Table S6: Spatial variance budget of the peaks of Section 5.2 at the three concentration levels.

Ion	Level	FWHM (s) [a]	FWHM/t_eff (%) [b]	D [c]	σ_x² [d]	σ²_diff [e]	σ²_excess [f]	Diffusion (%) [g]	N_exp [h]	N_diff [i]	EMD × c [j]
K^+	K10	3.58 ± 0.13	2.23	1.280	1.52	0.42	1.1	28	11,800	41,200	2.12
	K20	3.48 ± 0.07	2.22	1.310	1.51	0.420	1.08	28	12,000		4.15
	K30	3.68 ± 0.09	2.36	1.320	1.71	0.420	1.28	25	10,600		6.37
Ca^{2+}	K10	4.63 ± 0.17	2.18	0.480	1.46	0.210	1.25	14	12,200	82,300	1.76
	K20	4.93 ± 0.15	2.4	0.500	1.76	0.210	1.55	12	10,100		3.44
	K30	4.74 ± 0.12	2.31	0.5	1.62	0.21	1.41	13	10,900		5.27
Mg^{2+}	K10	6.54 ± 0.46	2.77	0.44	2.35	0.21	2.14	9	7,600	82,300	2.92
	K20	6.57 ± 0.18	2.87	0.45	2.52	0.21	2.31	8	7,000		5.71
	K30	7.08 ± 0.32	3.11	0.45	2.95	0.21	2.74	7	6,000		8.76
NO_3^-	K10	4.32 ± 0.10	2.62	1.25	2.1	0.42	1.68	20	8,600	41,200	−5.73
	K20	4.82 ± 0.23	2.91	1.24	2.59	0.42	2.17	16	7,000		−11.20
	K30	6.20 ± 0.34	3.72	1.23	4.22	0.42	3.8	10	4,300		−17.18
SO_4^{2-}	K10	4.68 ± 0.38	2.41	0.53	1.77	0.21	1.56	12	10,200	82,300	−5.57
	K20	4.99 ± 0.35	2.56	0.53	2	0.21	1.79	11	9,000		−10.91
	K30	6.34 ± 0.27	3.21	0.52	3.15	0.21	2.94	7	5,700		−16.72

All values are means of three runs (n = 3).

[a] Full width at half maximum, mean ± SD.

[b] Relative peak width, with t_eff = t_m − 5 s (10 s linear voltage ramp).

[c] Diffusion coefficient (10^{-9} m² s^{-1}) from the Nernst–Einstein relation, D = |μ|kT/(|z|e), using the experimental apparent mobility and T = 293 K. Nominal charges were used (|z| = 2 for sulfate).

[d] Spatial peak variance at the detector (mm²), σ_x = (FWHM/2.355)·L_det/t_eff, assuming a Gaussian profile.

[e] Longitudinal-diffusion variance (mm²), σ²_diff = 2Dt_m.

[f] Excess variance (mm²), σ_x² − σ²_diff, attributed to the injection plug, the detector length and electromigration dispersion.

[g] Fraction of σ_x² due to diffusion.

[h] Experimental plate number.

[i] Diffusion-limited plate number, N_diff = |z|eEL_det/(2kT), with E = V/L_tot. It depends only on the ion charge.

[j] 10^{-3} S m² mol^{-1} × mM (Table S5).