

Supporting information

The dumbbell-like polyionic complexes of dendronized poly(ethylene glycol): synthesis and self-assembly studies

S.V. Khatuntsev¹, A.A. Fanova³, P.A. Fetin¹, L.I. Kaberov^{4,5}, N.V. Girbasova¹, I.M. Zorin¹, A.A. Lezov², A.Yu. Bilibin¹

¹Institute of Chemistry, St. Petersburg State University, Universitetskaya nab. 7/9, 199034, St. Petersburg, Russian Federation

²Department of Molecular Biophysics and Polymer Physics, Physical Faculty, St. Petersburg State University, Universitetskaya nab. 7/9, 199034, St. Petersburg, Russian Federation

³Department of Physical and Macromolecular Chemistry, Faculty of Science, Charles University, Hlavova 2030, 12840 Prague 2, Czech Republic

⁴Institute of Organic Chemistry and Macromolecular Chemistry (IOMC), Friedrich Schiller University Jena, D-07743 Jena, Germany

⁵Jena Center for Soft Matter (JCSM), Friedrich Schiller University Jena, D-07743, Jena, Germany

p.fetin@spbu.ru

leonid.kaberov@uni-jena.de

i.zorin@spbu.ru

Contents

Figure S1. ^1H NMR spectrum of <i>N</i> -acryloyldimethyl asparagine (DMA) in CDCl_3 .	3
Figure S2. ^1H NMR spectrum of poly(ethylene glycol)- <i>bis</i> -tosylate in CDCl_3 .	3
Figure S3. ^1H NMR spectrum of poly(ethylene glycol)- <i>bis</i> -amine in CDCl_3 .	4
Figure S4. ^1H NMR spectrum of PEG-DMA in CDCl_3 .	4
Figure S5. ^1H NMR spectrum of PEG-Asp-EDA in DMSO-d_6 .	5
Figure S6. ^1H NMR spectrum of PEG-Asp in DMSO-d_6 .	5
Figure S7. ^1H NMR spectrum of Complex 1 in DMSO-d_6 .	6
Figure S8. ^1H NMR spectrum of dimethyl-(4- <i>N</i> -acryloyl)aminobenzoyl aspartate in CDCl_3 .	6
Figure S9. ^1H NMR spectrum of PEG-B-DMA in CDCl_3 .	7
Figure S10. ^1H NMR spectrum of PEG-B-Asp-EDA in CDCl_3 .	7
Figure S11. ^1H NMR spectrum of PEG-B-Asp in DMSO-d_6 .	8
Figure S12. ^1H NMR spectrum of PEG-Asp-GMDA in CDCl_3 .	8
Figure S13. IR spectrum of amino- component (PEG-Asp-EDA) of Complex 1.	9
Figure S14. IR spectrum of carboxyl component (PEG-Asp) of Complex 1	9
Figure S15. IR spectrum of Complex 1 formed from carboxyl components (PEG-Asp) and amino- component (PEG-Asp-EDA)	10
Figure S16. The distribution functions of R_h for PEG-Asp-GMDA and Complex 3 in water	10
Figure S17. The thermogram of Complex 1 obtained from chloroform..	11
Figure S18. The SWAXS spectra of Complex 1 obtained from water (A) and from methanol (B). For measurement, the sample was fixed on tape.	12

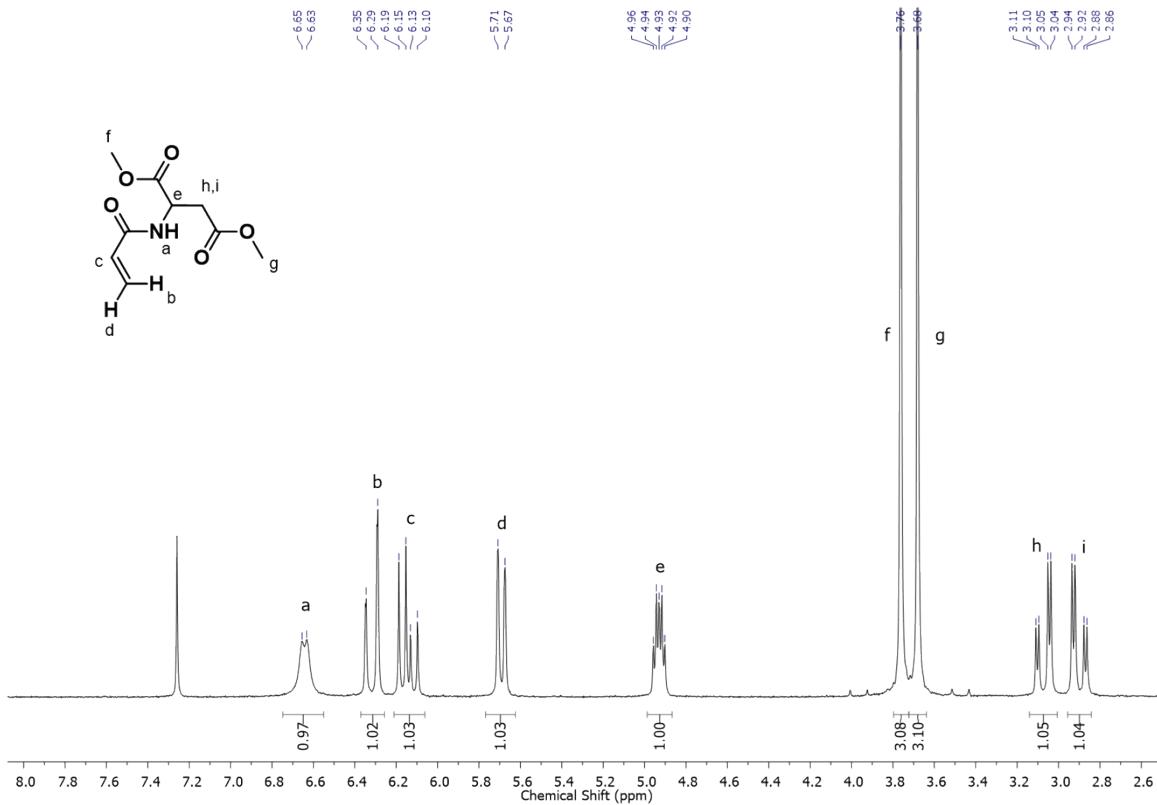


Figure S1. ^1H NMR spectrum of *N*-acryloyldimethyl asparaginate (DMA) in CDCl_3 .

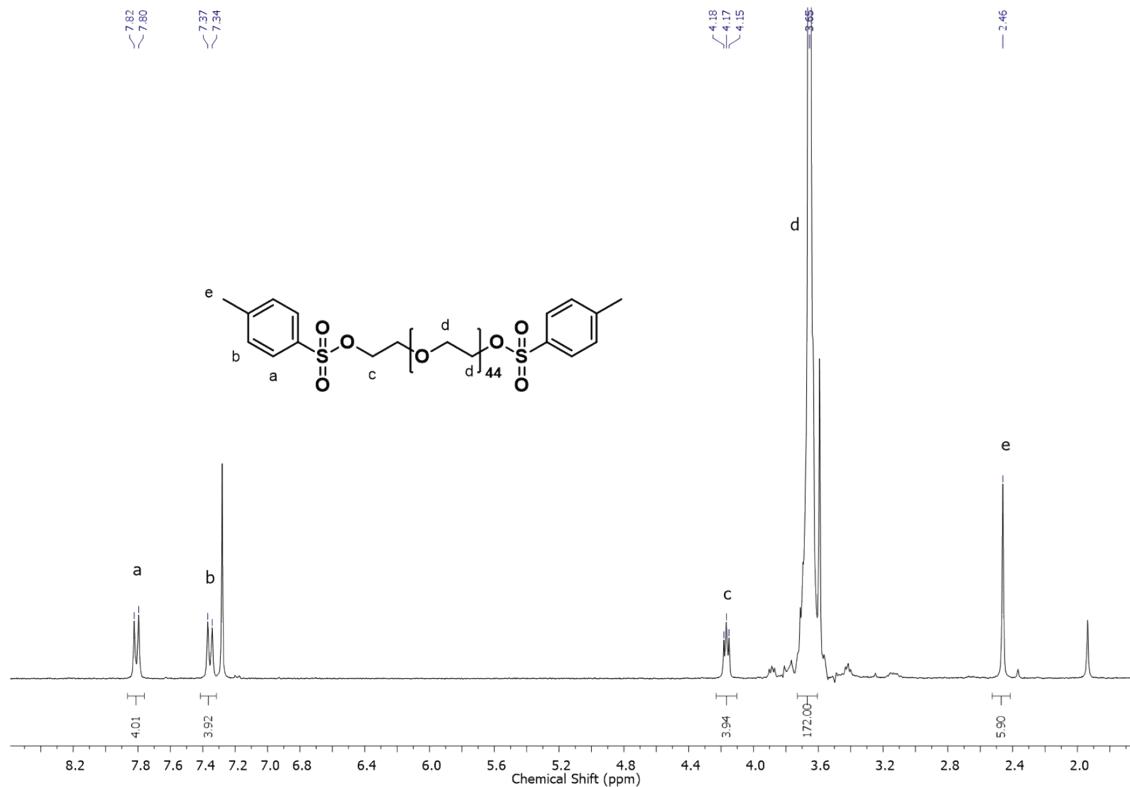


Figure S2. ^1H NMR spectrum of poly(ethylene glycol)-*bis*-tosylate in CDCl_3 .

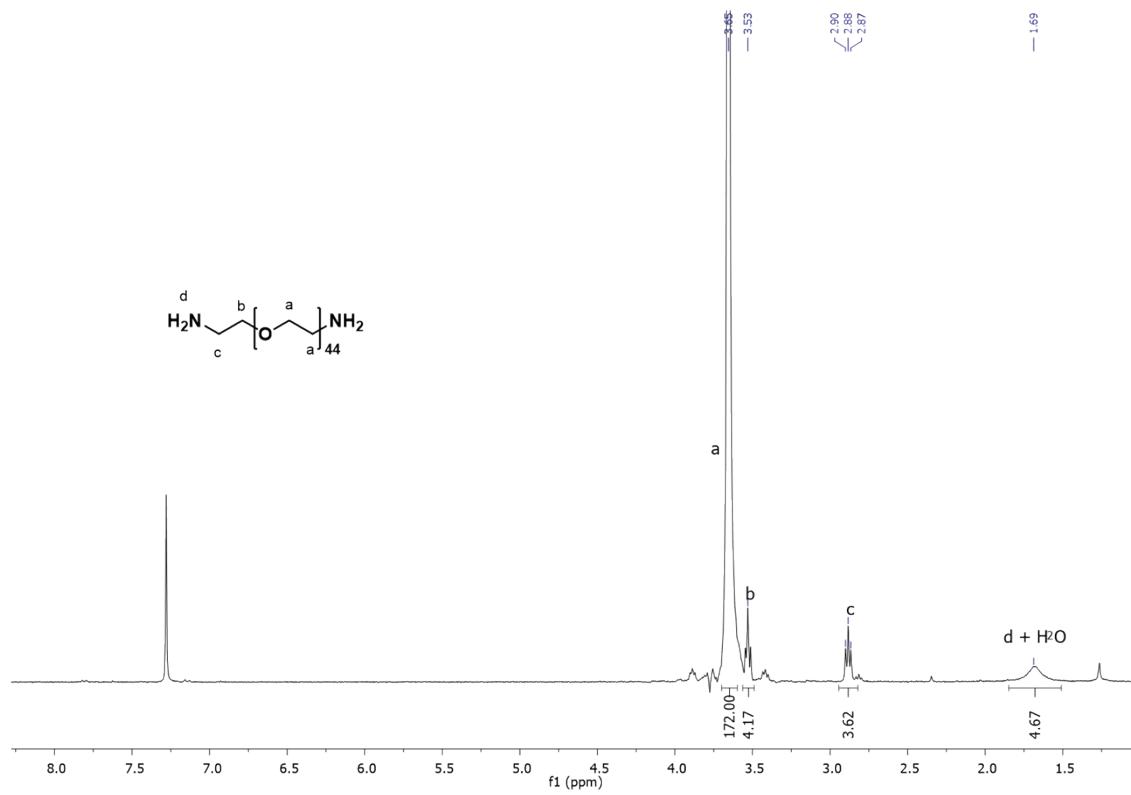


Figure S3. ^1H NMR spectrum of poly(ethylene glycol)-bis-amine in CDCl_3 .

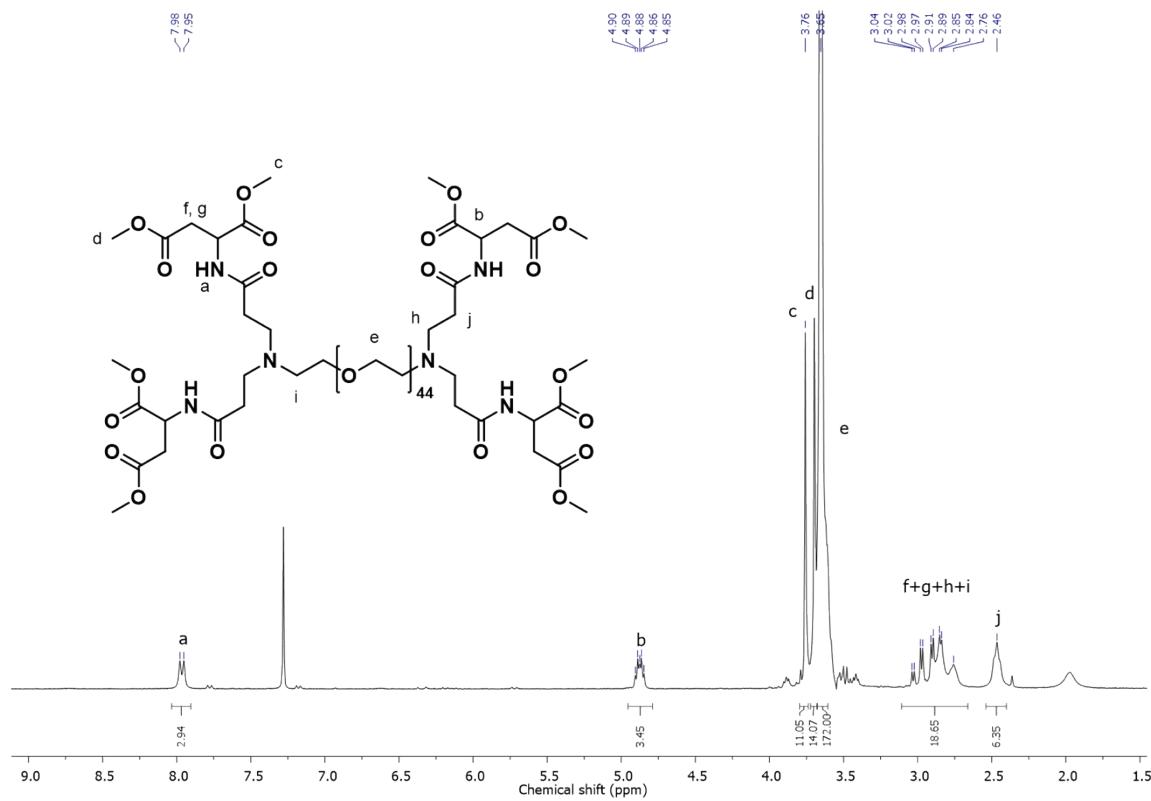


Figure S4. ^1H NMR spectrum of PEG-DMA in CDCl_3 .

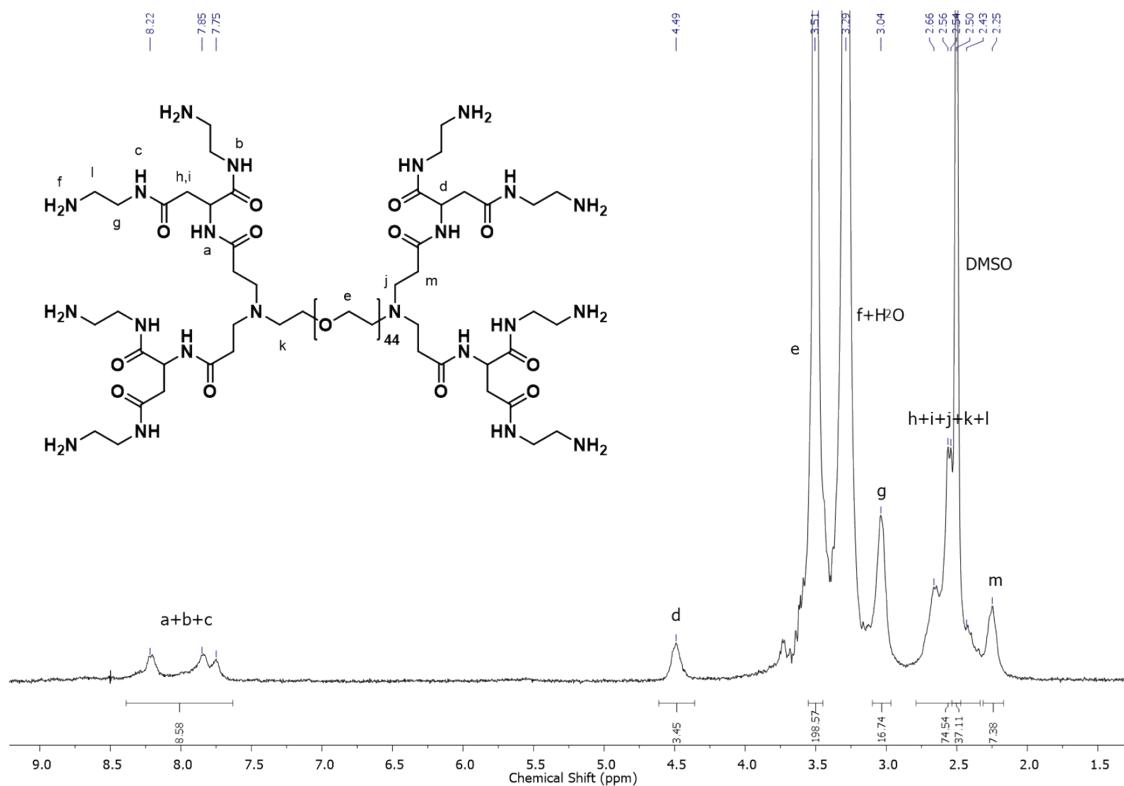


Figure S5. ^1H NMR spectrum of PEG-Asp-EDA in DMSO-d6.

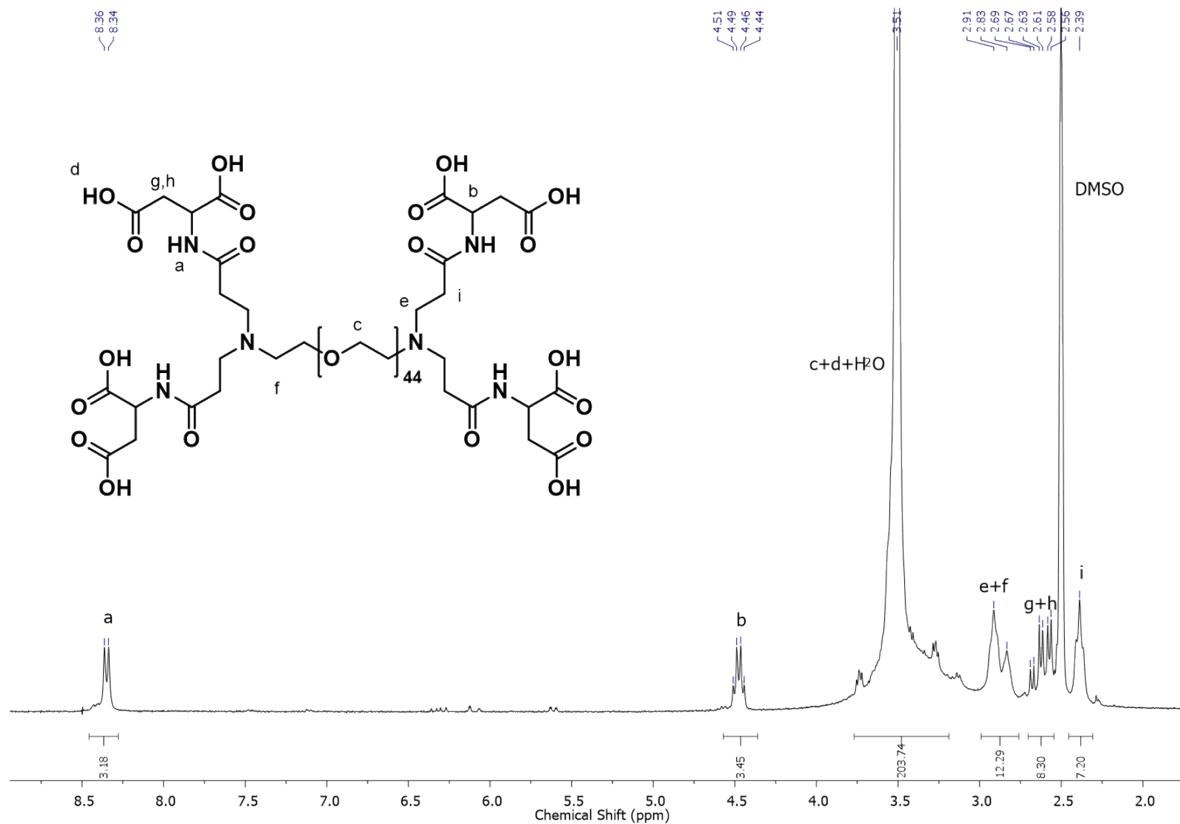


Figure S6. ^1H NMR spectrum of PEG-Asp in DMSO-d6.

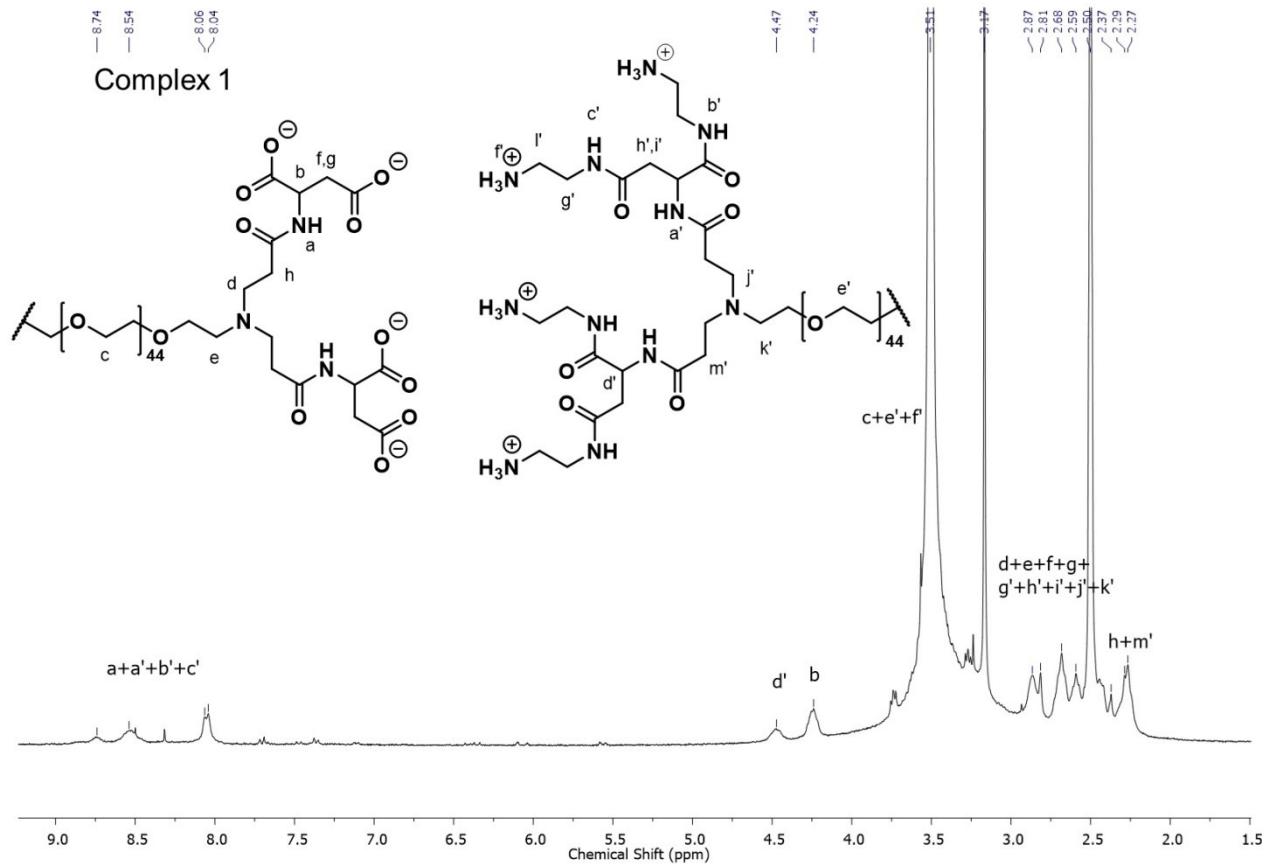


Figure S7. ^1H NMR spectrum of Complex 1 in DMSO-d6.

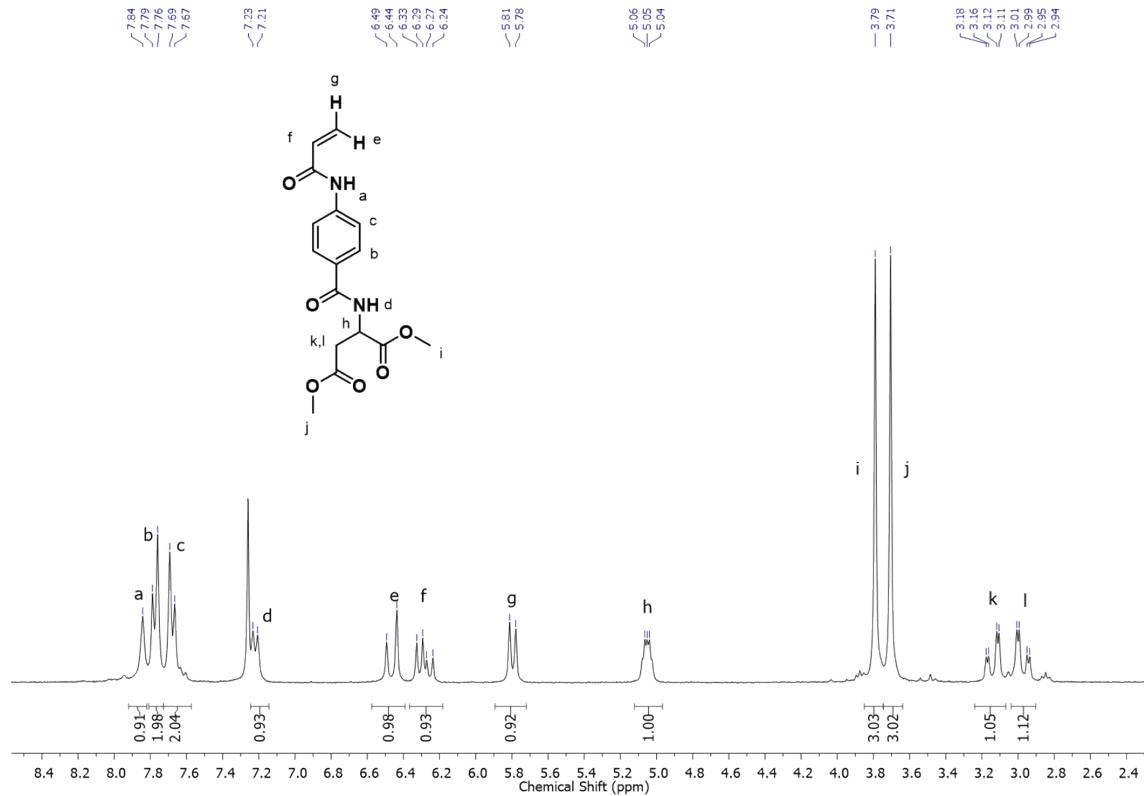


Figure S8. ^1H NMR spectrum of dimethyl-(4-*N*-acryloyl)aminobenzoyl aspartate in CDCl_3 .

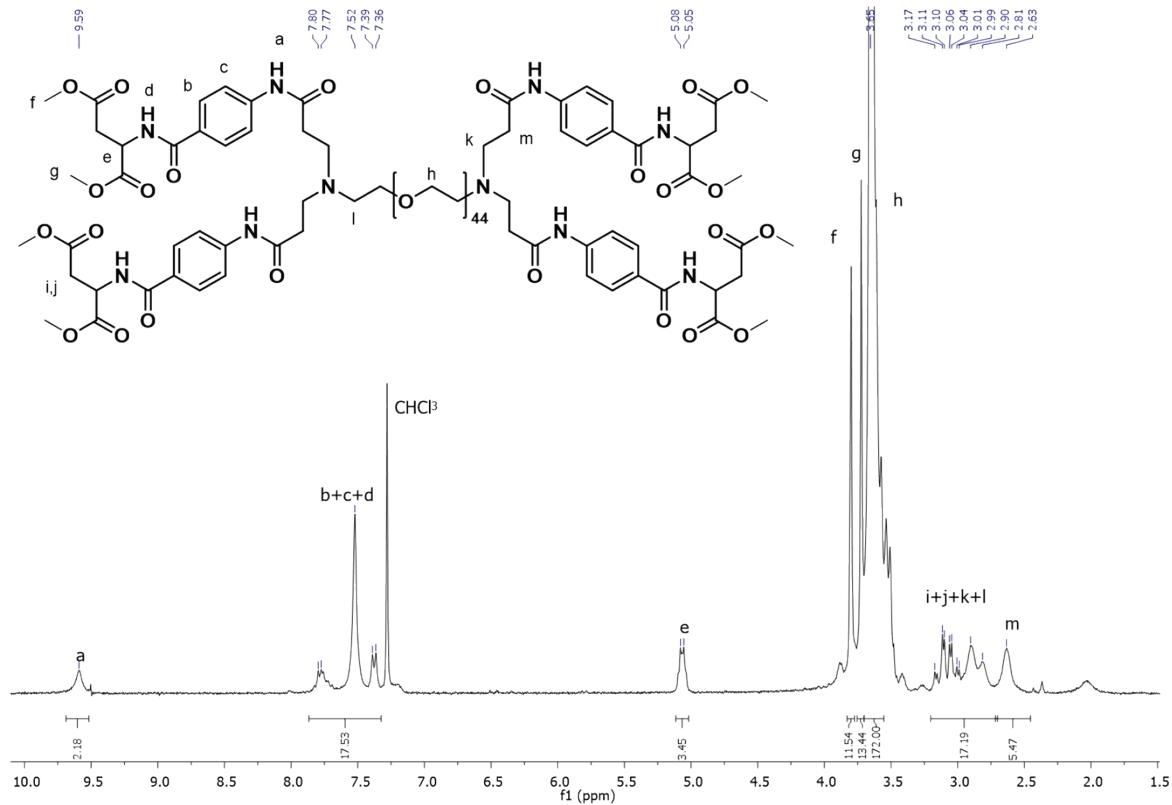


Figure S9. ^1H NMR spectrum of PEG-B-DMA in CDCl_3 .

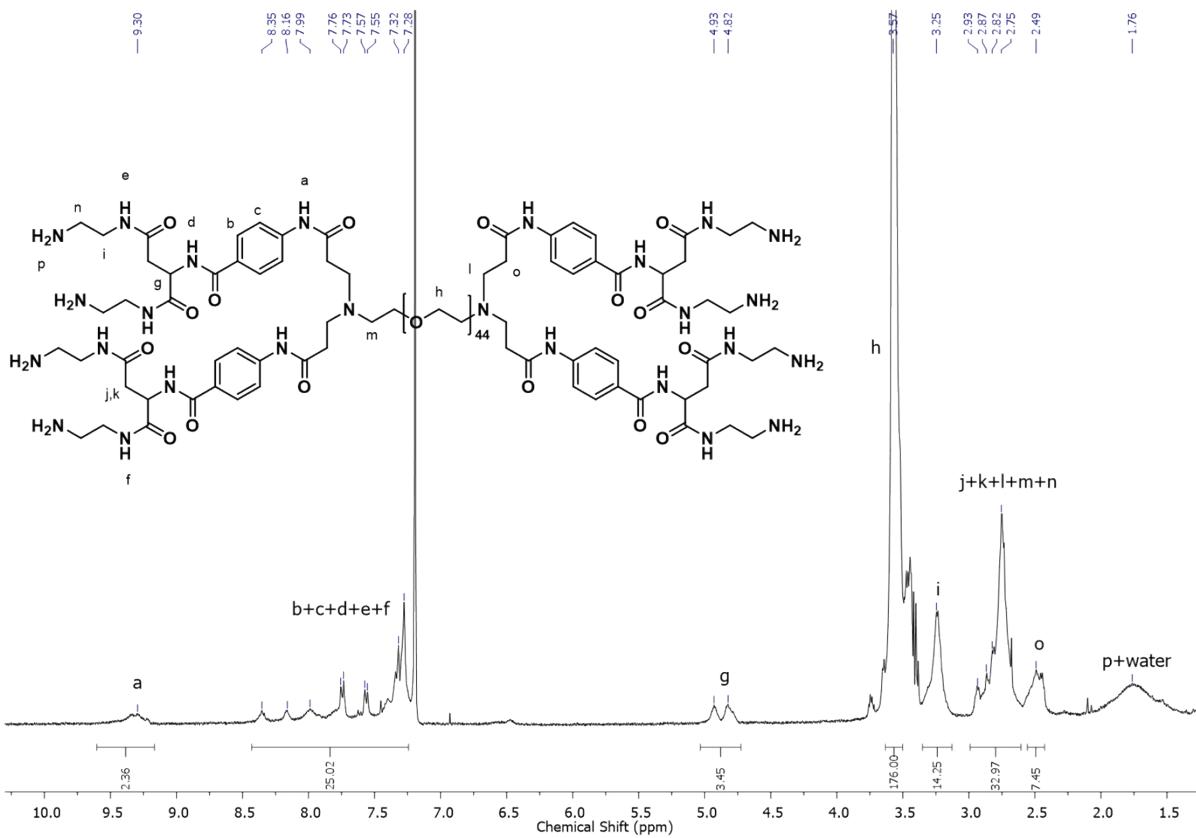


Figure S10. ^1H NMR spectrum of PEG-B-Asp-EDA in CDCl_3 .

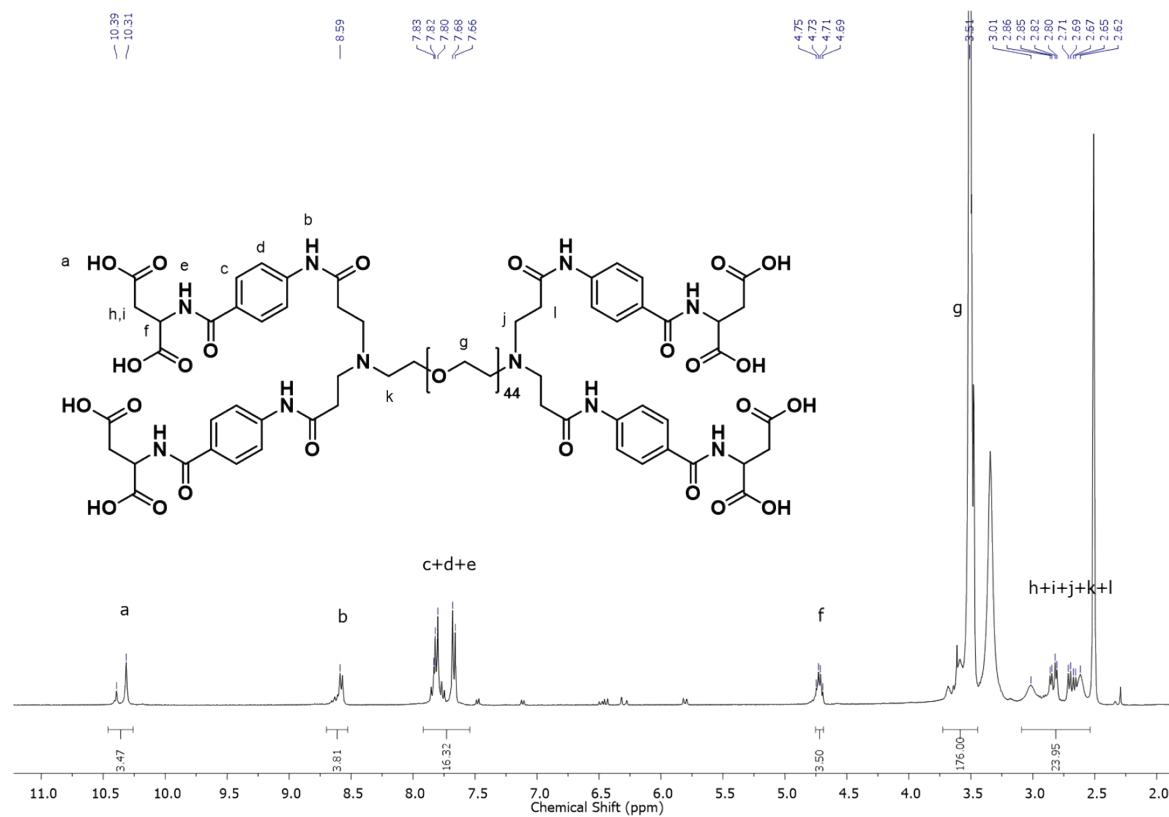


Figure S11. ^1H NMR spectrum of PEG-B-Asp in DMSO-d6.

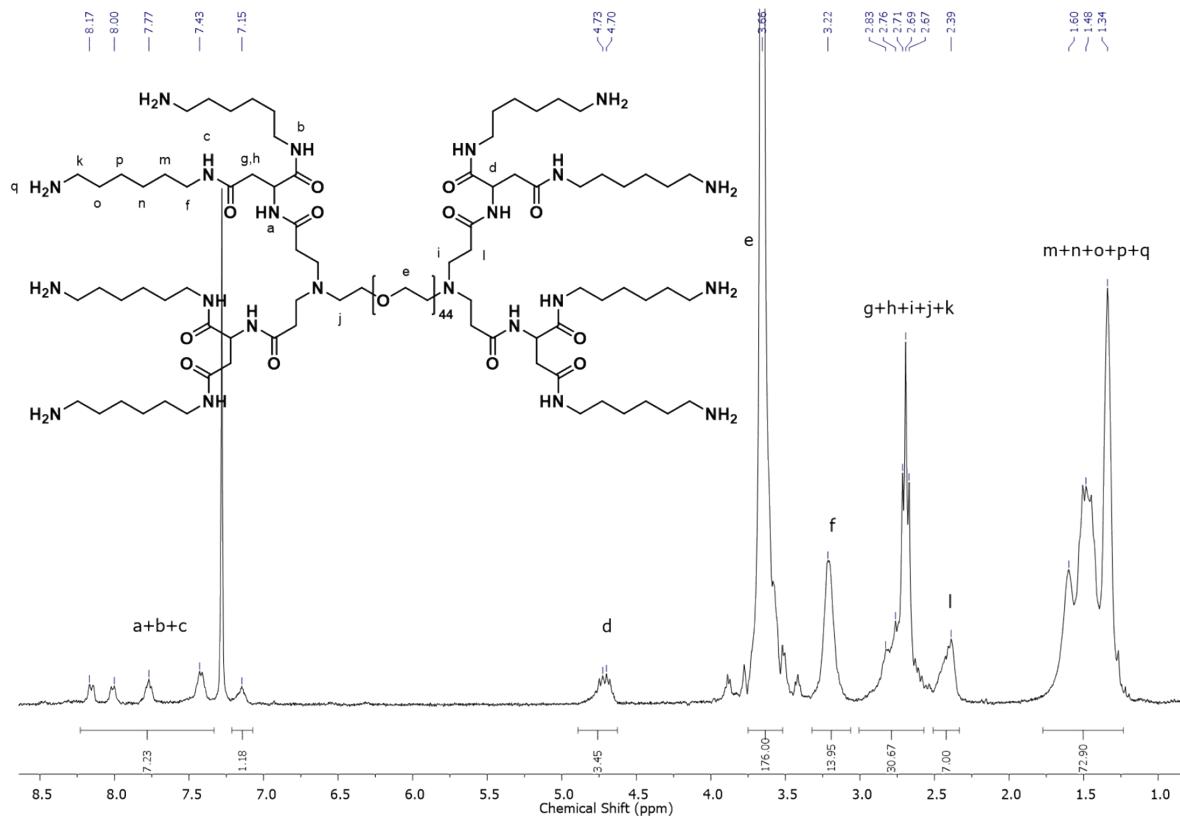


Figure S12. ^1H NMR spectrum of PEG-Asp-GMDA in CDCl_3 .

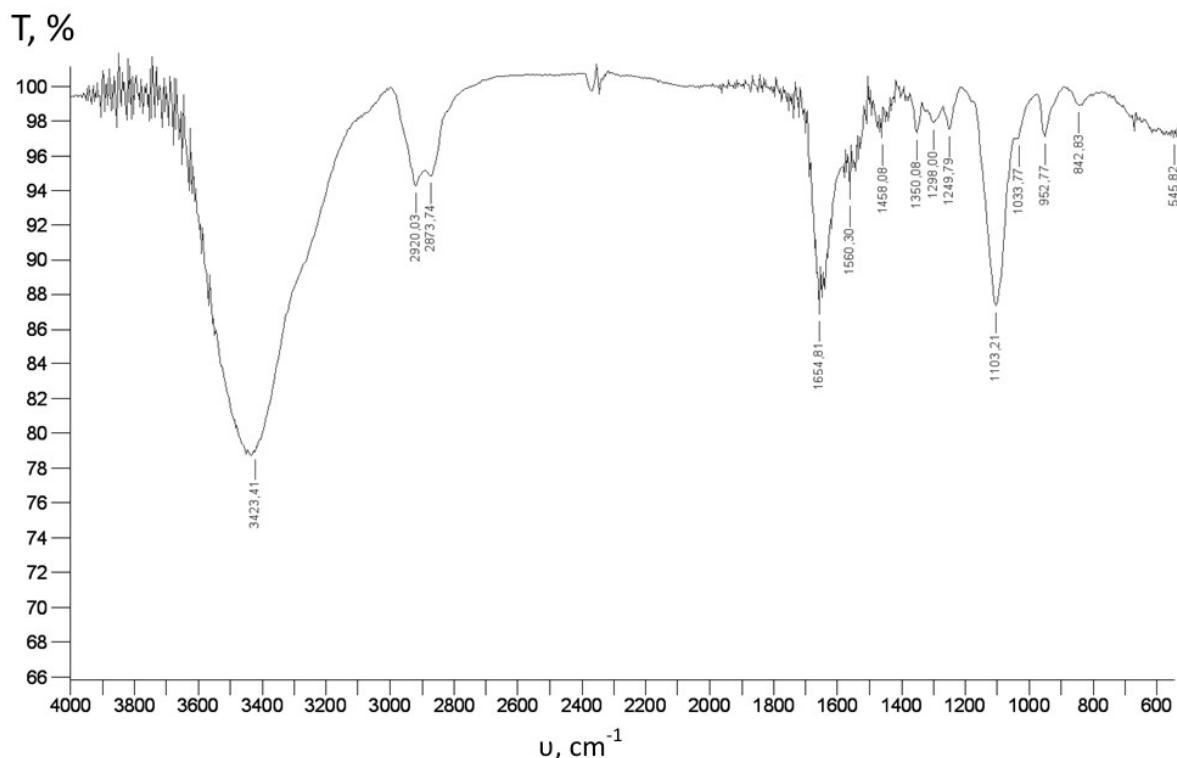


Figure S13. IR spectrum of amino- component (PEG-Asp-EDA) of Complex 1, T,% - transmission, ν , cm^{-1} - wave number.

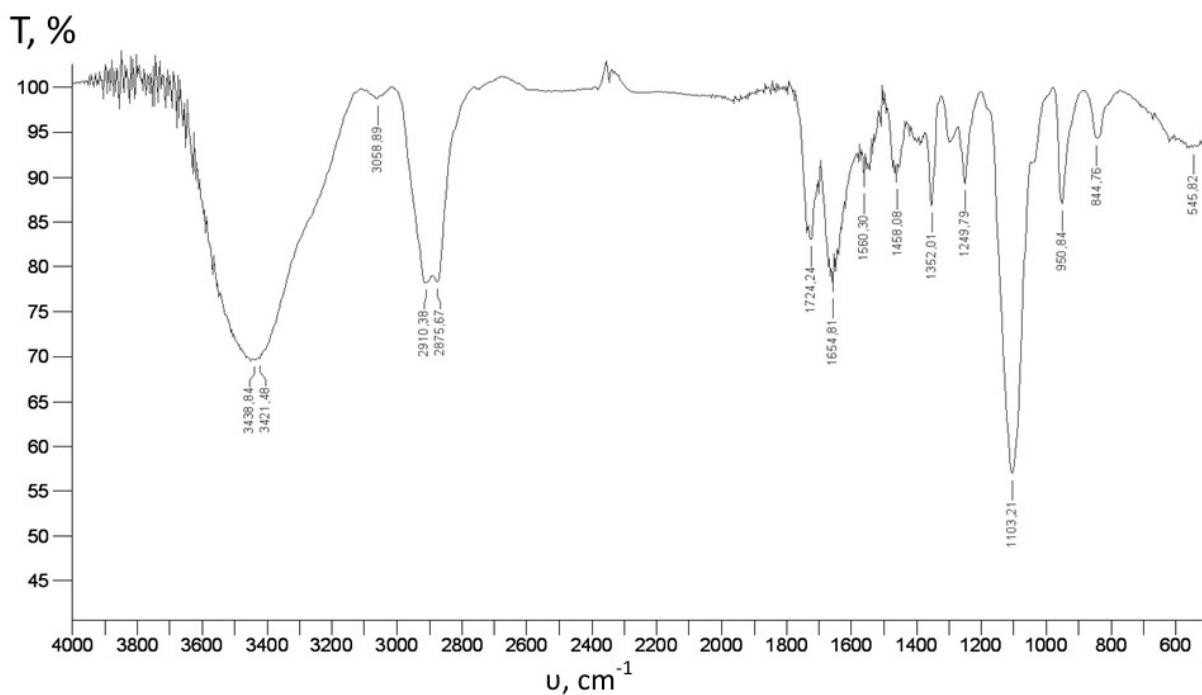


Figure S14. IR spectrum of carboxyl component (PEG-Asp) of Complex 1, T,% - transmission, ν , cm^{-1} - wave number.

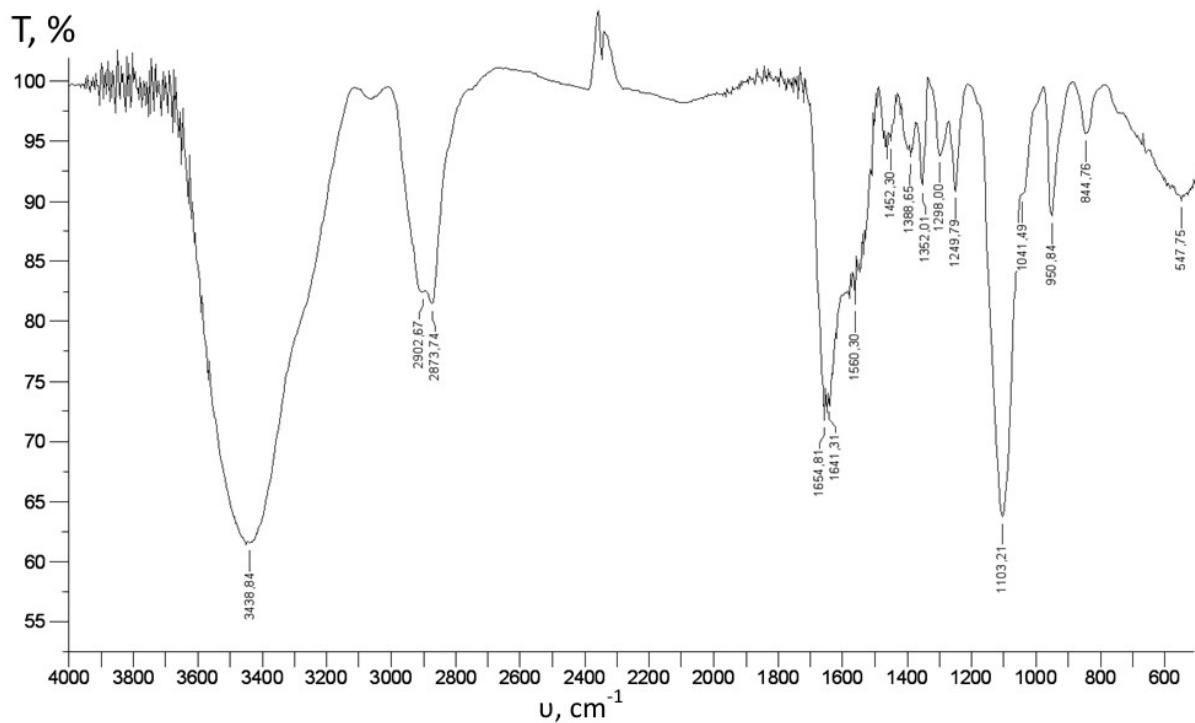


Figure S15. IR spectrum of Complex 1 formed from carboxyl components (PEG-Asp) and amino- component (PEG-Asp-EDA), T,% - transmission, u, cm⁻¹ - wave number.

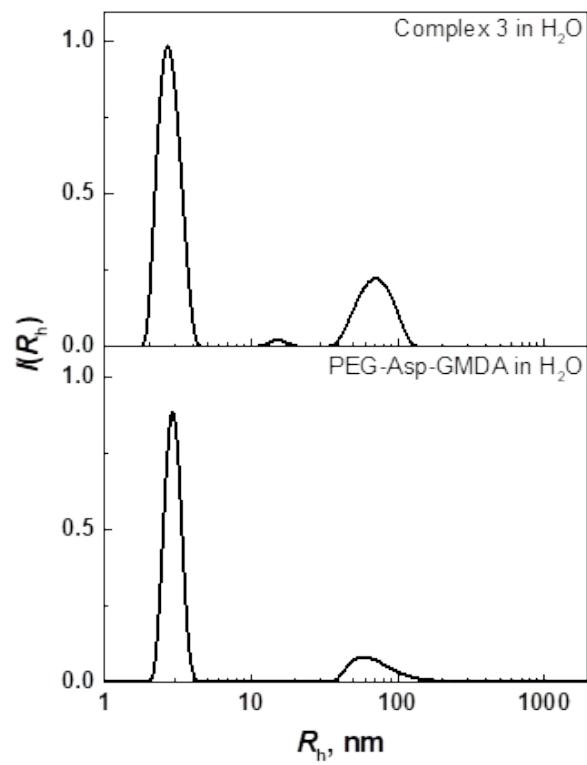


Figure S16. The distribution functions of R_h for PEG-Asp-GMDA and Complex 3 in water.

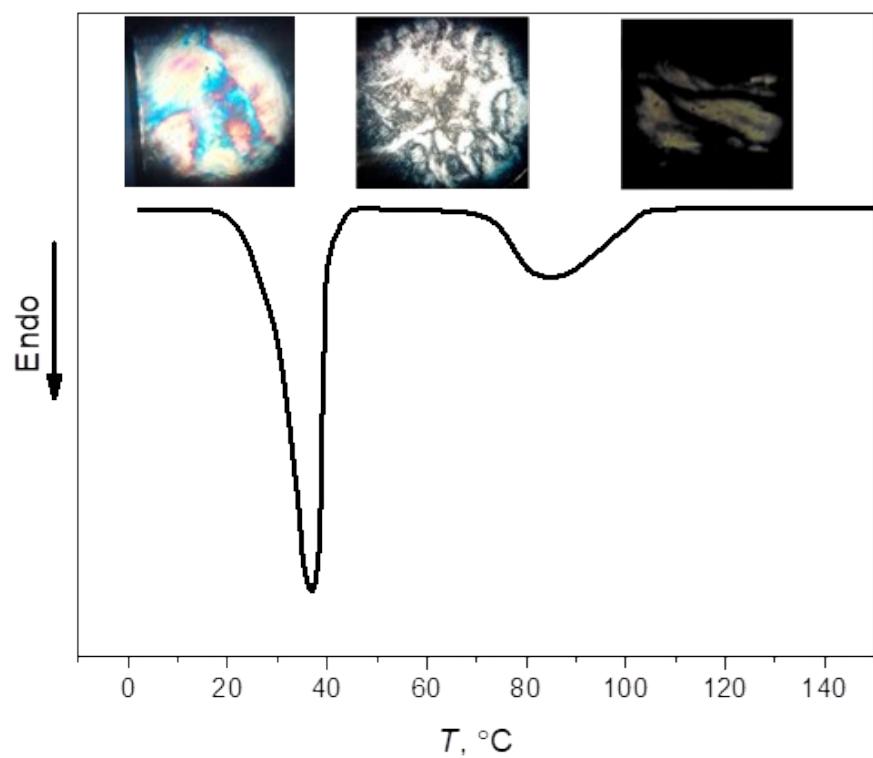


Figure S17. The thermogram of Complex 1 obtained from chloroform. The insets show POM images of the complex at different temperatures in crossed polarizers.

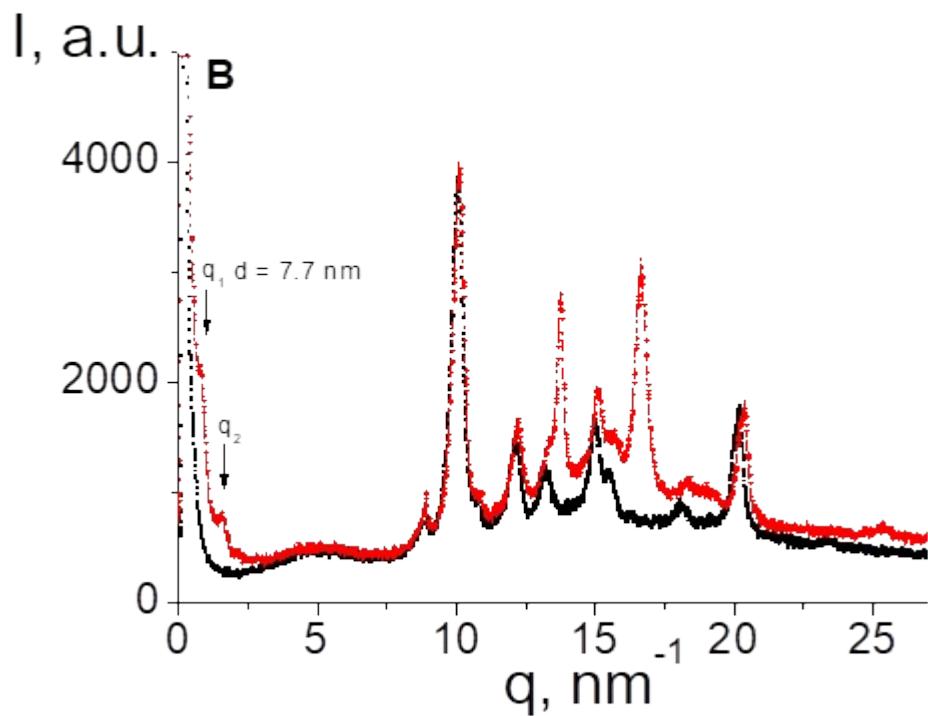
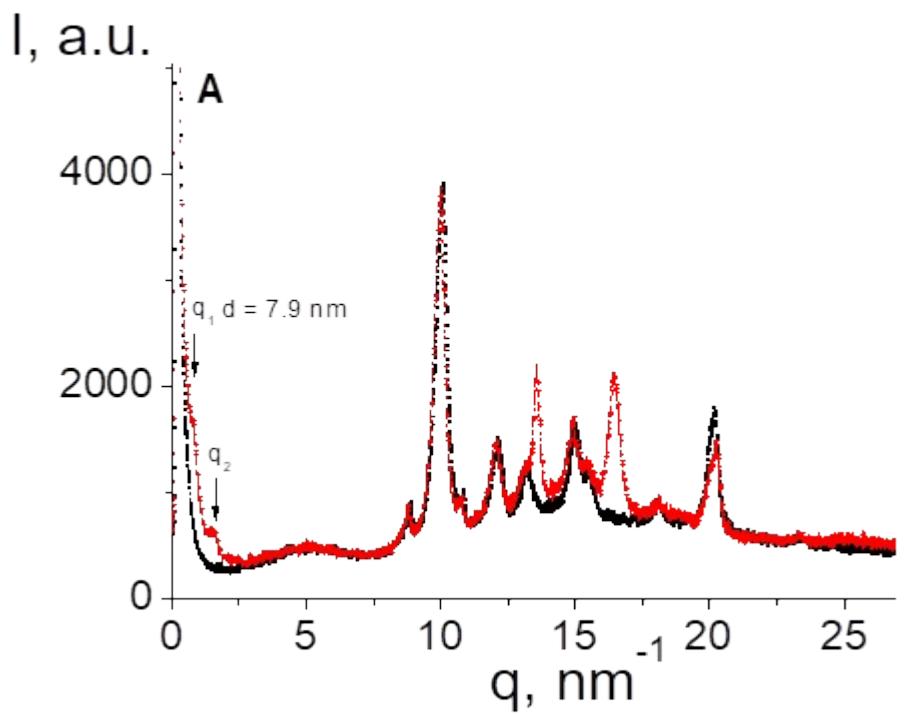


Figure S18. The SWAXS spectra of Complex 1 obtained from water (A) and from methanol (B). For measurement, the sample was fixed on tape. The SWAXS spectra of tape are represented by black dots, Complex 1 spectrum – red dots.