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LIST OF ABBREVIATIONS

% removal	percentages of heavy metal removal
C_0	initial concentration (mg/L)
C_i	remaining concentration at any time (mg/L)
K_L	Langmuir adsorption constant (L/mg)
q_e	amount of adsorption equilibrium (mg/g)
q_m	monolayer adsorption capacity of the adsorbent (mg/g)
C_e	solute concentration at equilibrium (mg/L)
C_o	initial concentration of arsenate solution (mg/L)
R_L	dimensionless separation factor
K_F	Freundlich adsorption constant (L/g)
n	Freundlich constants
q_d	Dubinin-Radushkevich monolayer capacity (mg/g)
β	a constant related to adsorption energy
ε	Polanyi potential
A_T	Tempkin isotherm constants
b	Tempkin isotherm constants
A	Harkin's - Jura isotherm constants
B	Harkin's - Jura isotherm constants
T	absolute temperature
q_t	amounts of solute adsorbed at any time (mg/g)
t	time (min)
k_1	rate constant of pseudo-first-order adsorption (min^{-1})
k_2	rate constant of pseudo-second-order adsorption (g/mg·min)
h	initial adsorption rate (mg/g·min)
k_p	intra-particle diffusion rate constant ($mmol/g \cdot min^{1/2}$)
ΔG^o	gibbs free energy change
ΔH^o	enthalpy change
ΔS^o	entropy change

LIST OF ABBREVIATIONS (Cont.)

β	a constant related to adsorption energy
ε	Polanyi potential
A	Harkin's - Jura isotherm constants
A_T	Tempkin isotherm constants
B	Harkin's - Jura isotherm constants
b	Tempkin isotherm constants
b_i	linear coefficients
b_0	intercept coefficient
b_{ii}	quadratic coefficients
b_{ij}	interaction term
C_e	equilibrium concentrations solution (mg/L)
C_o	initial solution concentrations (mg/L)
C_t	concentration solution at time (mg/L)
E	mean adsorption energy (kJ/mol)
k_1	rate constant of pseudo-first-order adsorption (min^{-1})
k_2	the rate constant of pseudo-second-order adsorption (g/mg·min)
k_D	Dubinin-Radushkevich constant
k_F	Freundlich adsorption constant (L/g)
k_L	Langmuir adsorption constant (L/mg)
k_{i1}	intra-particle diffusion rate constant at slope 1 ($mmol/g \cdot min^{1/2}$)
k_{i2}	intra-particle diffusion rate constant at slope 2 ($mmol/g \cdot min^{1/2}$)
M	is mass of adsorbent (g)
n	Freundlich constants
q_e	adsorption capacity at equilibrium (mg/g)
$q_{e.exp}$	adsorption capacity at equilibrium for experimental(mg/g)
$q_{e,cal}$	adsorption capacity at equilibrium for calculated (mg/g)

LIST OF ABBREVIATIONS (Cont.)

q_D	adsorption capacity at equilibrium for Dubinin-Radushkevich isotherm (mg/g)
R_L	dimensionless separation factor of Langmuir adsorption
q_{max}	adsorption capacity at equilibrium for Langmuir isotherm (mg/g)
q_t	adsorption capacity at time (mg/g)
R^2	determination coefficients
R^2_{adj}	adjusted determination coefficients
R^2_{pre}	predicted determination coefficients
SD	standard deviation
t	time (min)
V	volume of the solution (L)
Y	response denoted as the predicted $As^{5+/}As^{3+}$ percentage adsorption
X_1	adsorbent dose (g/L)
X_2	pH
X_3	initial concentration (μg/L)