0.0003 (1.000)	0.0205 ± 0.0005 (0.998)	0.0174 ± 0.0000 (1.000)	0.0239 ± 0.0004 (0.999)
2,6D4NP	0.0229 ± 0.0004 (0.999)	0.0268 ± 0.0006 (0.998)	0.0245 ± 0.0001 (1.000)	0.0346 ± 0.0007 (0.999)

Table S2. Correlations between *m/z* = 182 and individual nitrocatechols (NC) and total nitroaromatic compounds (NACs) measured in particulate matter of 2.5 μm or less in aerodynamic diameter ($PM_{2.5}$) samples at Tsuen Wan from 2010 to 2012

4-Nitrocatechol (4NC), 4-methyl-5-nitrocatechol (4M5NC), 3-methyl-6-nitrocatechol (3M6NC) and 3-methyl-5-nitrocatechol (3M5NC)

m/z	4NC	4M5NC	3M6NC	3M5NC	ΣNACs
182(1)	0.74	0.68	0.63	0.67	0.76
182(2)	0.84	0.70	0.65	0.73	0.84
182(3)	0.82	0.89	0.74	0.75	0.82
182(4)	0.86	0.93	0.85	0.84	0.87
182(5)	0.87	0.91	0.86	0.97	0.89

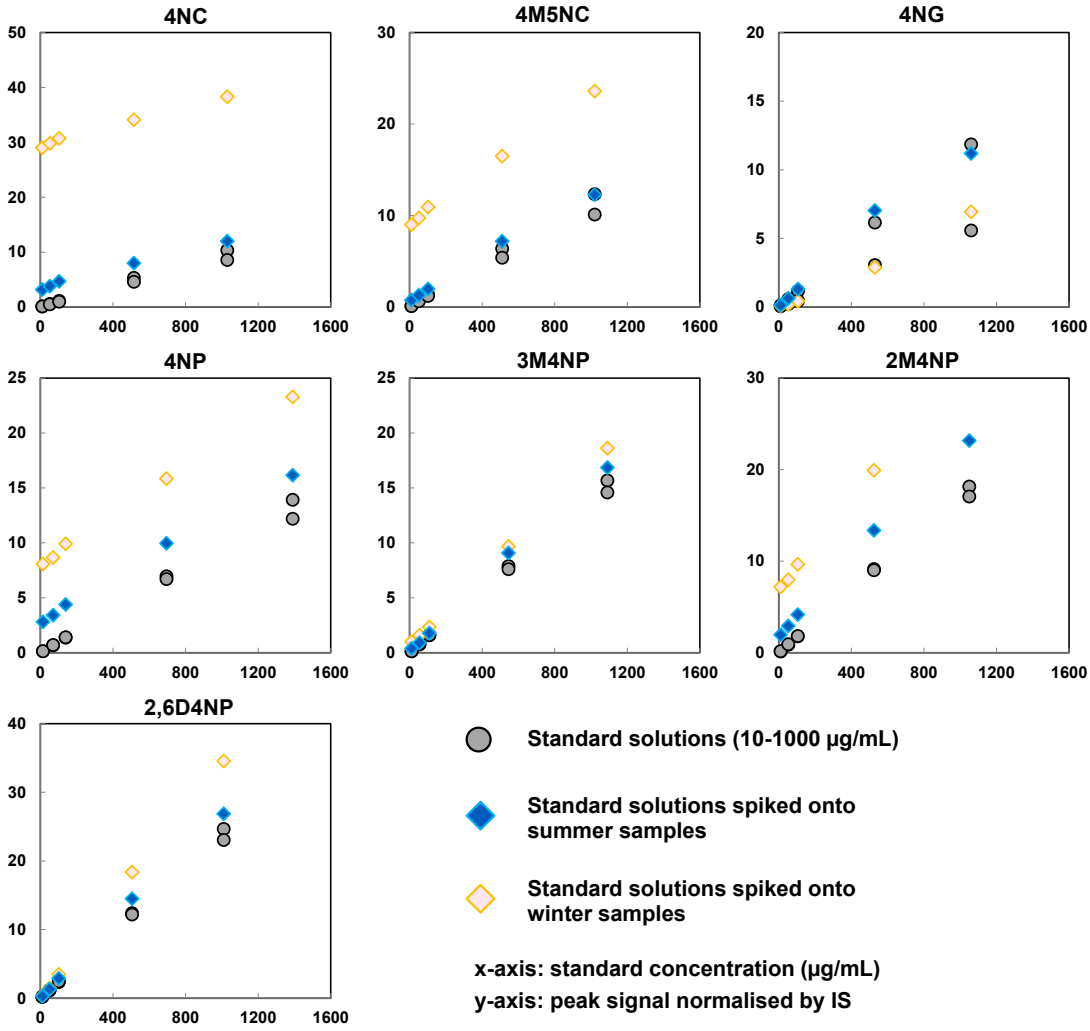

Fig. S1. Nitroaromatic compound (NAC) standards of five concentration levels spiked onto aerosol filters show comparable linear regression slopes (listed in Table S1). One summer and one winter filter samples were used in this matrix effect experiments. The set of standard addition points associated with the winter filter matrix generally form linear curves of higher intercepts because of the higher level of NACs present in the winter filter.

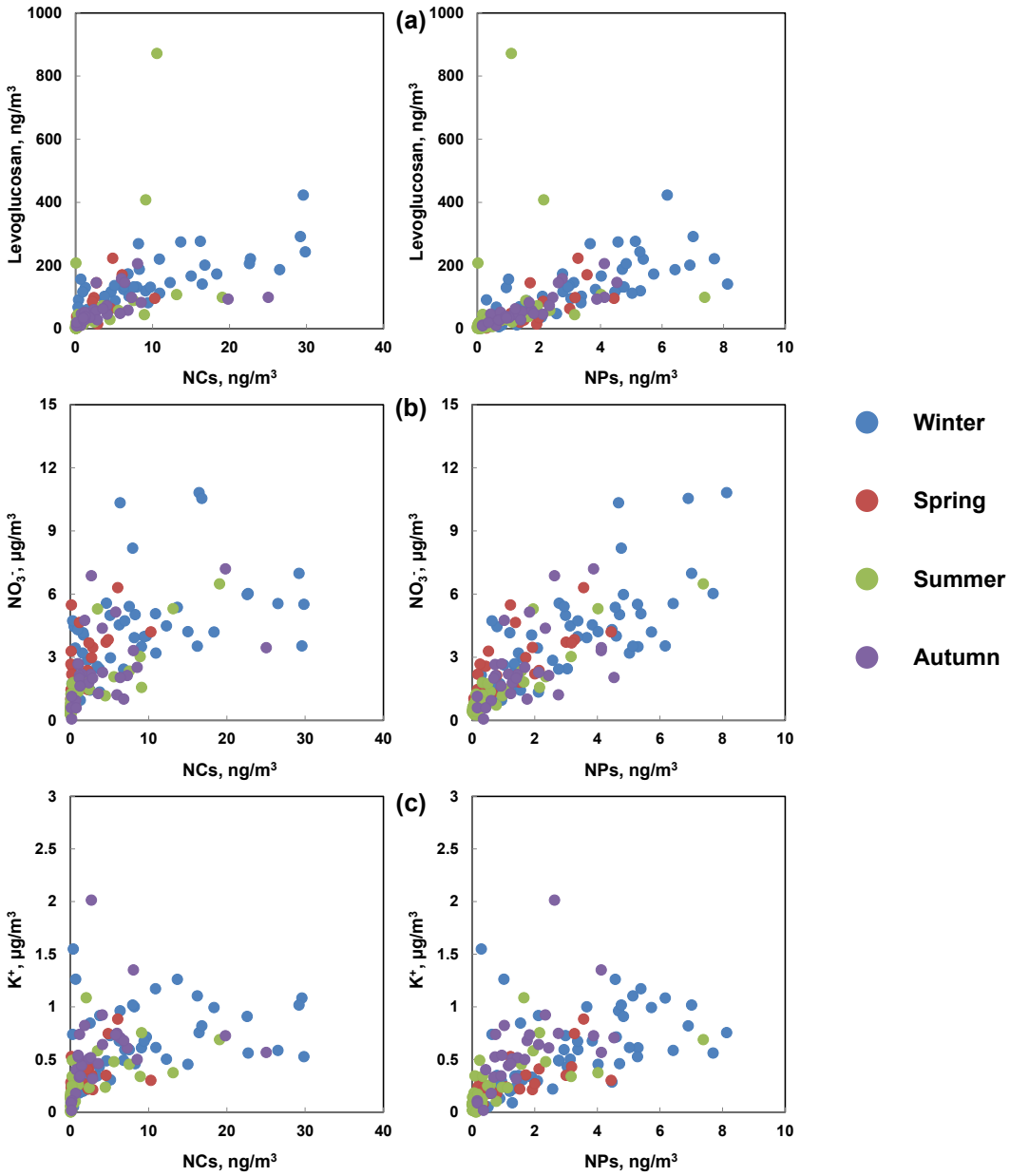

Fig. S2. Correlations between nitroaromatic compounds (NACs) and (a) levoglucosan, (b) NO_3^-, and (c) K^+ for particulate matter of 2.5 µm or less in aerodynamic diameter ($PM_{2.5}$) samples collected at Tsuen Wan from 2010 to 2012.

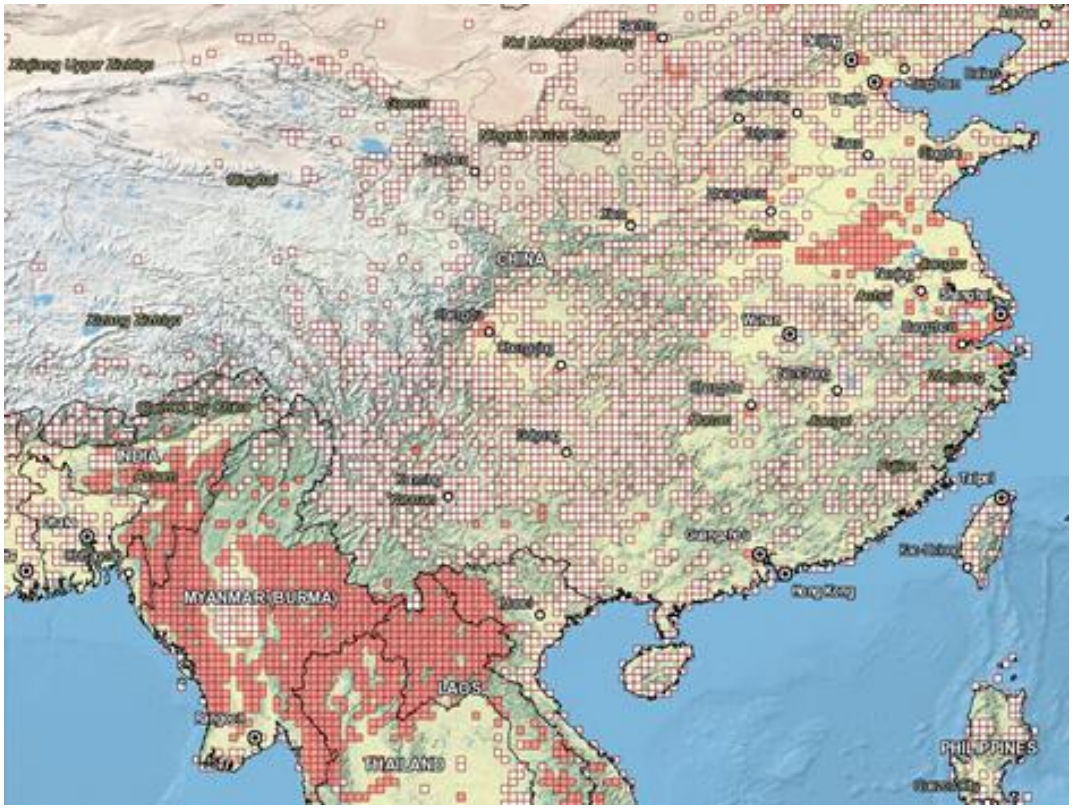

Fig. S3. Fire counts during the sampling period (2010–2012) in this study (data were retrieved from MODIS active fire detection by NASA Fire Information for Resource Management System (FIRMS)).