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LIST OF ABBREVIATIONS AND SYMBOLS

EFB	-	Empty Fruit Bunches
AC	-	Activated carbon
CAC	-	Commercial activated carbon
GAC	-	Granular activated carbon
PAC	-	Powder activated carbon
R&D	-	Research and Development
MPOB	-	Malaysia Palm Oil Board
POME	-	Palm Oil Mill Effluent
US	-	United States
USEPA	-	United States Environmental Protection Agency
SEM	-	Scanning Electron Microscope
TGA	-	Thermo Gravimetric Analysis
FTIR	-	Fourier Transform Infrared Spectroscopy
CHNO	-	Carbon, Hydrogen, Nitrogen, Oxygen
RSM	-	Response Surface Methodology
TPR	-	Temperature Programmed Reduction
NKRA	-	National Key Result Area
GNI	-	Gross National Income
IUPAC	-	International of Pure and Applied Chemistry
BWD	-	Back washed and Drained
BET	-	Breuner, Emmer and Teller
ASTM	-	American Society for Testing and Materials
UK	-	United Kingdom

NaOH	-	Sodium Hydroxide
Mg/L	-	Milligram per litter
Min	-	Minutes
L/min	-	Litter per minutes
DIG	-	Digital Imaging Microscopy
ASAP	-	Accelerated Surface Area and Porosimetry Analyzer
HPVA	-	High Pressure Volumetric Analyzer
KH ₂ PO ₄	-	Potassium dihydrogen phosphate
K ₂ CO ₃	-	Potassium carbonate
NaOH	-	Sodium hydroxide
C ₆ H ₅ OH	-	Phenol
CO ₂	-	Carbon dioxide gas
N ₂	-	Nitrogen gas
H ₂	-	Hydrogen gas
H ₂ O	-	Water
-CH ₂ -	-	Hydrocarbon chains
KOH	-	Potassium hydroxide
UV	-	Ultraviolet
BC	-	Char
BCF	-	Char fibre
DOE	-	Design of experiment
RE	-	Regeneration efficiency
ANOVA	-	Analysis of variance
DF	-	Degree of freedom
S	-	Sulphur
NAD	-	Nitrogen adsorption-desorption

%	-	Percent
K	-	Kelvin
q_e	-	Amount of adsorbent at equilibrium
q_t	-	Equilibrium rate constant
C_o	-	Initial concentration
C_e	-	Equilibrium concentration
V	-	Volume of solution
M	-	Absorber weight
$\frac{x}{m}$	-	Mass of adsorbate over mass of adsorbent
C_s	-	Equilibrium adsorbate concentration after adsorption
N	-	Freundlich intensity parameter
A	-	Amount of adsorbate to form a complete monolayer
B	-	Empirical formula
R_L	-	Langmuir constant
M	-	Monolayer capacity
c	-	BET constant
i.e	-	It is
°C	-	Degree Celsius
C /min	-	Degree Celsius per minutes
G	-	gram
M_1	-	Amount of raw EFB before pyrolysis
M_2	-	Amount of char produced
Mm	-	Milimolar
MI	-	Mililiter
C_o	-	Initial phenol concentration
C_e	-	Final (equilibrium) phenol concentration
V	-	Volume of solution
W	-	Mass of adsorbent

>	-	Greater than
<	-	Less than
Rpm	-	Revolutions per minute
T	-	Time
K	-	Equilibrium rate constant
K_F	-	Freundlich coefficient factor
K_L	-	Langmuir coefficient factor
k_1	-	Pseudo-first order equilibrium rate constant
K	-	Pseudo-second order equilibrium rate constant
K_i	-	Intraparticle diffusion constant
K_{DW}	-	Rate constant of adsorption
X_1	-	Carbonization temperature
X_2	-	Carbonization heating rate
X_3	-	Carbonization residence time
Y	-	Phenol adsorption uptake
Y_1	-	RSM second order polynomial function's predicted response
B	-	RSM second order polynomial function's coefficient
\emptyset	-	Pore diameter
Mpa	-	Mega Pascal
H	-	Hour
\AA	-	Angstrom (10^{-9})
R^2	-	Correlation coefficient
Hg	-	Mercury
Cu	-	Copper
Pb	-	Lead
Ppm	-	Part per millions
Vol	-	Volume
R_p	-	Total particle radius
q_s	-	Average value of q (adsorption quantity) in a spherical particle at any particular time
q(r)	-	Local value of solid phase concentration
q_{if}	-	Average concentration in the solid at infinite time

D_s	-	Intraparticle diffusion coefficient
R	-	Radial position
Q_t	-	Adsorption capacity at time t

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