

## LIST OF SYMBOLS

%	percentage
$b$	Langmuir constant
$C_b$	heavy metal concentration in biosorbent after biosorption
$C_d$	the concentration of heavy metal after desorption
$C_e$	the equilibrium concentration of heavy metal in solution
$C_i$	the initial heavy metal concentration
$C_l$	loss of heavy metal after biosorption
$\text{cm}^{-1}$	per centimeter
$C_o$	the contaminants concentration for first washing cycle
$C_w$	the final concentration of contaminants after washing cycle
eV	electronvolt
g	gram
g/L	gram per litre
g/mg/min	gram per milligram per minute
Gb	gigabyte
J/(K.mol)	joule per Kelvin mole
K	kelvin
$k_1$	rate constant of pseudo second-order
$k_2$	rate constant of pseudo second-order
$K_c$	the distribution coefficient
$K_m$	the half saturation constant
kHz	kilo hertz
kJ/mol	kilo joule per mole
kV	kilo volt

L	litre
L/g	litre per gram
L/mg	litre per miligram
M	mole
m <sup>2</sup> /g	meter square per gram
mA	mili ampere
mg/g	milligram per gram
mg/L	milligram per litre
mg/min	milligram per minute
MHz	mega hertz
mL	millilitre
mm	millimeter
min	minute
<i>M-Mo</i>	changes of signal intensity
MΩ.cm	mega ohm centimetre
nm	nanometer
°C	degree celcius
Pa	pasca
$q_e$	heavy metal uptake by biosorbent
$q_{max}$	maximum heavy metal uptake value
$q_t$	heavy metal uptake by biosorbent at time
$R_c$	percentage of contaminants removal
$R$	the gas constant
$r_{max}$	the maximum reaction rate
rpm	round per minute
$S$	the initial biosorbent concentration

s	second
$T$	temperature
$t$	time
w/v	weight per volume
$W_b$	the initial weight of biosorbent before biosorption
$W_d$	the weight of biosorbent after desorption
$W_l$	loss of biosorbent after desorption
$\alpha$	alpha
$\mu\text{A}$	micro ampere
$\mu\text{m}$	micro meter
$\mu\text{s}$	micro second