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Modified natural zeolite using ammonium quaternary based material for Acid red 18 removal from aqueous solution

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Abstract

The aims of this study were to modify local clinoptilolite zeolite (CZ) to

A_T	Tempkin isotherm model equilibrium binding constant (L/g)	n	Number of parameters within the isotherm equation
α_e	Initial sorption rate (mMol/g min)	p	
	Langmuir isotherm model constant (L/mg)	Q_0	Maximum monolayer coverage capacities (mg/g)
β_e	Desorption constant (g/mMol)	q_e	Amount of adsorbate in the adsorbent at equilibrium (mg/g)
B_T	Tempkin isotherm model constant (KJ/Mol)	$q_{e,calc}$	Calculated amount of adsorbate in the adsorbent at equilibrium (mg/g)
C_0	Adsorbate initial concentration (mg/L)	$q_{e,exp}$	Experimental amount of adsorbate in the adsorbent at equilibrium (mg/g)
C_e	Equilibrium concentration (mg/L)	q_s	Theoretical isotherm saturation capacity (mg/g)
K_i	Intraparticle diffusion constant (mg/g)	R	Gas constant (J/Mol K)
K_1	Pseudo-first-order rate constant (1/min)	q_t	Amount of dye adsorbed at time t
K_2	Pseudo-secondorder rate constant (g/mg min)	R_L	Separation factor
K_{ad}	Dubinin–Radushkevich isotherm model constant (Mol^2/kJ^2)	t	Detention time (min)
K_i	Diffusion coefficient (mg/g $min^{1/2}$)	T	Absolute temperature(K)
K_F	Freundlich isotherm model constant (mg/g) related to adsorption capacity	V	Reactor volume (L)