

Supporting Information

for

Association Behaviors of Carbazole-Labeled Polyacrylamide in water Studied by Fluorescence Spectroscopy

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S1. Emission spectra of NVC in water.

Although NMR was used to characterize to PAM-*r*-PNVC copolymers, the existence of characteristic peak from NVC could not convince us that these two monomers were copolymerized successfully. There might be a situation that the purification haven't been executed completely in other word there might be the blend of NVC and PAM. For this consideration, we checked the emission spectra of NVC in water to compare with that of the copolymer (Figure 4a in paper). Figure S1 was the emission spectra when 2 mg NVC was dispersed in 100 ml water (the NVC concentration is similar to that of 1000 ppm PAM-*r*-PNVC05 solution). Here are several differences to support the polymers we obtained were real copolymer instead of blends. First even such low amount of NVC couldn't be dissolved in water due to the extreme low solubility while our polymer could be dissolved in water easily. Second the emission spectrum of unreacted NVC in water was quite different from the copolymer's spectrum in figure 4a. once the NVC

monomer was copolymerized into the chain NVC monomers were separated from each other. Thus the emission spectrum of the copolymer in figure 4a exhibited two structural peaks which corresponding to 0-0 transition and 0-1 transition. These spectral features were similar to that of carbazole unites in a good solvent. While for NVC in water, these monomers form aggregates and there was only a structureless peak in the emission spectrum (figure S1). In order to exclude the influence of these undissolved NVC aggregates, the solution was filtered by a membrane with 0.45 μm pore size. It could be found that only the fluorescence intensity decreased sharply and still a structureless peak appeared. Thus the unreacted NVC monomer couldn't show a structural emission peak in water. Therefore by this comparison we are convinced that NVC was copolymerized with AM instead of blends in our copolymer.

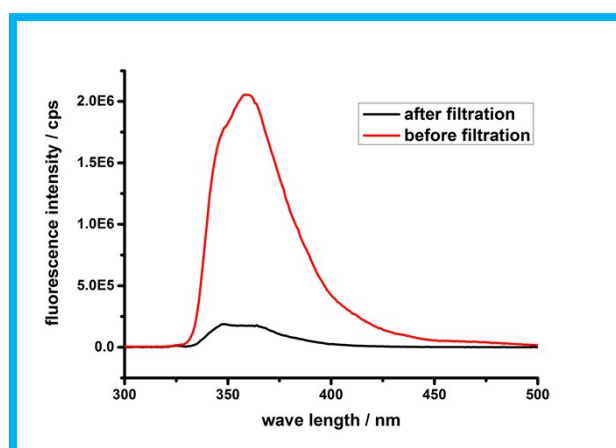


Figure 2. emission spectra ($\lambda_{\text{excitation}}=290\text{nm}$) of NVC in water dilute solution.