Supporting Information for

Modeling response characteristics of photo-sensitive hydrogel electrolytes in Hofmeister salt solution for the development of smart energy storage devices

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Table S1**.** Some input parameters for the numerical simulation.

Parameter	**Value**
Polymer chain density in the dry gel, N_R [1, 2]	1.08×10^{25} m^{-3}
Photo-kinetic factor, F_L [3, 4]	1.94
Logarithm of frequency factor, log (A_T /1 s^{-1}) [5]	16.96
Activation energy, E_T [5]	114.41 kJ·mol^{-1}
Interaction parameter at a lower temperature than LCST, χ_L	0.33
Interaction parameter at a higher temperature than LCST, χ_H	0.62
Dehydration coefficient, G_H^* [5-7]	1.8×10^{-3} mM^{-1} at pH<7.0 and 0 mM^{-1} at pH≥7.0
Permittivity, ε [8]	7.08×10^{-10} C^2·N^{-1}·m^{-2}
Logarithmic acidity constant of McH$^+$, pKa$_1$ [4]	6.8

Logarithmic acidity constant of SpH^+, pKa_2 [4]	2.6
Logarithmic acidity constant of AAH, pKa_3 [7]	4.2
Logarithmic acidity constant of $H_2PO_4^-$, pKa_4 [9]	7.21
Logarithmic acidity constant of HPO_4^{2-}, pKa_5 [9]	12.32
Equilibrium constant of water, K_w [8]	10^{-14} M^2
Initial transition temperature, T_0 [6]	33 °C
Temperature width of phase transition, ΔT_c [6]	4 °C
Molar volume of solvent molecule, v [10]	1.8×10^{-5} $m^3\cdot mol^{-1}$
Ring-opened reaction rate constant, k_o [11]	2.53×10^{-3} s^{-1}
Light wavelength, λ_L [6]	436 nm
Molar absorption coefficient, ε_L [4]	2.3×10^4 M^{-1} cm^{-1}
Quantum yield, ϕ_L [12]	7%
Polymer-solvent structural constant, k_1 and k_2 [13]	$k_1 = 0.066$, $k_2 = 0.263$
Diffusivity of H^+, $\bar{D}_{H^+}$ [14]	$(8.79\text{-}11.20)\times10^{-9}$ $m^2\cdot s^{-1}$
Diffusivity of Na^+, $\bar{D}_{Na^+}$ [15]	$(1.20\text{-}1.88)\times10^{-9}$ $m^2\cdot s^{-1}$
Diffusivity of Cl^-, $\bar{D}_{Cl^-}$ [15]	$(1.84\text{-}2.82)\times10^{-9}$ $m^2\cdot s^{-1}$
Diffusivity of SO_4^{2-}, $\bar{D}_{SO_4^{2-}}$ [15]	1.07×10^{-9} $m^2\cdot s^{-1}$
Diffusivity of NO_3^-, $\bar{D}_{NO_3^-}$ [15]	$(1.75\text{-}2.61)\times10^{-9}$ $m^2\cdot s^{-1}$
Diffusivity of $H_2PO_4^-$, $\bar{D}_{H_2PO_4^-}$ [16]	9.59×10^{-10} $m^2\cdot s^{-1}$
Diffusivity of HPO_4^{2-}, $\bar{D}_{HPO_4^{2-}}$ [16]	7.59×10^{-10} $m^2\cdot s^{-1}$
Diffusivity of PO_4^{3-}, $\bar{D}_{PO_4^{3-}}$ [16]	6.1×10^{-10} $m^2\cdot s^{-1}$
Hydrated radii of H^+, r_{H^+} [15]	2.82 Å
Hydrated radii of Na^+, r_{Na^+} [15]	3.58 Å
Hydrated radii of Cl^-, r_{Cl^-} [15]	3.32 Å
Hydrated radii of SO_4^{2-}, $r_{SO_4^{2-}}$ [15]	3.79 Å

Hydrated radii of NO_3^-, $r_{NO_3^-}$ [15]	3.35 Å
Hydrated radii of $H_2PO_4^-$, $r_{H_2PO_4^-}$ [17]	3.41 Å
Hydrated radii of HPO_4^{2-}, $r_{HPO_4^{2-}}$ [17]	3.79 Å
Hydrated radii of PO_4^{3-}, $r_{PO_4^{3-}}$ [17]	3.85 Å

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