Electronic supporting information for:

A facile method to synthesize strong salt-enhanced hydrogels based on reversible physical interaction

Baichao Zhang [a b], Chao Wang [b], Yinchuan Wang [b], Tao Li [c], Kankan Zhai [b], Fan Zhang [b], Yungang Bai [b], Ying Tan [b], Yuqin Ma*[a], Kun Xu* [b], and Pixin Wang [b]

a. Changchun University of Science and Technology, Changchun 130028, China. E-mail: myq3939@163.com; Tel: +150-4408-7078.
b. Changchun Institute of Applied Chemistry, Changchun 130022, China.
c. Huan Qing Branch of Yumen Oilfield Company, Changchun, China.

corresponding author is Yuqin Ma (myq3939@163.com) and Kun Xu(xukun@ciac.ac.cn).

1. The energy dissipating mechanism of salt-enhancing P(AAm-co-HFBMA) hydrogel

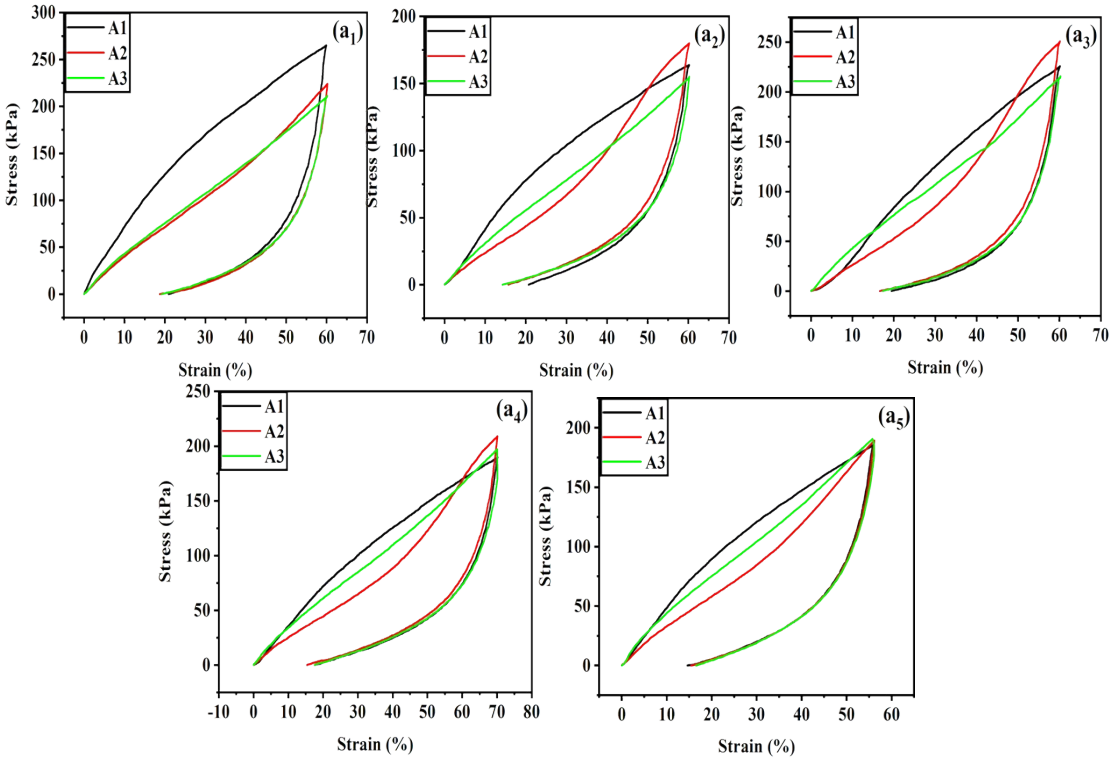

Figure S1 a_1~a_5 are the tensile cycle curves of P(AAm-co-HFBMA) composite hydrogels at different salt concentrations（0M, 0.1M, 0.5M, 1M, 2M）

A1, A2, and A3 in each figure are the first, second, and third stretching cycle curves of the same sample, and the loading-unloading curve area in the corresponding section corresponds to ΔU_{hyst-1}, ΔU_{hyst-2}, ΔU_{hyst-3} mentioned in the article.

2. Comparison before and after hydrogel removal of organic solvents

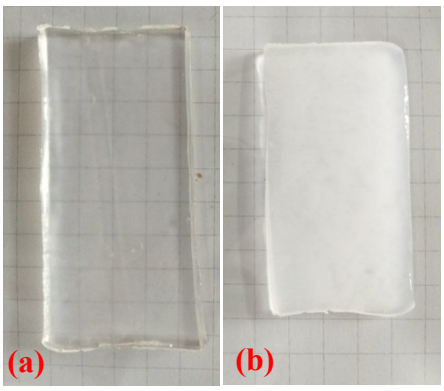

Figure S2 The (a) as-synthesized P(AAm-co-HFBMA) hydrogel and (b) it becomes opaque after solvent is replaced to distilled water

3. Fluorescence Spectroscopy

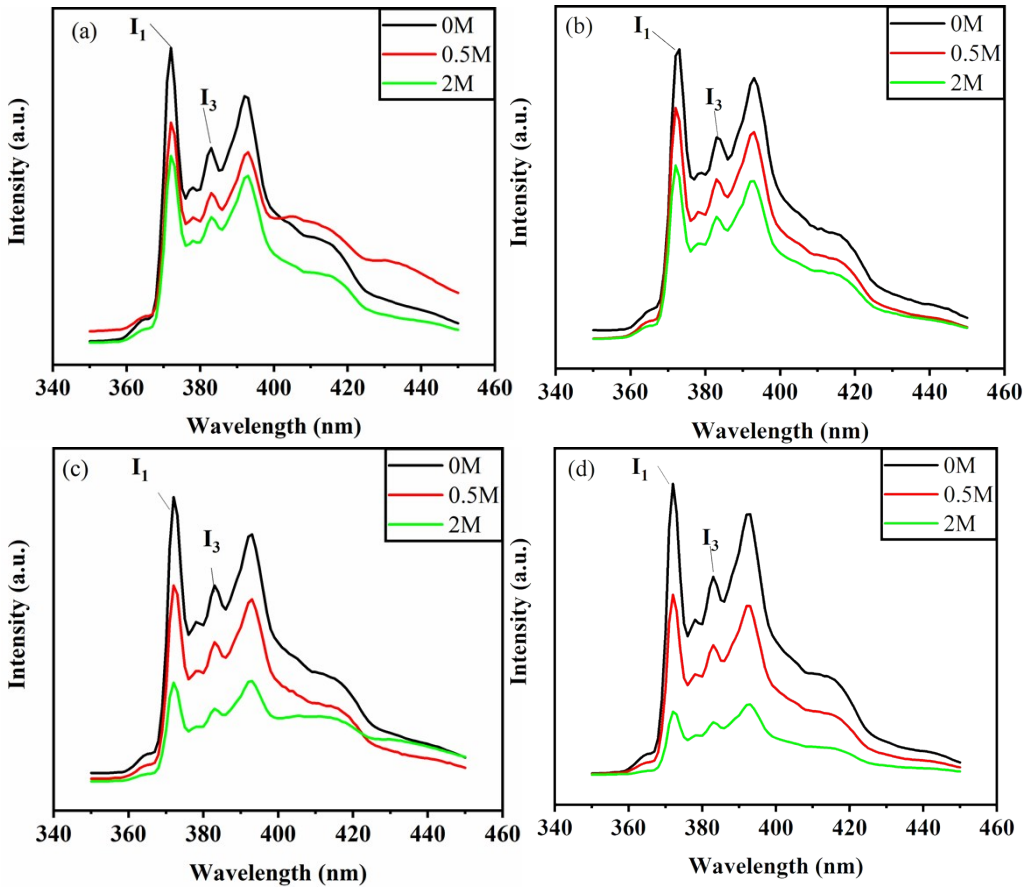

Figure S3 The Fluorescence Spectroscopy of P(AAm-co-HFBMA) hydrogels with various HFBMA contents(a) 5 mol%, (b) 10 mol%, (c) 15 mol%, (d) 20 mol% in NaCl solution with various concentrations (0, 0.5, 2.0 M).

4.DSC curves of PAAm gel and P(AAm-co- HFBMA) gel

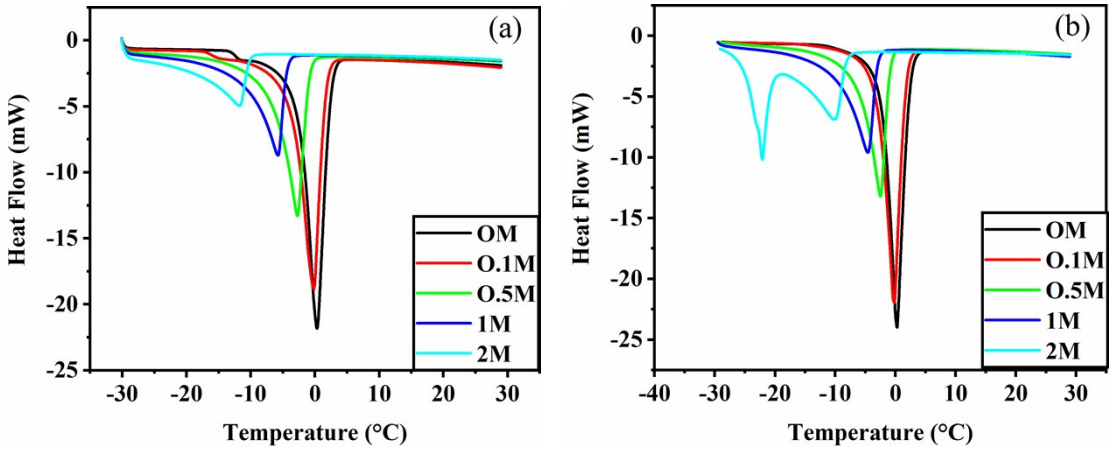

Figure S4 Effect of salt concentration on water state in (a) PAAm gel and (b) P(AAm-co- HFBMA) gel with the same water content.