Supplementary information

Modelling Fast Mode Dielectric Relaxation of Counterions in Aqueous Solutions of Ionene Bromides and Fluorides.

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	3,3–		4,5–		6,6–		6,9–	
≈ c /M	Φ(Br)	Φ(F)	Φ(Br)	Φ(F)	Φ(Br)	Φ(F)	Φ(Br)	Φ(F)
0.02	0.349	0.384	0.413	0.462	0.448	0.451	0.504	0.453
0.03	0.352	0.390	0.418	0.475	0.453	0.459	0.509	0.469
0.05	0.356	0.398	0.426	0.495	0.459	0.473	0.517	0.492
0.07	0.359	0.404	0.431	0.509	0.464	0.483	0.522	0.510

Table S-I: Osmotic coefficients of 3,3–; 4,5–; 6,6–; and 6,9–ionene bromides,† Φ(Br), and fluorides,‡ Φ(F), as a function of concentration at 298 K. († K. Arh, C. Pohar, and V. Vlachy, *J. Phys. Chem. B*, 2002, **106**, 99679973; ‡ I. Lipar, P. Zalar, and C. Pohar, *unpublished work.*)

	3,3–				4,5–			
≈ c /M	τ_1(Br) /ps	S_1(Br)	τ_1(F) /ps	S_1(F)	τ_1(Br) /ps	S_1(Br)	τ_1(F) /ps	S_1(F)
0.02	(2940)	8.31	1030	7.41	1600	6.34	1430	7.04
0.03	761	4.84	847	8.64	1256	6.34	911	7.84
0.05	582	6.95	726	11.46	626	7.94	828	10.03
0.07	462	8.82	584	12.71	559	8.70	661	10.91
	6,6–				6,9–			
≈ c /M	τ_1(Br) /ps	S_1(Br)	τ_1(F) /ps	S_1(F)	τ_1(Br) /ps	S_1(Br)	τ_1(F) /ps	S_1(F)
0.02	797	4.01	1170	4.77	1040	4.63	1940	5.56
0.03	703	4.95	1010	5.88	730	4.99	1390	5.74
0.05	585	6.41	876	7.08	606	6.21	898	5.89
0.07	468	7.09	769	7.97	507	7.56	798	6.02

Table S-II: Relaxation times, τ_1, and amplitudes, S_1, attributed to the fast-mode relaxation of counterions in aqueous solutions of 3,3–; 4,5–; 6,6–; and 6,9–ionene bromides (Br) and fluorides (F) as a function of concentration at 298 K. (M. Lukšič, R. Buchner, B. Hribar-Lee, and V. Vlachy, *Macromolecules*, 2009, **42**, 4337–4342.)

	3,3–		4,5–		6,6–		6,9–	
≈ c /M	(Br)	(F)	(Br)	(F)	(Br)	(F)	(Br)	(F)
0.02	21	23	14	17	11	12	13	13
0.03	13	20	11	15	10	11	11	11
0.05	12	18	10	13	9	9	9	9
0.07	12	16	9	11	8	8	9	7

Table S-III: The correlation length, $L_{S,Ito}$, in Å, calculated from equation 9, for 3,3–; 4,5–; 6,6–; and 6,9–ionene bromides, and fluorides, as a function of concentration at 298 K.