Supplementary Materials

Effects of counterion on the formation and hydration behavior of α-form hydrated crystals (α-gels)

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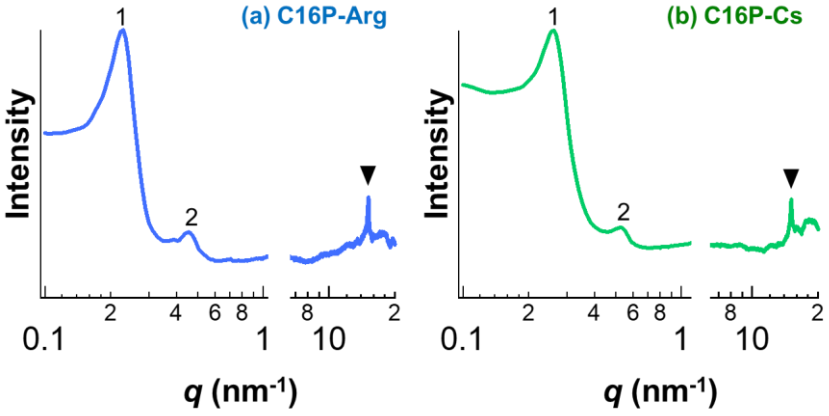


Figure S1: SWAXS data for the (a) C16P-Arg and (b) C16P-Cs α-form hydrated crystals prepared at high temperatures above the T_c. The SWAXS data calculate d = 27 nm (q = 0.23 nm^{-1}) for C16P-Arg and d = 24 nm (q = 0.26 nm^{-1}) for C16P-Cs, respectively.

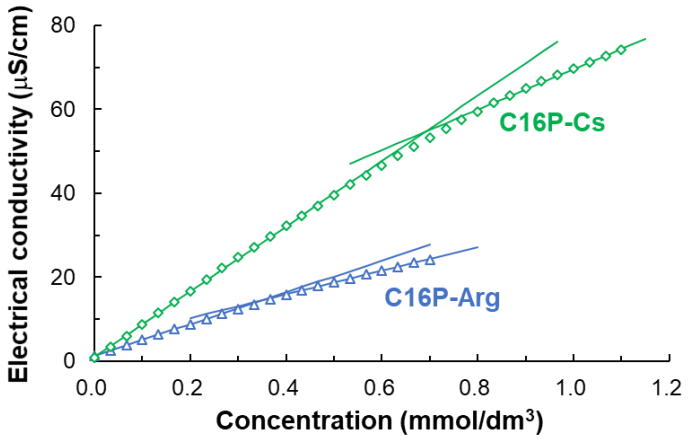


Figure S2: Electrical conductivity of aqueous solutions of C16P-Arg and C16P-Cs measured at 60 °C. The degree of counterion binding was estimated as 0.26 for C16P-Arg and 0.38 for C16P-Cs, respectively.

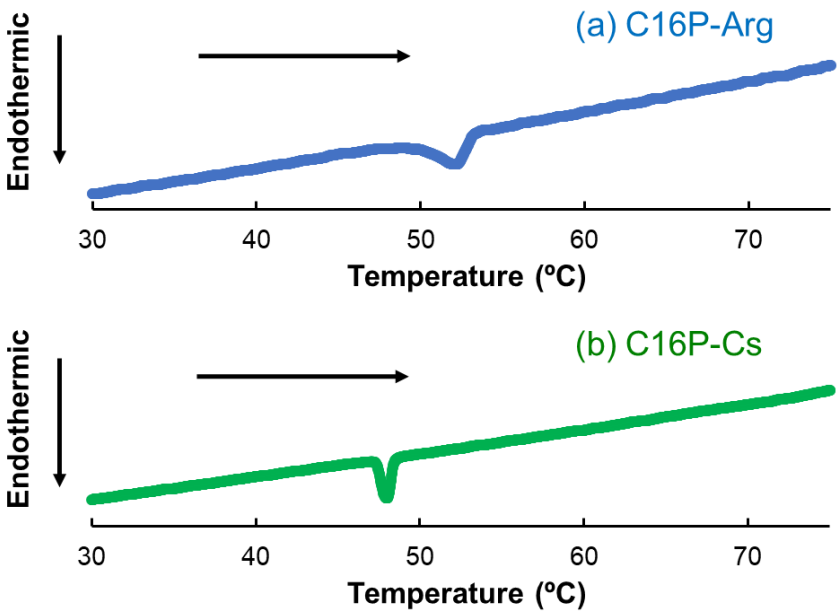
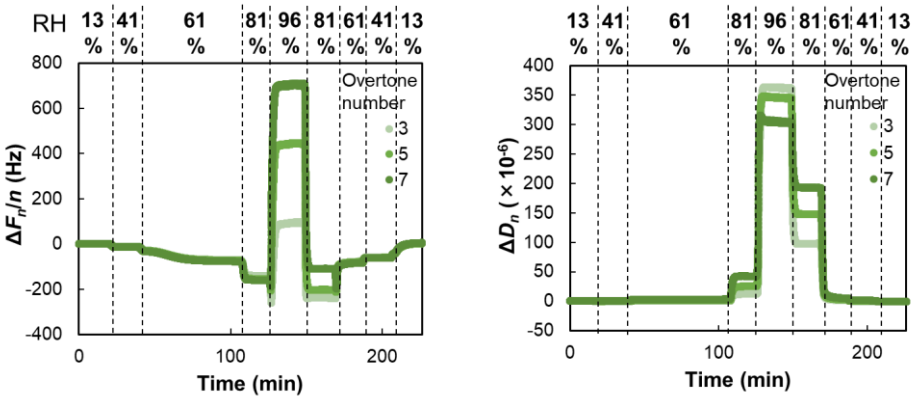
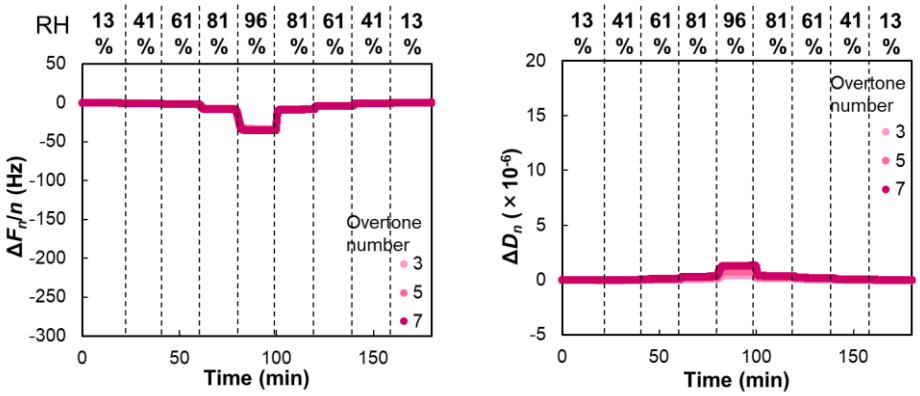


Figure S3. DSC data for the (a) C16P-Arg and (b) C16P-Cs systems. The concentration of the neutralized C16P salts was 0.2 mol/kg in water. These systems were equilibrated at 25 °C for 2 weeks after preparation.

(a) C16P-Cs



(b) C16P-K



(c) C16P-Na

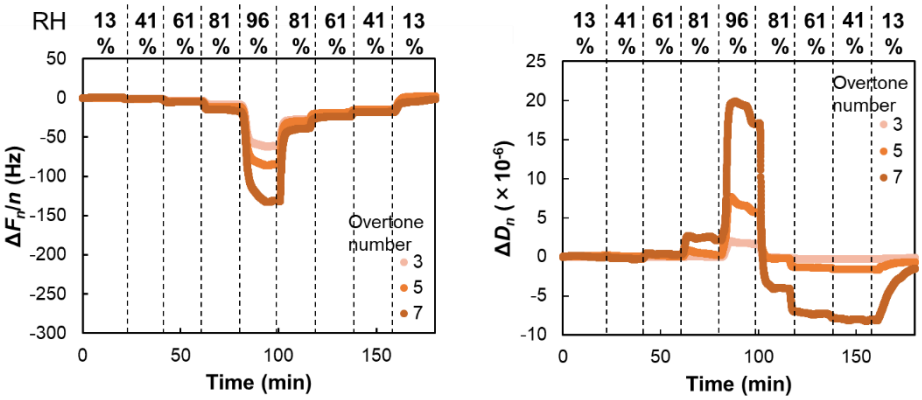


Figure S4: QCM-D responses of (a) C16P-Cs, (b) C16P-K, and (c) C16P-Na systems. The relative humidity was controlled by injecting aqueous LiCl solutions of different concentrations: 13% ([LiCl] = 18.5 mol/kg), 41% ([LiCl] = 10.0 mol/kg), 61% ([LiCl] = 7.0 mol/kg), 81% ([LiCl] = 4.0 mol/kg), and 96% ([LiCl] = 1.0 mol/kg). The relative humidity (RH) values were calculated based on the water activity (a_w): RH = a_w × 100.