

Supplementary Information

Electroosmotic Flow Rate

$$\text{Equation 1}^1 \quad Q_e = K_e E$$

$$\text{Equation 2}^1 \quad K_e = \frac{\eta \epsilon_w \zeta}{\mu}$$

Table S1. Variable names, units, and values used to calculate expected rate of electroosmosis.

Variable	Variable Name and Units	Value	Reference
Q_e	electroosmotic flow rate (m s^{-1})	--	--
K_e	coefficient of electroosmotic permeability	--	--
E	electric field intensity (V m^{-1})	75	--
η	soil porosity	0.55	2
ϵ_w	permittivity of pore water (F m^{-1})	7.1×10^{-10}	
μ	viscosity of pore water (Ns m^{-1})	0.001002	3
ζ	zeta potential (V)	-0.010	4

Effective Ionic Mobility

$$\text{Equation 3}^5 \quad U_j = \frac{D_j z_j F}{RT} \tau \eta$$

Table S2. Variable names, units, and values used to calculate expected rate of electromigration.

Variable	Variable Name and Units	Value	Reference
U_j	effective ionic mobility ($\text{m}^2 \text{s}^{-1} \text{V}^{-1}$)	--	--
D_j	species specific diffusion coefficient ($\text{m}^2 \text{s}^{-1}$)	1.070×10^{-9} (sulfate)	--
z_j	chemical species charge	2 (sulfate)	--
F	Faraday's constant (C mol^{-1})	96485.34	--
τ	tortuosity	0.35	1
η	porosity	0.55	2
R	gas constant ($\text{J mol}^{-1} \text{K}^{-1}$)	8.314	--
T	temperature (K)	298	--

References

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