# Supporting Information

# for

# Influence of cyclodextrin on the UCST- and LCST-behavior of poly(2-methacrylamido-caprolactam)-co-(*N*,*N*-dimethylacrylamide)

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## Characterization data of intermediates and copolymers including $^{1}$H NMR and $^{13}$C NMR spectra, turbidity- and DLS-measurements.

## Content:

Turbidity measurement of copolymer **6b**

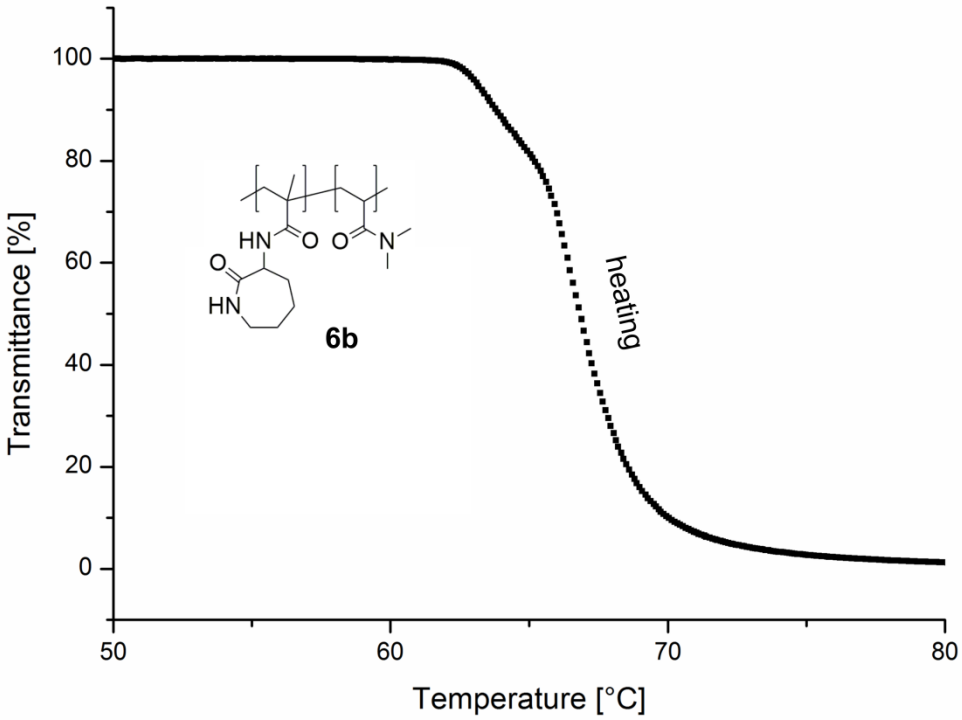


**Figure S1:** LCST measurements of copolymer **6b** in water upon heating of 10 mg/ml at a heating rate of 1 °C $min^{-1}$.

Determination of the hydrodynamic diameter of copolymer **6a**

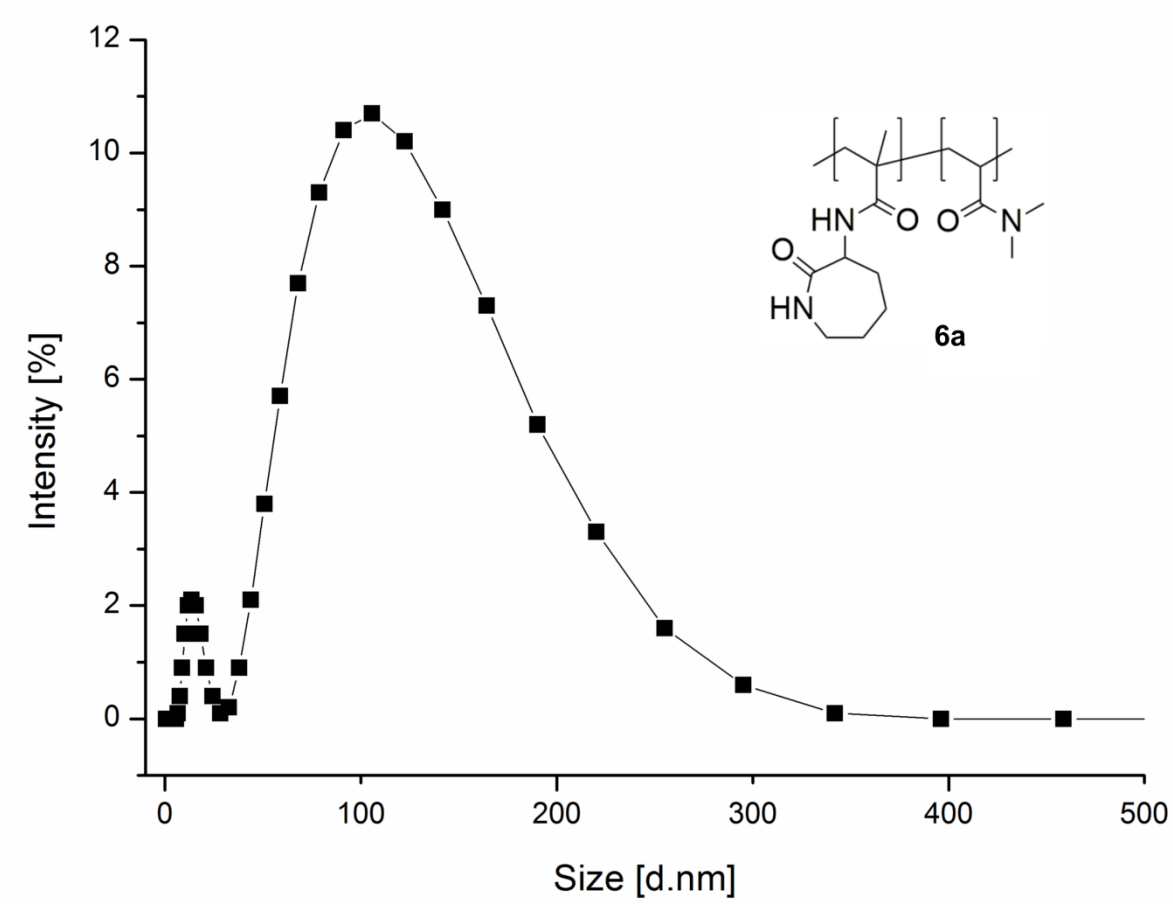


**Figure S2:** Hydrodynamic diameters of **6a** in ethanol (2 mg $ml^{-1}$) at 20 °C.

$^{1}$H NMR spectrum of 2-methacrylamido-caprolactam (**4**)

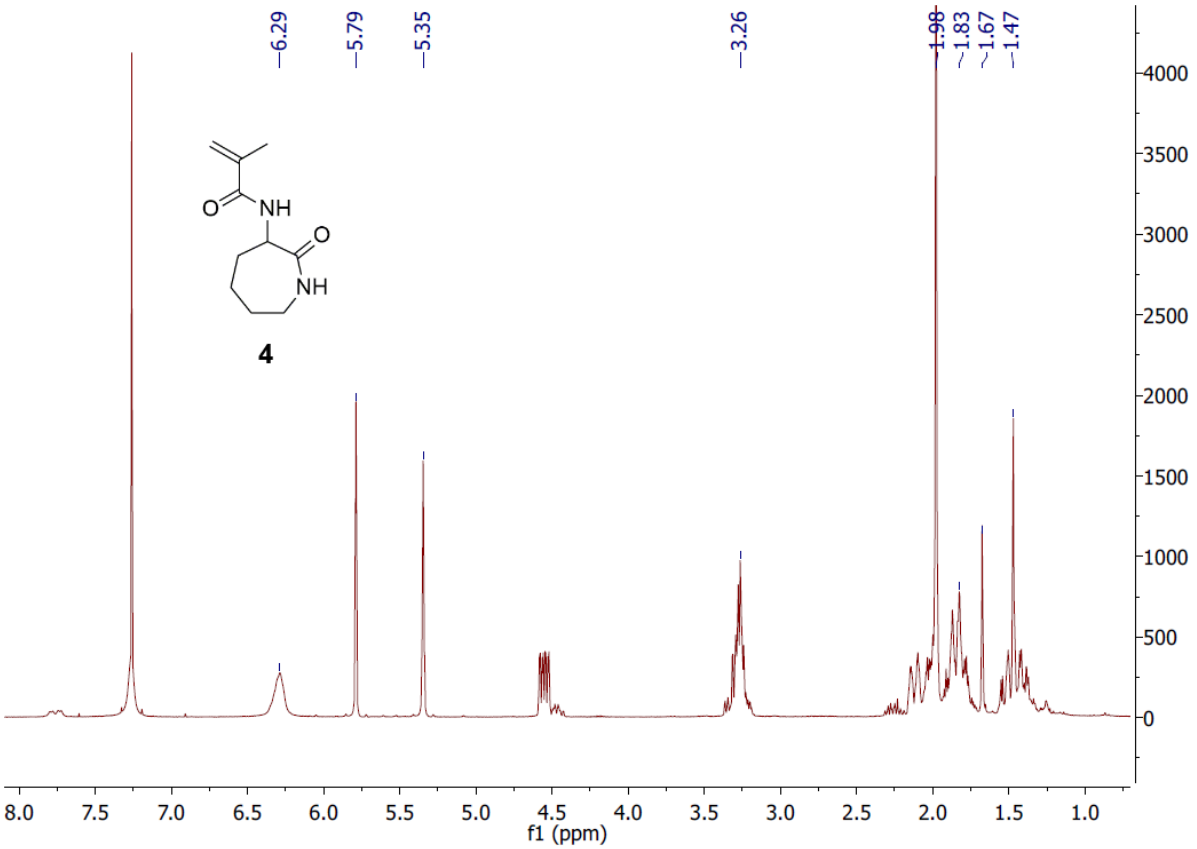


**Figure S3:** $^{1}$H NMR spectrum of 2-methacrylamido-caprolactam (**4**) in $CDCl_3$.

$^{13}$C NMR spectrum of 2-methacrylamido-caprolactam (**4**)

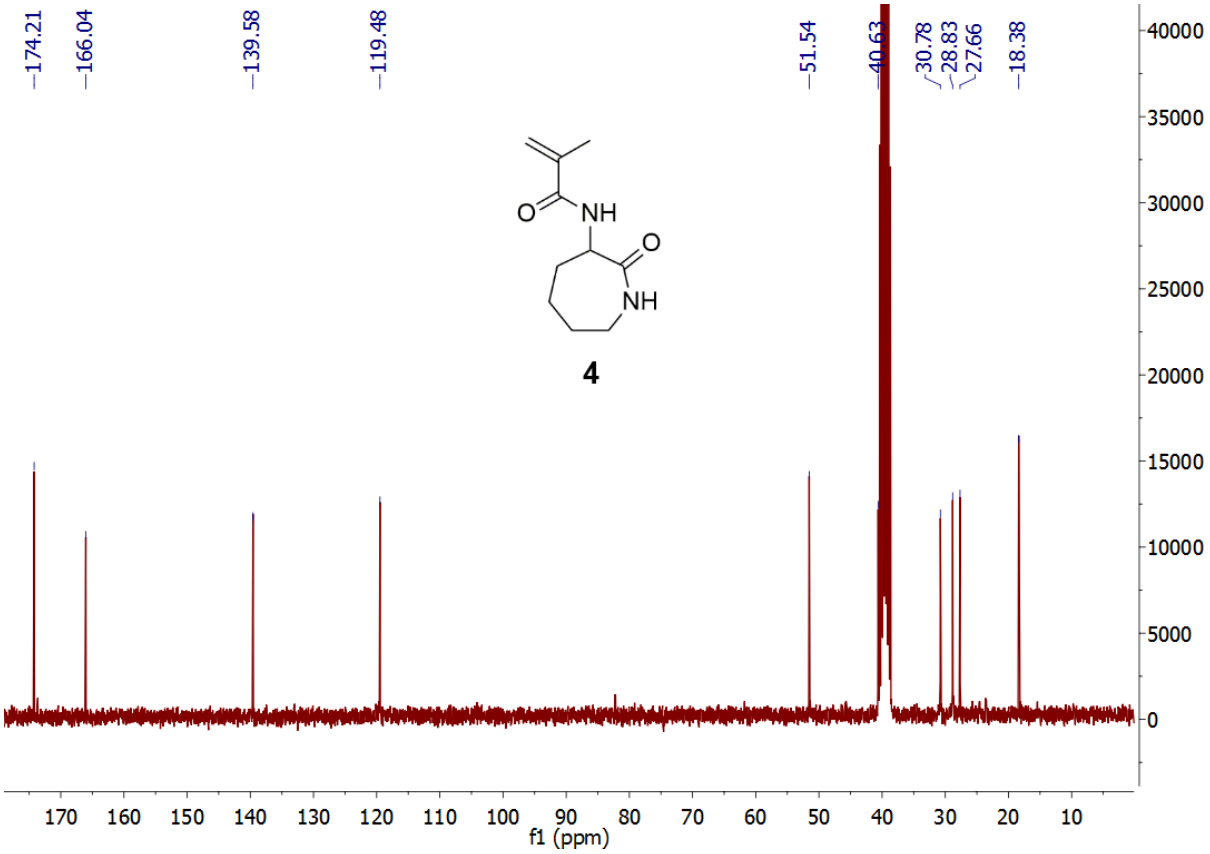


**Figure S4:** $^{13}$C NMR spectrum of 2-methacrylamido-caprolactam (**4**) in dimethylsulfoxide-$d_6$.

IR spectrum of 2-methacrylamido-caprolactam (**4**) in the solid state

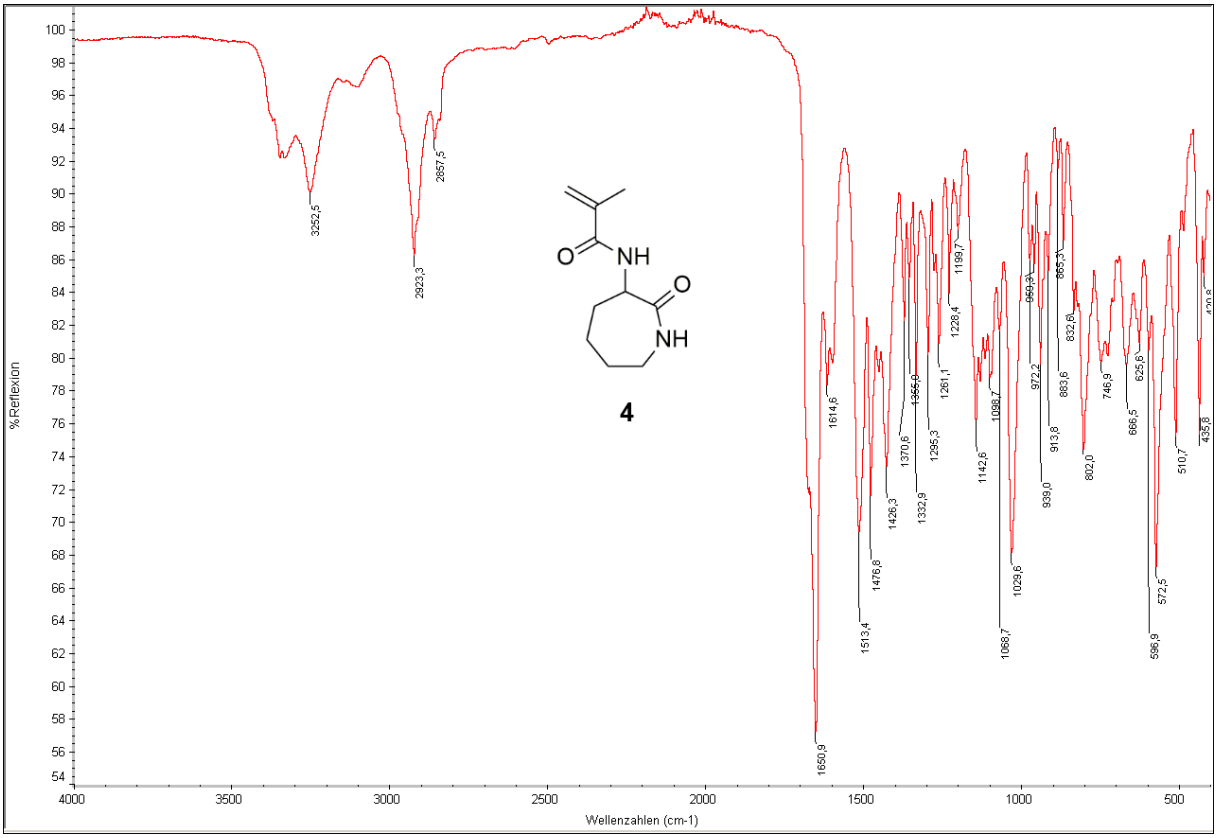


**Figure S5:** IR spectrum of 2-methacrylamido-caprolactam (**4**) in the solid state.

$^{1}$H NMR spectrum of poly(2-methacrylamido-caprolactam)-co-(*N*,*N*-dimethylacrylamide) **6b**

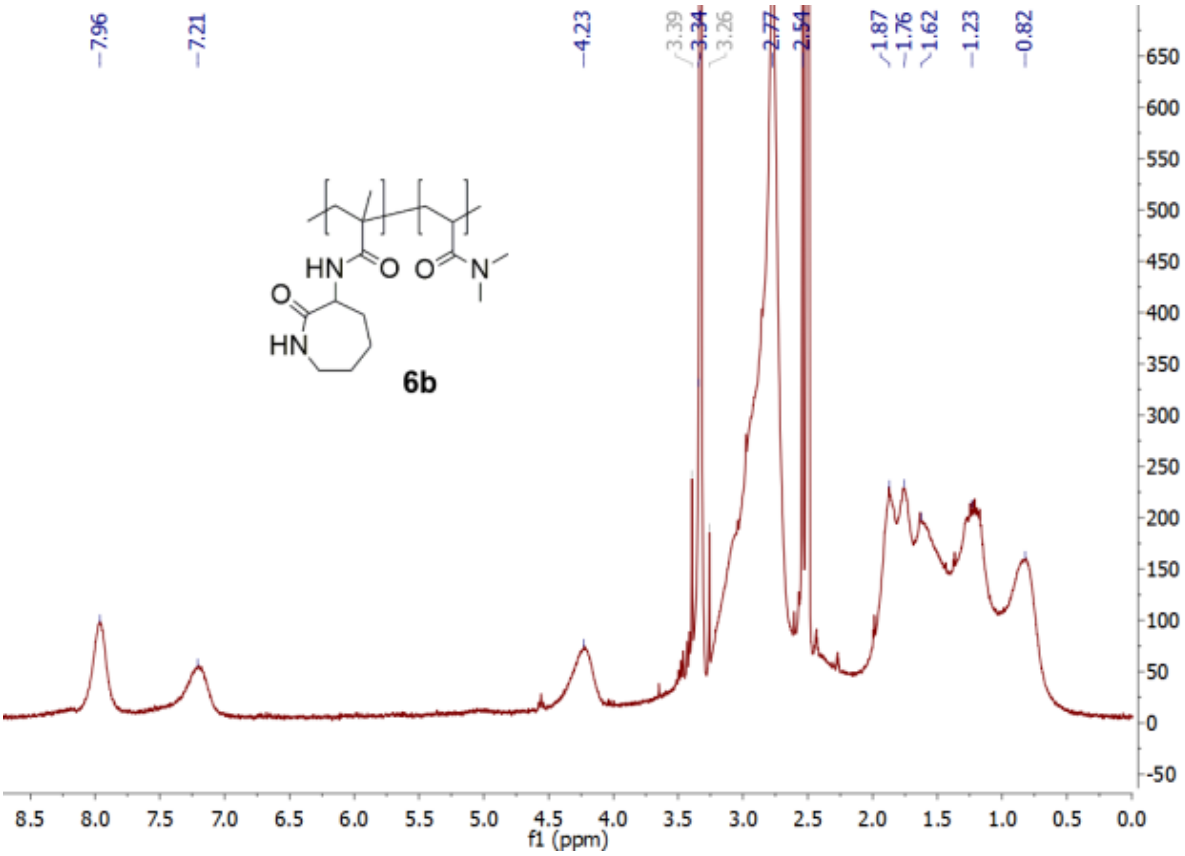


**Figure S6:** $^{1}$H NMR spectrum of copolymer **6b** in dimethylsulfoxide-$d_6$.

IR spectrum of poly(2-methacrylamido-caprolactam)-co-(*N*,*N*-dimethylacrylamide) **6b**

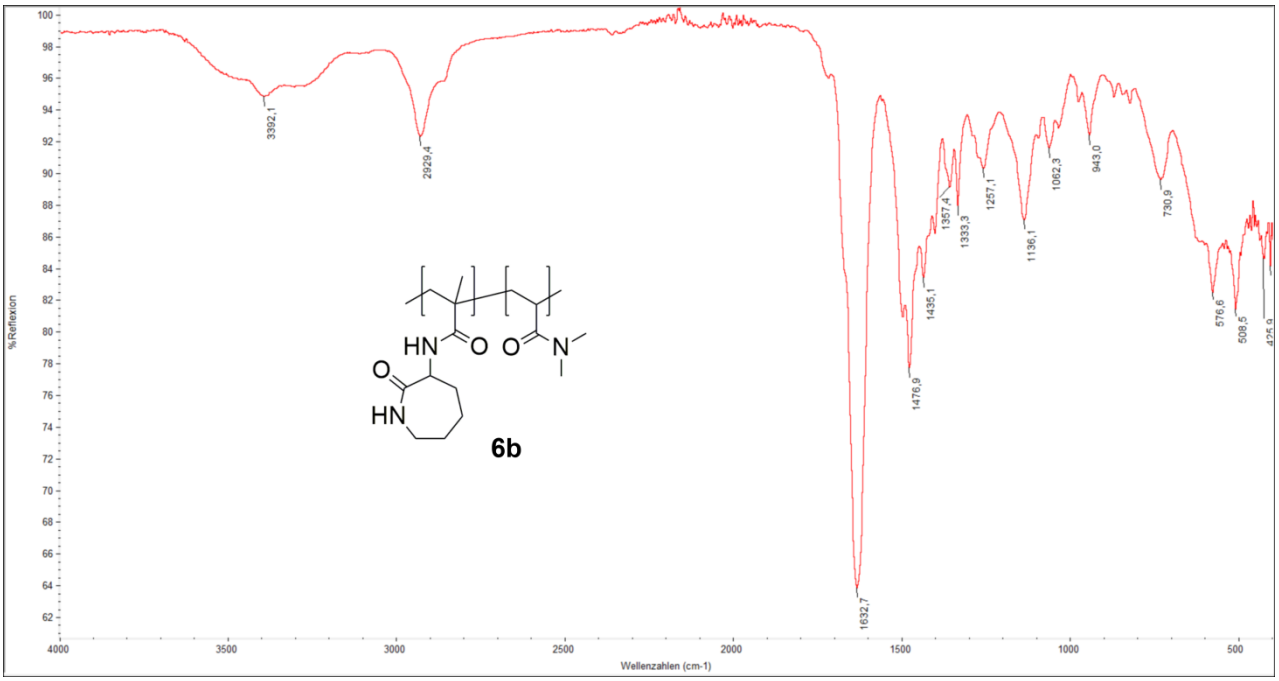


**Figure S7:** IR spectrum of copolymer **6b** in the solid state.

$^1$H NMR spectra of Job plot analysis of RAMEB cyclodextrin with α-amino-ε-caprolactam (**2**)

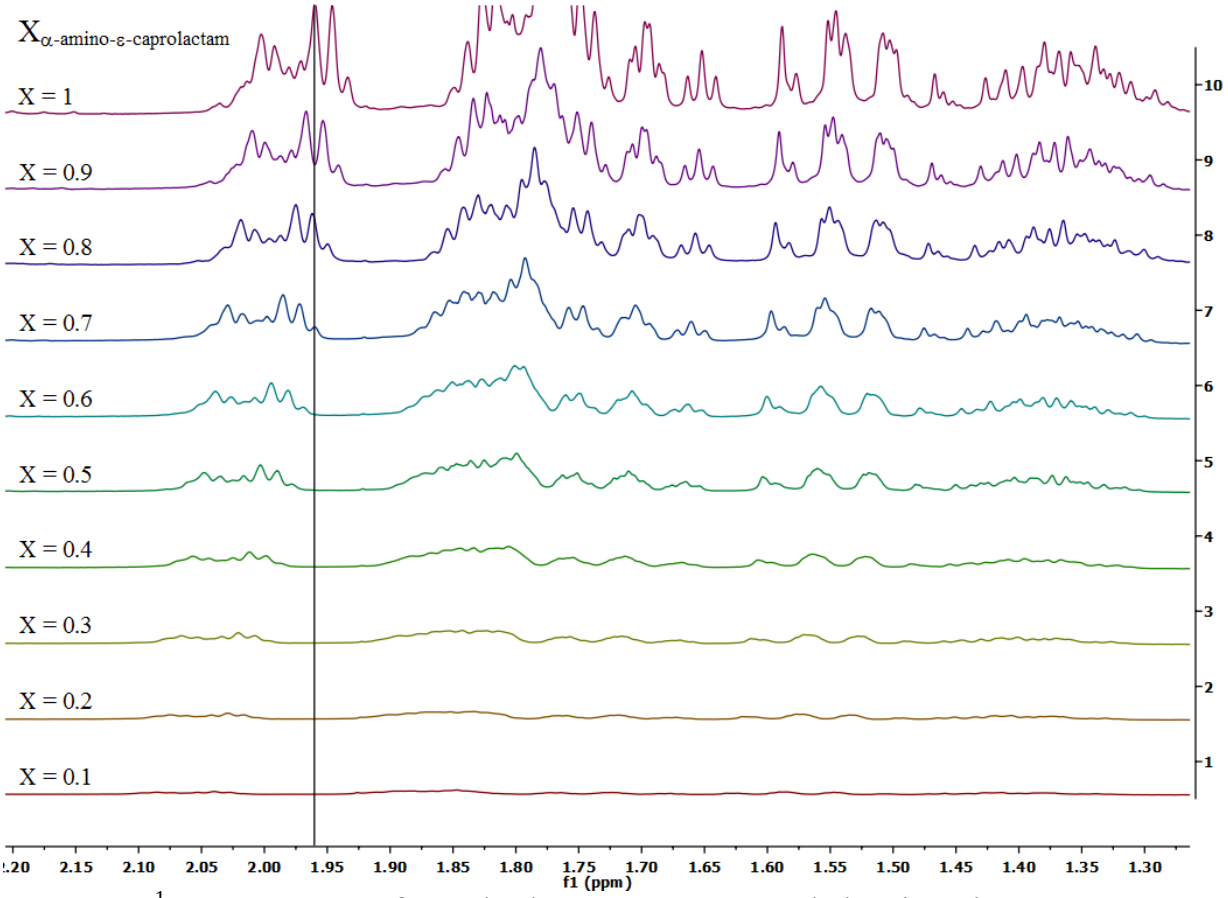


**Figure S8:** $^1$H NMR spectra of complex between RAMEB cyclodextrin and α-amino-ε-caprolactam (**2**) in $D_2O$.