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## List of symbols and abbreviations

UV	Ultra Violet
PAH	Polycyclic aromatic hydrocarbon
$\mu\text{m}$	micro meter
nm	nanometer
DDA	Discrete Dipole Approximation
FDTD	Finite-Difference Time-Domain method
TMM	T-matrix method
$\lambda$	wavelength
FEM	Finite Element Method
$a_{\text{eff}}$	Effective particle size
m	complex refractive index
N	number of dipoles
CCG	Complex Conjugate Gradient method
FFT	Fast Fourier Transform
$x$	Particle size parameter
GOA	Geometric Optics Approximation
$\theta$	Scattering angle
$Q_{\text{sca}}$	Scattering efficiency
$Q_{\text{ext}}$	Extinction efficiency
$Q_{\text{abs}}$	Absorption efficiency
$a$	Single scattering albedo
$g$	Asymmetry parameter
$d$	Interdipole separation



$k$	wave vector
$\phi$	Azimuth angle
I	Field intensity
$C_{ext}$	Extinction cross section
$C_{abs}$	Absorption cross section
$C_{sca}$	Scattering cross section
$\omega$	angular frequency
$F$	Mueller Matrix
$F_{11}$	Phase function
$-\frac{F_{12}}{F_{11}}$	Degree of linear polarization
$\beta(\theta)$	Volume scattering function or ‘VSF’
GUI	Graphical User Interface
RAM	Random Access Memory
EBCM	Extended Boundary Condition Method
SEM	Scanning Electron Microscopy
$\Gamma$	Gamma function
$\sigma_g$	standard deviation
$r_g$	modal radius
mW	milliwatt
DAQ	Data Acquisition
IR	Infra-red.
XRD	X-ray diffraction
EDX	Energy-dispersive X-ray spectroscopy
$\text{Fe}_2\text{SiO}_4$	Fayalite