Electronic Supplementary Material (ESI) for Soft Matter.

Supporting Information

Effect of polyacrylamide morphology templated by lyotropic liquid crystal on proton conductivity of acid hydrogels

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1. SEM images of freeze-dried hydrogels in absence of EBDSA

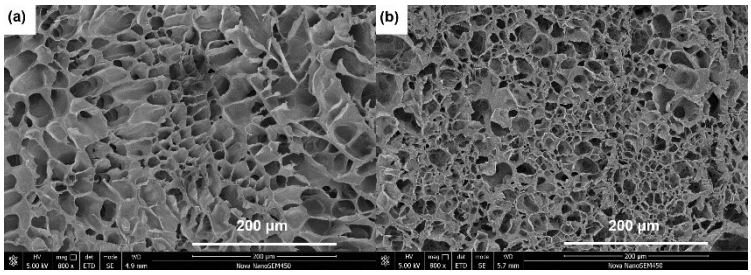

Fig. S1. SEM images of freeze-dried (a) $G_{PAM\text{-}Poly@15℃}$ and (b) $G_{PAM\text{-}Poly@45℃}$.

$G_{PAM\text{-}Poly@15℃}$ and $G_{PAM\text{-}Poly@45℃}$ were obtained polymerizing a precursor consisting of acrylamide (13 wt%), EGDMA (0.4 wt%), and HEPK (0.1 wt%) at 15 and 45 °C, respectively.

2. Dependence of conductivity on EDBSA concentration

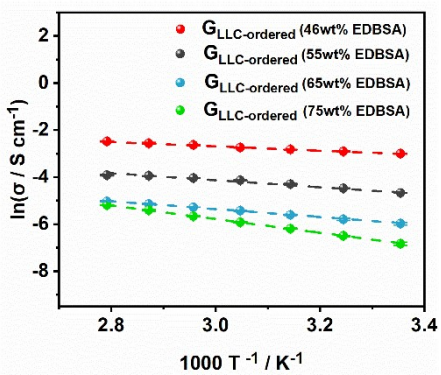

Fig. S2. Temperature-dependent proton conductivities of $G_{LLC\text{-}ordered}$ containing 55 wt%, 65 wt% and 75 wt% EDBSA, respectively.

3. Effect of DBSA on conductivity of hydrogels

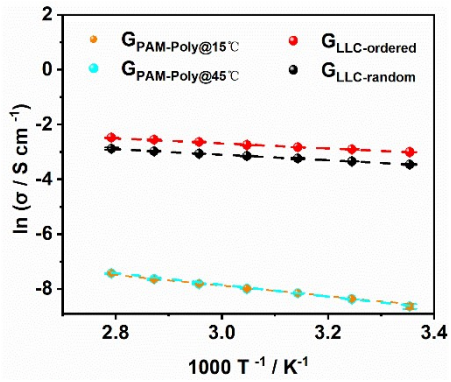

Fig. S3. Temperature dependent conductivities of $G_{PAM\text{-}Poly@15℃}$, $G_{PAM\text{-}Poly@45℃}$, $G_{LLC\text{-}ordered}$ and $G_{LLC\text{-}random}$.