

Supporting Information

Phase Transition and Aggregation Behaviour of an UCST- type Copolymer Poly(Acrylamide-co-Acrylonitrile) in Water: Effect of Acrylonitrile Content, Concentration in Solution, Copolymer Chain Length and Presence of Electrolyte Transition

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Synthesis of poly(AAm-co-AN):

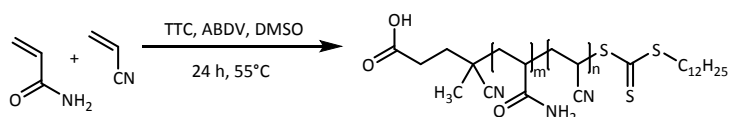


Fig. S1 Polymerization scheme of poly(AAm-co-AN) copolymers.

Table S1. Summary of the synthesis of poly(AAm-co-AN) copolymers with varying AN contents.

Sample Name	Acrylamide [g]	Acrylonitrile [mL]	TTC [mg]	ABDV [mg]	Yield %
P1	4.75	0.48	60.0	4.0	67
P2	4.52	0.70	60.0	4.0	61
P3	4.30	0.90	60.0	4.0	59
P4	4.10	1.10	60.0	4.0	65
P5	3.96	1.21	60.0	4.0	63
P6	3.83	1.33	60.0	4.0	61
P7	3.59	1.56	60.0	4.0	60

Characterization of poly(AAm-co-AN):

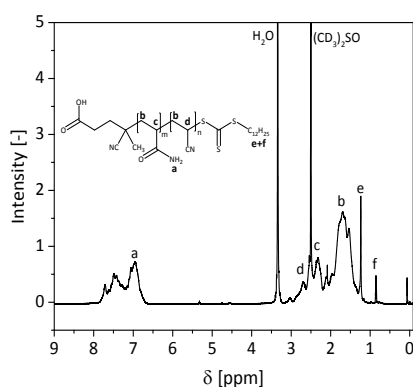


Fig. S2 ¹H-NMR spectrum (400 MHz, DMSO-d₆) of poly(AAm-co-AN) (sample P4, F_{AN} =0.144).

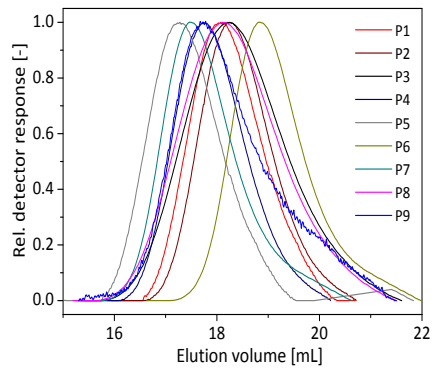


Fig. S3 GPC traces of poly(AAm-co-AN) .

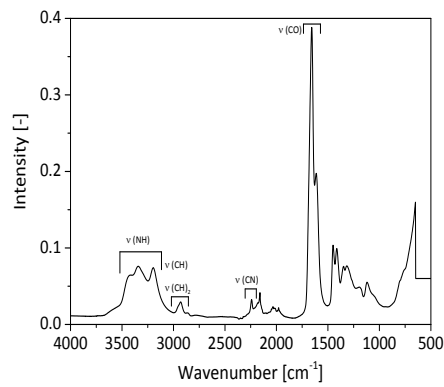


Fig. S4 ATR-FTIR spectrum of poly(AAm-co-AN) with acrylonitrile feed content of 0.225 % (Sample P4, $F_{AN}=0.144$).

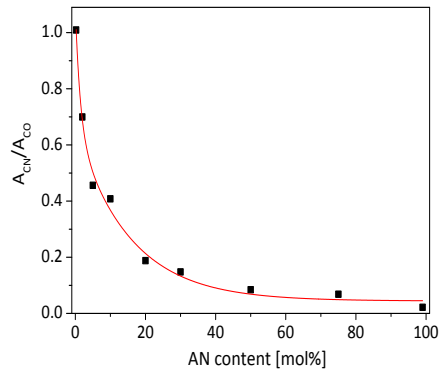


Fig. S5 Calibration curve used for the determination of the copolymer compositions of poly(AAm-co-AN). Standard homopolymer of polyacrylamide and polyacrylonitrile were thoroughly mixed. For the calibration, the carbonyl (C=O) peak from the copolymer at wavelength 1655 cm^{-1} and nitrile peak (C≡N) from acrylonitrile group at wavelength 2240 cm^{-1} were compared. The ratio between them is plotted against acrylonitrile content.

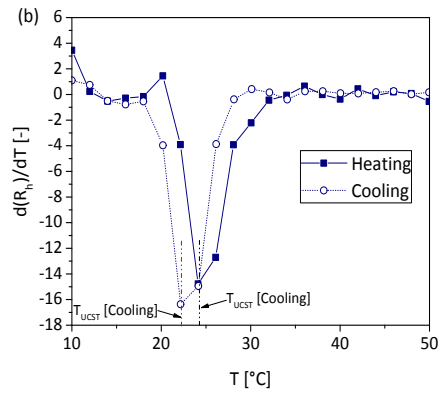


Fig. S6 First derivative of the R_h against temperature (T) curve in the heating and cooling cycle with concentration of 5 mg/mL (sample P4, $F_{AN}=0.144$).

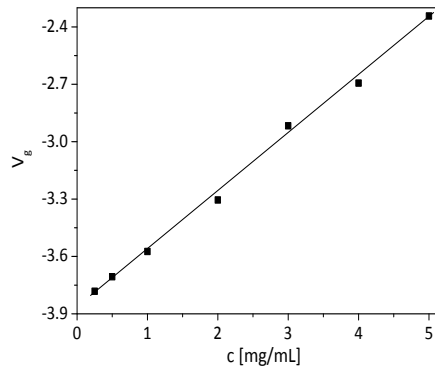


Fig. S7 Determination of refractive index increment (dn/dc) of poly(AAm-co-AN) copolymer ($F_{AN} = 0.144$) using dndc 2010 instrument (PSS, Germany).