

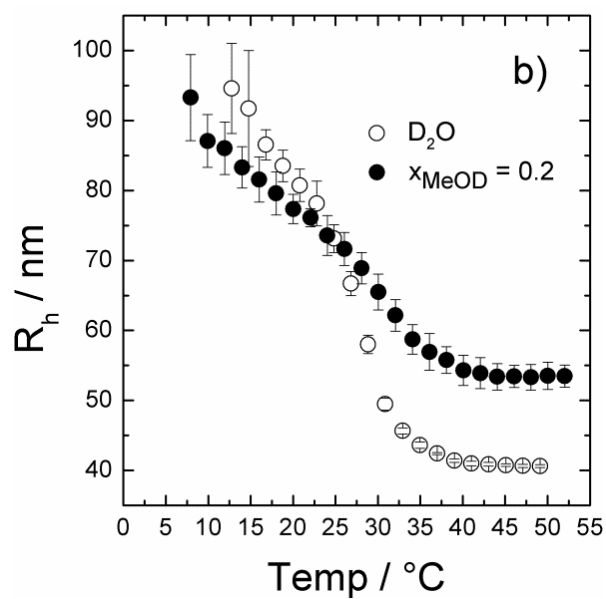
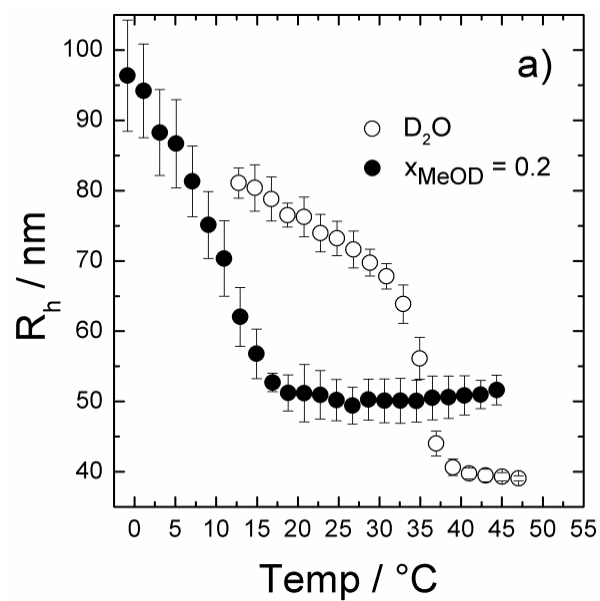
## Supporting Information

### Cononsolvency Effects on the Structure and Dynamics of Microgels

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**Dynamic Light Scattering.** DLS measurements were performed with an ALV 5000 goniometer. A laser wavelength of 633 nm was used. Samples were prepared from 1 wt% parent microgel dispersions in D<sub>2</sub>O and MeOD respectively. The samples were diluted with the corresponding solvent (D<sub>2</sub>O) or solvent mixture (MeOD/D<sub>2</sub>O) to avoid multiple scattering. Dust was removed from the highly diluted samples with Sartorius syringe filters of 0.45  $\mu$ m pore size prior to the measurement. Time dependent intensity was detected at 6 different  $q$ -values. Diffusion coefficients were calculated from the measured correlations functions and hydrodynamic radii were calculated via the Stokes-Einstein approach. Hydrodynamic radii of the particles were detected this way in temperature range between 0° and 50°C in 2°C steps. Viscosity of the mixture was measured with a conventional capillary viscosimeter (table S1). Refractive index of  $x_{\text{MeOD}} = 0.2$  was measured with a Michelson interferometer.

Radii shown in the figures were calculated by a cumulant fit. In the case of PNIPAM in  $x_{\text{MeOD}} = 0.2$  aggregates were found; this lead to a higher average  $R_h$ . Therefore the data was fitted with the CONTIN fit. The  $R_h$  given in the data result from these Contin fits. There were no aggregates in the other measured samples. Since we did the CONTIN fit not for all temperatures the data from the cumulant fit are shown. Moreover the trend of the radius vs. temperature is sufficiently well represented by these data.



**Figure S1.** Hydrodynamic Radii of microgels in  $D_2O$  (empty circles) and in  $x_{MeOD} = 0.2$  (full circles); a) PNIPAM b) PDEAAM.

**Table S1.** Viscosity, density and refractive index of the MeOD/D<sub>2</sub>O mixture with  $x_{\text{MeOD}} = 0.2$ 

Temperature	[°C]	Density [gcm <sup>-3</sup> ]	Dynamic Viscosity [mPas]	Refractive index
10		1.0642 ± 0.0002	3.172 ± 0.011	
12		1.0634± 0.0002	2.941 ± 0.011	
15		1.0618± 0.0002	2.635 ± 0.014	
20		1.0592± 0.0002	2.218 ± 0.013	1.3385
25		1.0564± 0.0002	1.890 ± 0.013	1.3352
30		1.0534± 0.0002	1.627 ± 0.013	