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**Appendix 1: Acronyms and Abbreviations**

<b>Acronym</b>	<b>Meaning</b>
1,3,5-TMB	1,3,5-Trimethyl Benzene
AC	Alternating Current
ACE	Aerosol Characterisation Experiment
ADC	Analogue to Digital Converter
AMS	(Aerodyne) Aerosol Mass Spectrometer
APCI-MS	Atmospheric Pressure Chemical Ionisation Mass Spectrometry
APS	Aerodynamic Particle Sizer
ARI	Aerodyne Research Incorporated
ATOFMS	Aerosol Time Of Flight Mass Spectrometer
BAe	British Aerospace
BAM	Beta Attenuation Monitor
BC	Black Carbon
CAART	Chemical Analysis of Aerosols in Real Time
CCN	Cloud Condensation Nucleus/Nuclei
CEH	Centre for Ecology and Hydrology (in Edinburgh)
CLACE	Cloud and Aerosol Characterisation Experiments
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
CNC	Condensation Nuclei Counter
CPC	Condensation Particle Counter
DC	Direct Current
DMA	Differential Mobility Analyser
DMPS	Differential Mobility Particle Sizer
DMS	Dimethyl Sulphide ((CH <sub>3</sub> ) <sub>2</sub> S)
DOS	Di-octylsabacate
EC	Elemental Carbon
EI	Electron Impact (ionisation)
ESEM	Environmental Scanning Electron Microscope

<b>Acronym</b>	<b>Meaning</b>
FAAM	Facility for Airborne Atmospheric Research
FID	Flame Ionisation Detector
FTIR	Fourier Transform Infrared
GC	Gas Chromatography
GMT	Greenwich Mean Time
GF	(Hygroscopic) Growth Factor
HNMR	Proton Nuclear Magnetic Resonance
HPLC	High Performance Liquid Chromatography
HTDMA	Hygroscopicity Tandem Differential Mobility Analyser
HULIS	Humic-Like Substances
HYSPLIT	Hybrid Single-Particle Lagrangian Integrated Trajectory
IC	Ion Chromatography
ICPMS	Inductively Coupled Plasma Mass Spectrometry
ID	Internal Diameter
IGAC	International Global Atmospheric Chemistry Project
IR	Infra-Red
ITMS	Ion Trap Mass Spectrometry
JMS	Jump Mass Spectrum
LAMPAS	Laser Mass analysis of Particles in the Airborne State
LDI	Laser Desorption and Ionisation
LFV	Lower Fraser Valley
MBL	Marine Boundary Layer
MOUDI	Micro Orifice Uniform Deposit Impactor
MS	Mass Spectrometry
NAEI	National Atmospheric Emissions Inventory (UK)
Nd:YAG	Neodymium-Yttrium Aluminium Garnet
NERC	Natural Environment Research Council (UK)
NIST	National Institute of Standards and Technology (USA)
NOAA	National Oceanographic and Atmospheric Administration (USA)
NSF	National Science Foundation (USA)

<b>Acronym</b>	<b>Meaning</b>
OC	Organic Carbon
OPC	Optical Particle Counter
OTDMA	Organic Tandem Differential Mobility Analyser
PAH	Polycyclic Aromatic Hydrocarbon
PALMS	Particle Analysis by Laser Mass Spectrometry
PAMS	Particle Analysis by quadrupole Mass Spectrometry
PSI	Paul Scherrer Institute (Switzerland)
PILS	Particle Into Liquid Sampler
PM	Particulate Matter
PSL	Polystyrene Latex
PST	Pacific Summer Time
QMS	Quadrupole Mass Spectrometer
RF	Radio Frequency
RH	Relative Humidity
RSMS	Rapid Single-particle Mass Spectrometry
SASUA	Sources And Sinks of Urban Aerosol
SEM	Scanning Electron Microscopy
SIMS	Secondary Ion Mass Spectrometry
SMPS	Scanning Mobility Particle Sizer
SOA	Secondary Organic Aerosol
TDMA	Tandem Differential Mobility Analyser
TDPBMS	Thermal Desorption Particle Beam Mass Spectrometer
TEOM	Tapered Element Oscillating Microbalance
TOC	Total Organic Carbon
TOF	(particle) Time Of Flight
TOFMS	Time Of Flight Mass Spectrometry
ToF-AMS	Time of Flight Aerosol Mass Spectrometer
TPTD	Temperature Programmed Thermal Desorption
TSP	Total Suspended Particulate
uCPC	Ultrafine Condensation Particle Counter

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<b>Acronym</b>	<b>Meaning</b>
UMIST	University of Manchester Institute of Science and Technology
UTC	Universal Time (GMT)
UV	Ultra Violet
VOC	Volatile Organic Carbon
VTDMA	Volatility Tandem Differential Mobility Analyser
WIOC	Water-Insoluble Organic Carbon
WSOC	Water-Soluble Organic Carbon