

## LIST OF ABBREVIATIONS AND SYMBOLS

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<b>Abbreviation</b>	<b>Description</b>
HTR	High Temperature Reactor
TRISO	Tristructural Isotropic
WHO	World Health Organization
PWR	Pressurized Water Reactor
BWR	Boiling Water Reactor
AGR	Advanced Gas-cooled Reactor
CHTR	Compact High Temperature Reactor
PHWR	Pressurized Heavy-Water Reactor
IHTR	Innovative High Temperature Reactor
LBE	Lead-Bismuth Eutectic
LOCA	Loss of Coolant Accident
FP	Fusion Products
SPECTRA	Sophisticated Plant Evaluation Code for Thermal-
BNL	Brookhaven National Laboratory
ECART	Enel Code for Analysis of Radionuclide Transport
CFD	Computational Fluids Dynamics
CCN	Cloud Condensation Nuclei
DMA	Differential Mobility Analyser
CPMA	Centrifugal Particle Mass Analyser
ELPI	Electrical Low Pressure Impactor

DMS	Differential Mobility Spectrometer
FIMS	Fast Integrated Mobility Spectrometer
EBD	Electrical Diffusion Battery
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
SMPS	Scanning Mobility Particle Sizer
PM	Particulate Matter
PVC	Polyvinyl Chloride
OPS	Optical Particle Sizer
XRD	X-Ray Diffraction
TGA	Thermogravimetric Analysis
SEM	Scanning Electron Microscope
EDS	Energy Dispersive X-Ray Spectroscopy
$\mu$	Dimensionless deposition parameter
$P_0$	Deposition efficiency
Stk.	Stokes number
A	Cross sectional area of tube (m <sup>2</sup> )
$U_0$	Velocity in tube (m/s)
U	Velocity in probe (m/s)
$\Theta$	Angle between the flow direction and sampling
L	Length of the tube (m)
Q	Volume flow rate in the tube (m <sup>3</sup> /s)
q	Volume flow rate in the probe (m <sup>3</sup> /s)
$d_{pr}$	Diameter of probe (m)

$\tau$	Relaxation time ( s )
T	Mean temperature of air (K)
$\eta$	Viscosity of air (Pa.s)
$d_p$	Particle diameter (m)
$\rho_p$	Particle density (kg/m <sup>3</sup> )
$C_0$	True concentration (#/cm <sup>3</sup> )
$C$	Particle concentration in a sampling probe (#/cm <sup>3</sup> )
$D_T$	Diameter of tube (m)
$\eta_{tube,diffu.}$	Diffusion loss percentage
D	Diffusion coefficient (m <sup>2</sup> /s)
B	Particle mobility (m.N/s)
$p$	Pressure (N/m <sup>2</sup> )
$\eta_{tube,grav}$	Transport efficiency of gravitational deposition
$V_{ts}$	Terminal velocity (m/s)
$g$	Acceleration due to gravity (m/s <sup>2</sup> )
$k_{th}$	Thermophoretic coefficient
$Pr$	Gas Prandtl number
$T_w$	Temperature of wall (K)
$C_m$	Momentum exchange coefficient
$C_s$	Thermal slip coefficient
$C_c$	Slip correction factor
$C_t$	Temperature jump coefficient
$k_g$	Thermal conductivity of gas (W/mK)
$k_p$	Thermal conductivity of particle (W/mK)

$\lambda$	Molecular mean free path (m)
$Z$	Gravitational deposition parameter
$\eta_{ther.loss}$	Thermophoresis deposition loss
$k$	Boltzmann constant (J/K)
$\eta_{tube,total loss}$	Total transport loss
$X$	Non dimensional mass
$E$	Activation energy (J/mol)
$R$	Universal gas constant ( $J.K^{-1}.mol^{-1}$ )
$m_f$	Final mass (kg)
$m_0$	Initial mass (kg)
$m$	Instantaneous mass (kg)
$A_e$	Pre-exponential factor