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Supplementary Materials for

# Effect of salt on dynamic mechanical behaviors of polyampholyte hydrogels

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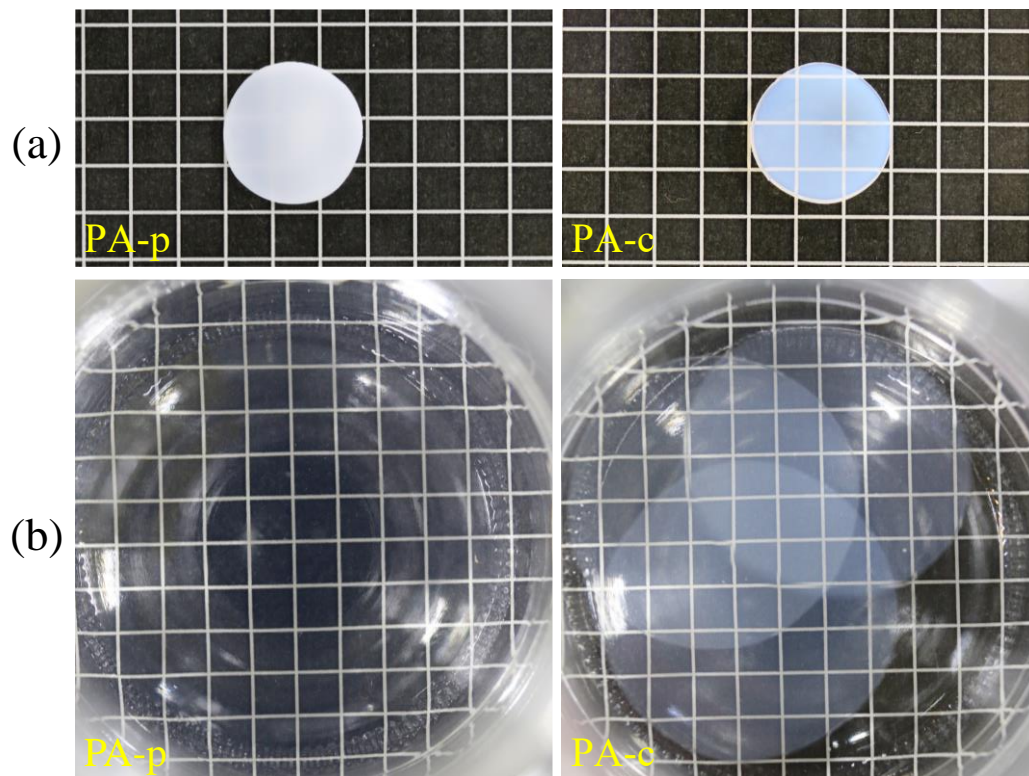
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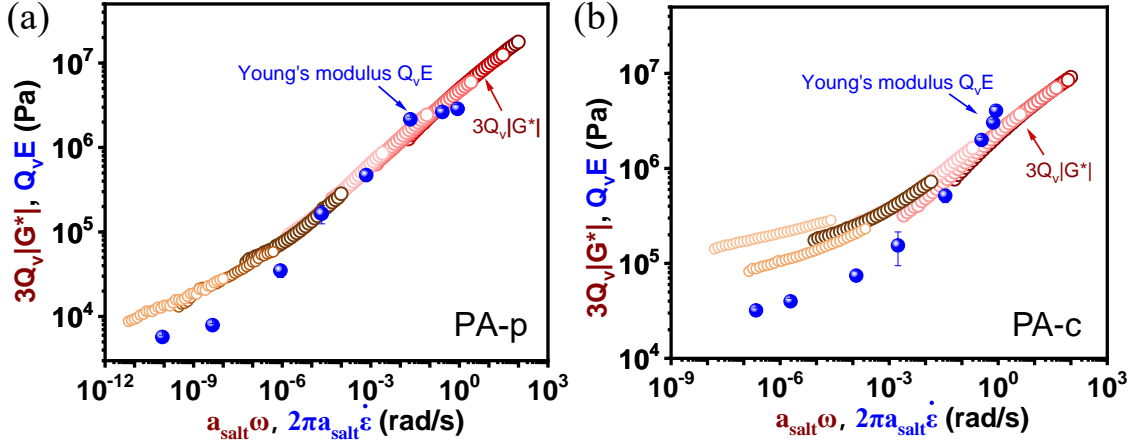
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**Figure S1.** The appearance of equilibrated PA-p and PA-c (a) in water, and (b) in  $C_{\text{NaCl}} = 4$  M solution. For (b), we put three pieces of salt-free PA gels shown in (a) into 4 M NaCl solution. The mesh size of the background lattice is 5 mm. It shows that the PA-p can completely dissolve into 4 M NaCl solution, while the PA-c swells dramatically.



**Figure S2.** Comparison between the norm of the complex shear modulus  $|G^*|$  against  $a_{\text{salt}}\omega$  from rheology test and the Young's modulus  $E$  against  $2\pi a_{\text{salt}}\dot{\epsilon}$  from uniaxial tensile test for (a) PA-p and (b) PA-c. The  $|G^*|$  and  $E$  are rescaled by volume swelling ratio  $Q_v$  to normalize the strand density per unit volume taking the salt-free gels as a reference state. Here,  $|G^*| = (G'^2 + G''^2)^{0.5}$ , where  $G'$  and  $G''$  are storage modulus and loss modulus, respectively. The relation  $E=3|G^*|$  for incompressible material is adopted. The  $Q_v E$  vs.  $2\pi a_{\text{salt}}\dot{\epsilon}$  curve overlap with its counterpart  $3Q_v|G^*|$  vs  $a_{\text{salt}}\omega$  curve, indicating that the tensile strain rate  $\dot{\epsilon}$  is correlated to the angular frequency  $\omega$  by  $\omega=2\pi\dot{\epsilon}$ .