

## **SUPPLEMENTARY INFORMATION**

### **Characterization of Traffic-Related Particulate Matter Emissions in a Road Tunnel in Birmingham, UK: Trace Metals and Organic Molecular Markers**

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## Gravimetric Analysis

Each filter was weighed three times and both positive and negative weights were recorded. Average weights were calculated using the arithmetic mean of the six recorded values. Sampled mass was calculated as the difference between the mass of the filter before and after sampling.

## Trace Metal Analysis

The reverse aqua regia (RAR) method for sample preparation has a high extraction efficiency for most elements, with the exception of aluminosilicates. A detailed discussion on the validation of the method is discussed in Harper et al. (1983).

Calibration curves were prepared using a range of standard solutions (0-100 ppb, and 0-10 ppm). Filter blanks were analysed with the sample batches and the samples were blank corrected.

**Table S1: Method Reporting Limits (MRL) for the elements analysed using ICP-MS**

Element	MRL (ng/ml)
Ti	< 0.2
V	< 0.05
Mn	< 0.05
Fe	< 0.2
Ni	< 0.1
Cr	< 0.2
Cu	< 0.1
Zn	< 0.1
Cd	< 0.05
Sb	< 0.05
Sn	< 0.1
Ba	< 0.1
Pb	< 0.1

## Organic Speciation Analysis

Quantification of the different compounds was performed using deuterated (internal) standards. Six to eight point calibration curves were prepared using pure natural compound standards in the concentration range of 1-2000 pg/ $\mu$ l for each class of compounds ( $r^2 > 0.994$  for all compounds).

Limit of detection (LoD) was estimated using blank filters (3\* standard deviation of the blank filters (n=6)).

**Table S2: Limits of detection and quantification (pg/μl)**

<b>Compound</b>	<b>LoD (pg/μl)</b>
TNOHO	0.052
NHO	0.044
HOP	0.032
SHHO	0.204
RHHO	0.248
SBHHO	0.189
RBHHO	0.263
STHHO	0.208
RTHHO	0.226
C24	2.715
C25	3.125
C26	3.279
C27	3.093
C28	1.690
C29	2.362
C30	1.987
C31	4.255
C32	4.800
C32	6.383
C34	9.524
Benzo(k)fluoranthene (BkF)	0.349
Benzo(e)pyrene (BeP)	0.799
Benzo(a)pyrene (BaP)	0.387
Perylene (Per)	0.637
Indeno(123-cd)pyrene (IcdP)	0.413
Dibenz(ah)anthracene (DahA)	0.238
Picene (Pic)	0.230
Benzo(ghi)perylene (BghiPe)	0.291
Coronene (Cor)	0.444

### **Carbon Analysis**

Instrument detection limits were calculated to be  $0.83 \pm 0.04 \mu\text{g}/\text{cm}^2$  for OC,  $0.0002 \pm 0.00 \mu\text{g}/\text{cm}^2$  for EC and  $0.83 \pm 0.04 \mu\text{g}/\text{cm}^2$  for TC.

**Quality Assurance**

The methods are in regular use in our laboratory and have previously been shown to compare well with certified values of constituents of NIST Standard Reference Materials SRM 1648 (trace elements) and SRN 1649 (organic compounds).