

**Electronic Supplementary Information for**

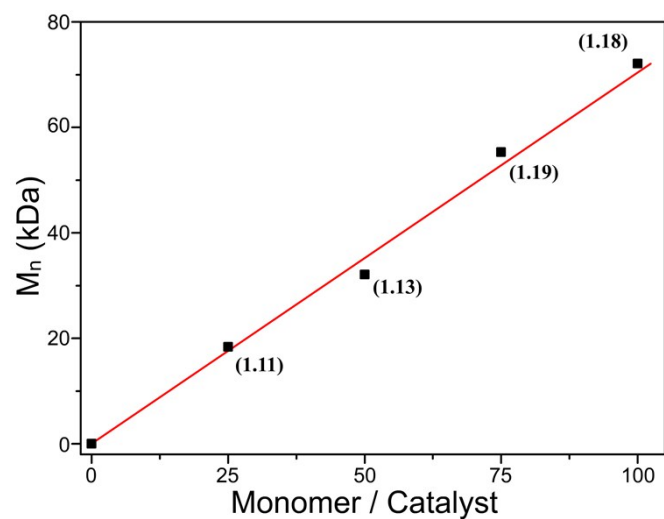
**Switchable Two-Photon Imaging of RGD-Functionalized**

**Polynorbornenes with Enhanced Cellular Uptake in Living Cells**

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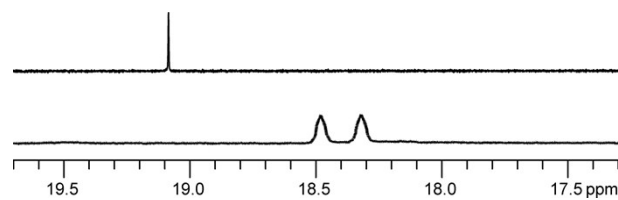


**Fig. S1** Plot of  $M_n$  vs the monomer-to-initiator ratios for the ROMP of NB-mPEG monomer.

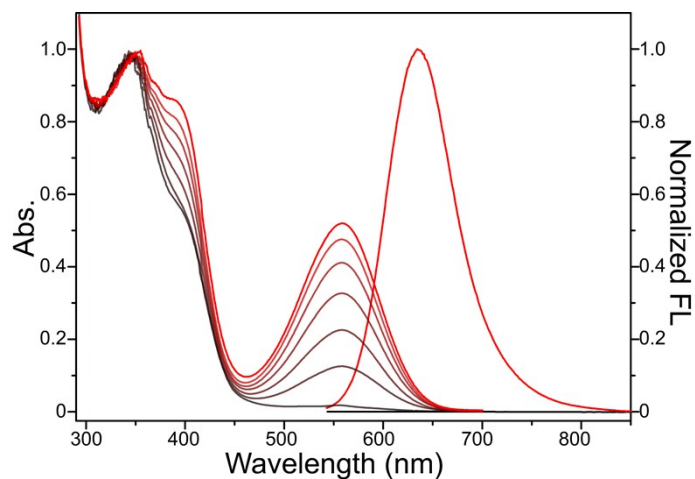
**Table S1** GPC data for NB-mPEG homopolymers.

Polymer <sup>a</sup>	[M]/[C]	$M_n$ /kDa	$M_w$ /kDa	PDI
PNB-mPEG <sub>25</sub>	25	18.4	20.4	1.11
PNB-mPEG <sub>50</sub>	50	32.1	36.2	1.13
PNB-mPEG <sub>75</sub>	75	55.3	65.7	1.19
PNB-mPEG <sub>100</sub>	100	72.1	85.3	1.18

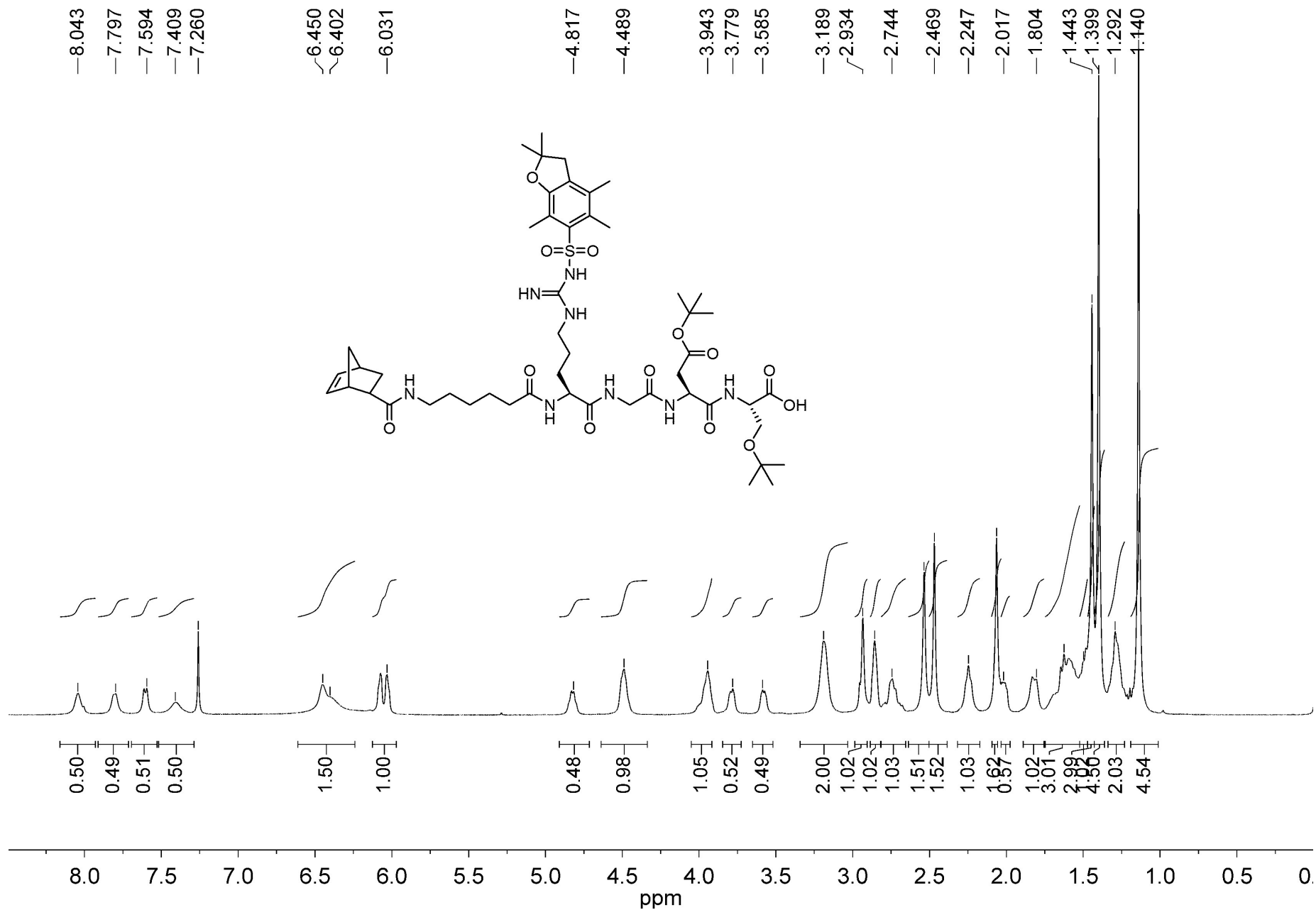
<sup>a</sup>Measured in THF at 298 K.



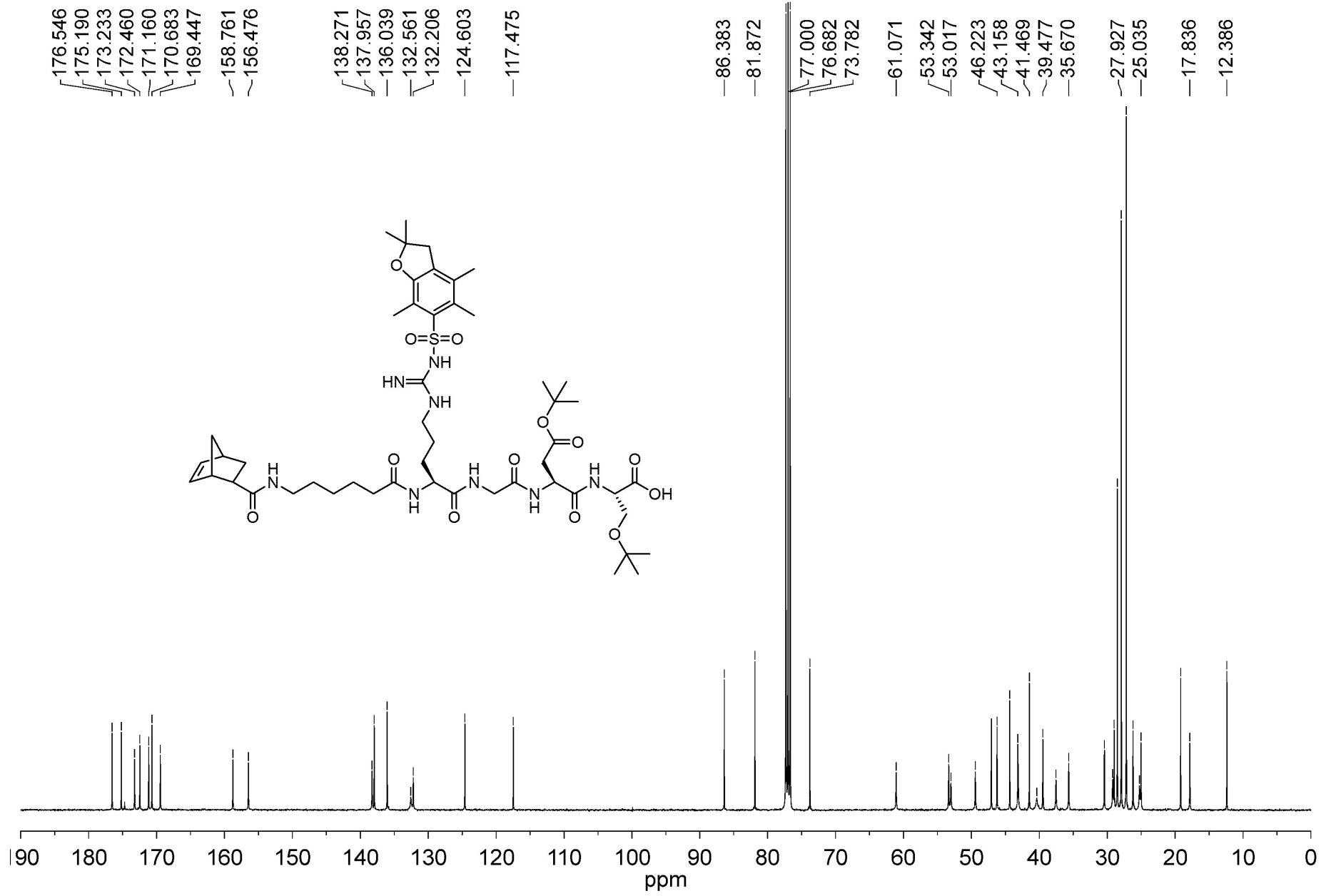
**Fig. S2** Carbene  $^1\text{H}$  NMR signals for Grubbs' third-generation initiator (top), and during the polymerizations of NB-mPEG monomer (bottom) in  $\text{CDCl}_3$ .



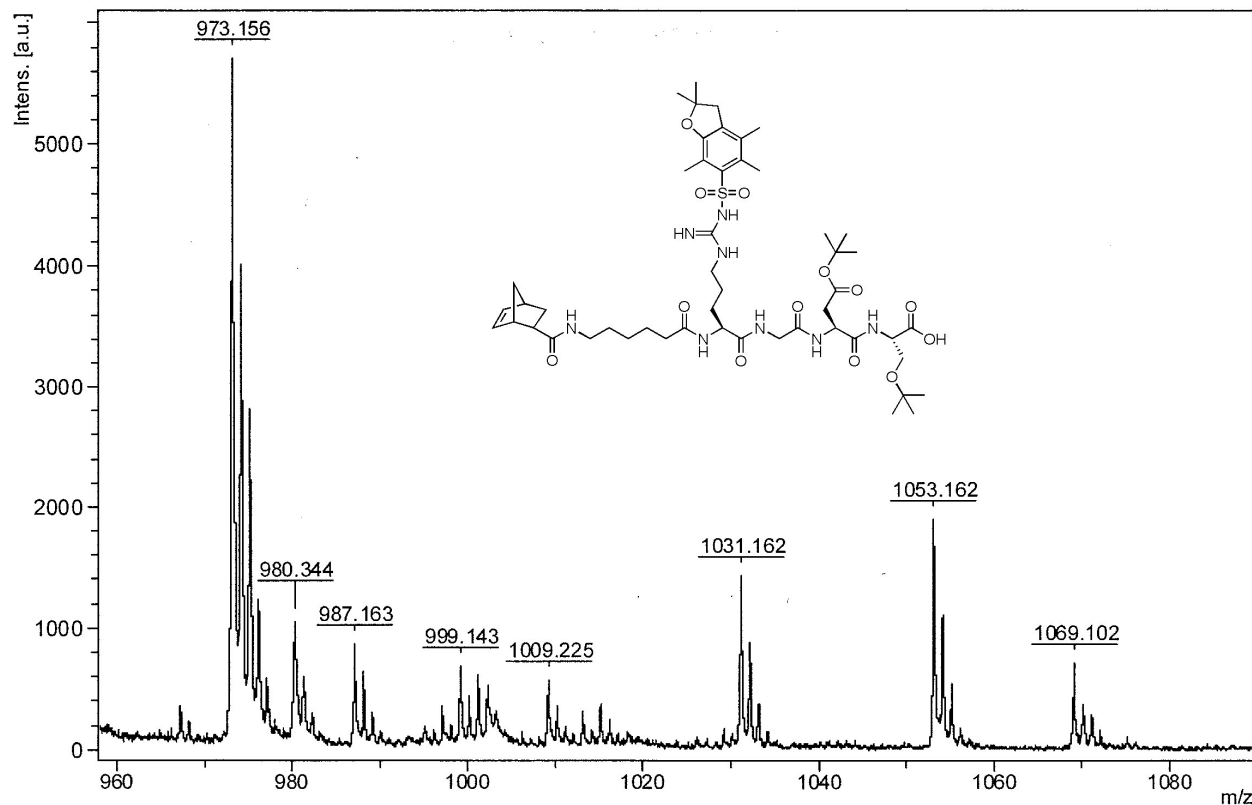
**Fig. S3** UV-Vis absorption spectra upon UV @ 365 nm irradiation and normalized fluorescence spectra of nonfluorescent SP form (black) and fluorescent MC form (red) for PNB-RGDS<sub>10</sub>-co-SP<sub>10</sub>-co-mPEG<sub>80</sub> with the concentration of  $0.082 \text{ mg}\cdot\text{mL}^{-1}$  in 10 mM PBS buffer.



**Fig. S4** <sup>1</sup>H NMR spectrum for *N*-(Acp-Arg(Pbf)-Gly-Asp(O<sup>t</sup>Bu)-Ser(<sup>t</sup>Bu))-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxamide in CDCl<sub>3</sub>.



**Fig. S5** <sup>13</sup>C NMR spectrum for *N*-(Acp-Arg(Pbf)-Gly-Asp(O<sup>t</sup>Bu)-Ser(<sup>t</sup>Bu))-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxamide in CDCl<sub>3</sub>.



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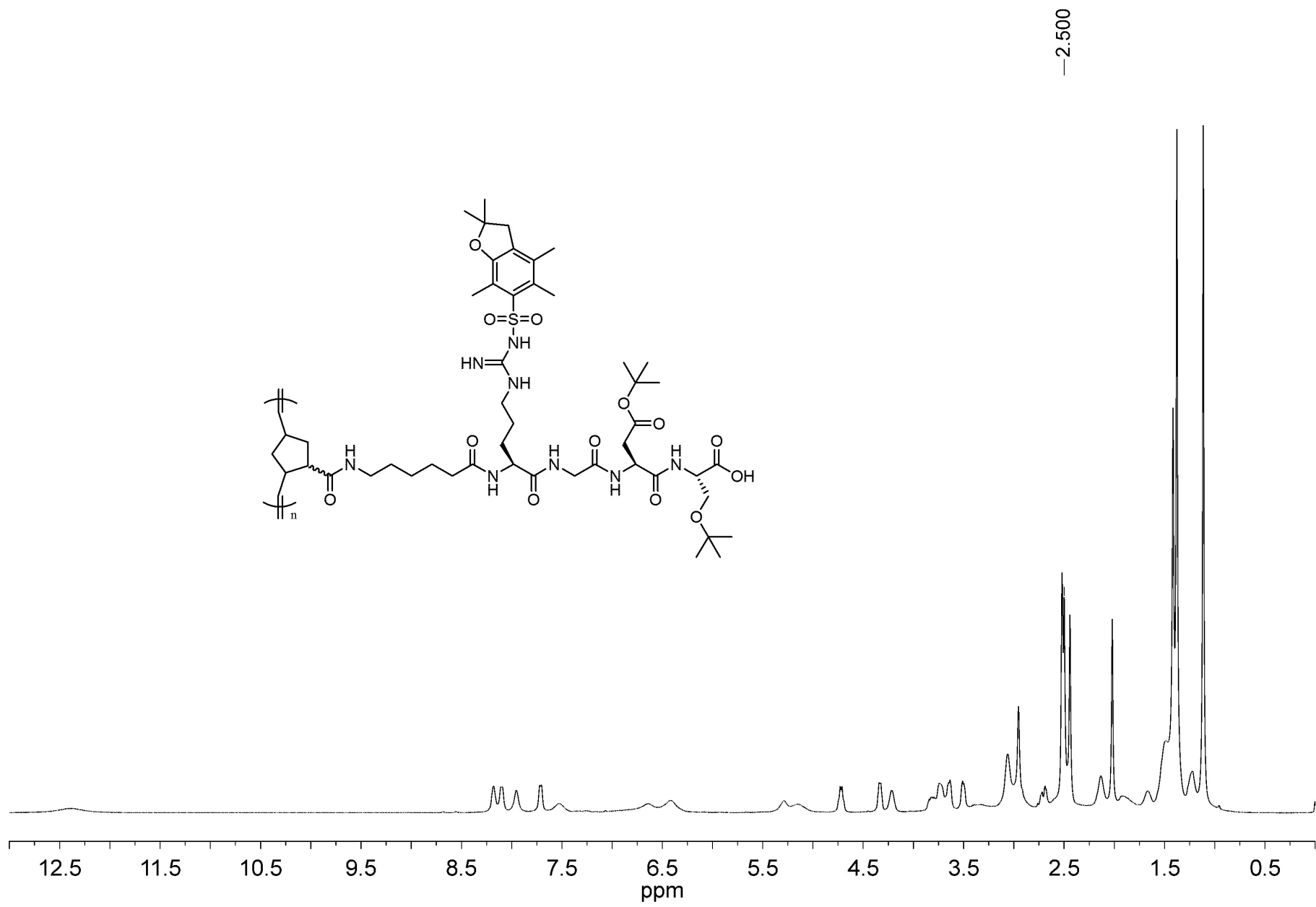
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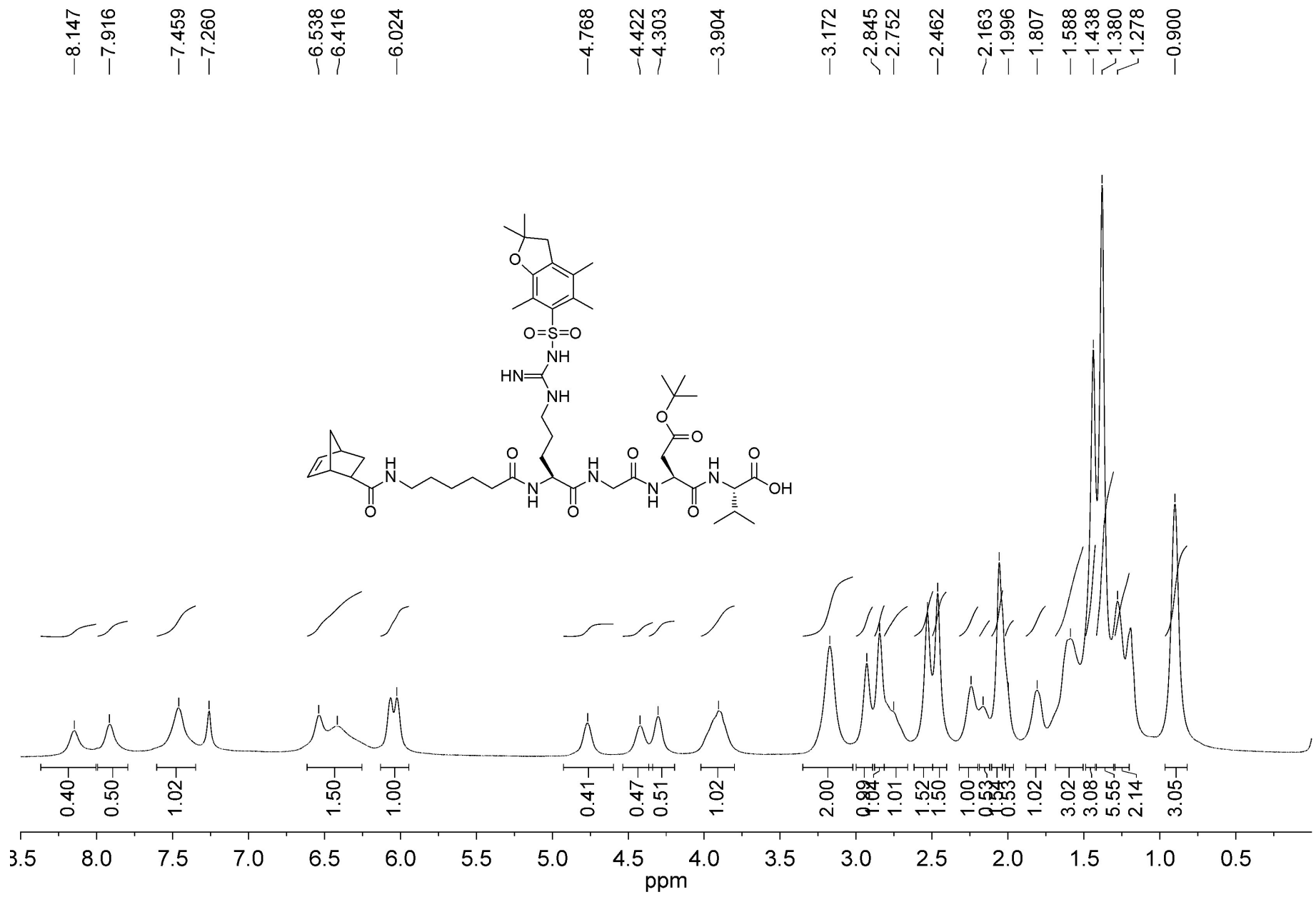
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**Fig. S6** MALDI-TOF MS spectrum for *N*-(Acp-Arg(Pbf)-Gly-Asp(O<sup>t</sup>Bu)-Ser(<sup>t</sup>Bu))-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxamide.

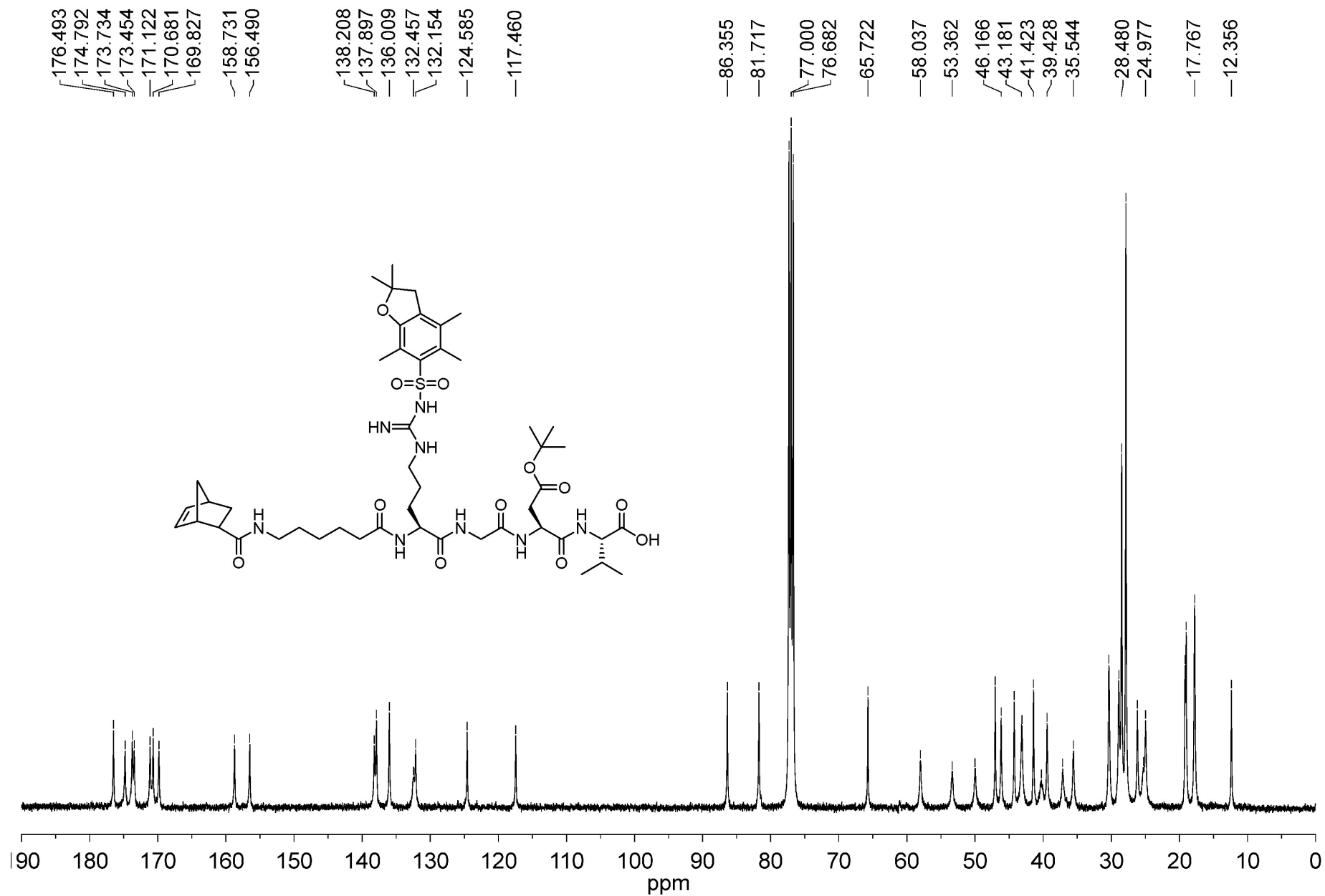


**Fig. S7**  $^1\text{H}$  NMR spectrum for PNB-pRGDS polymer in  $\text{DMSO-}d_6$ .

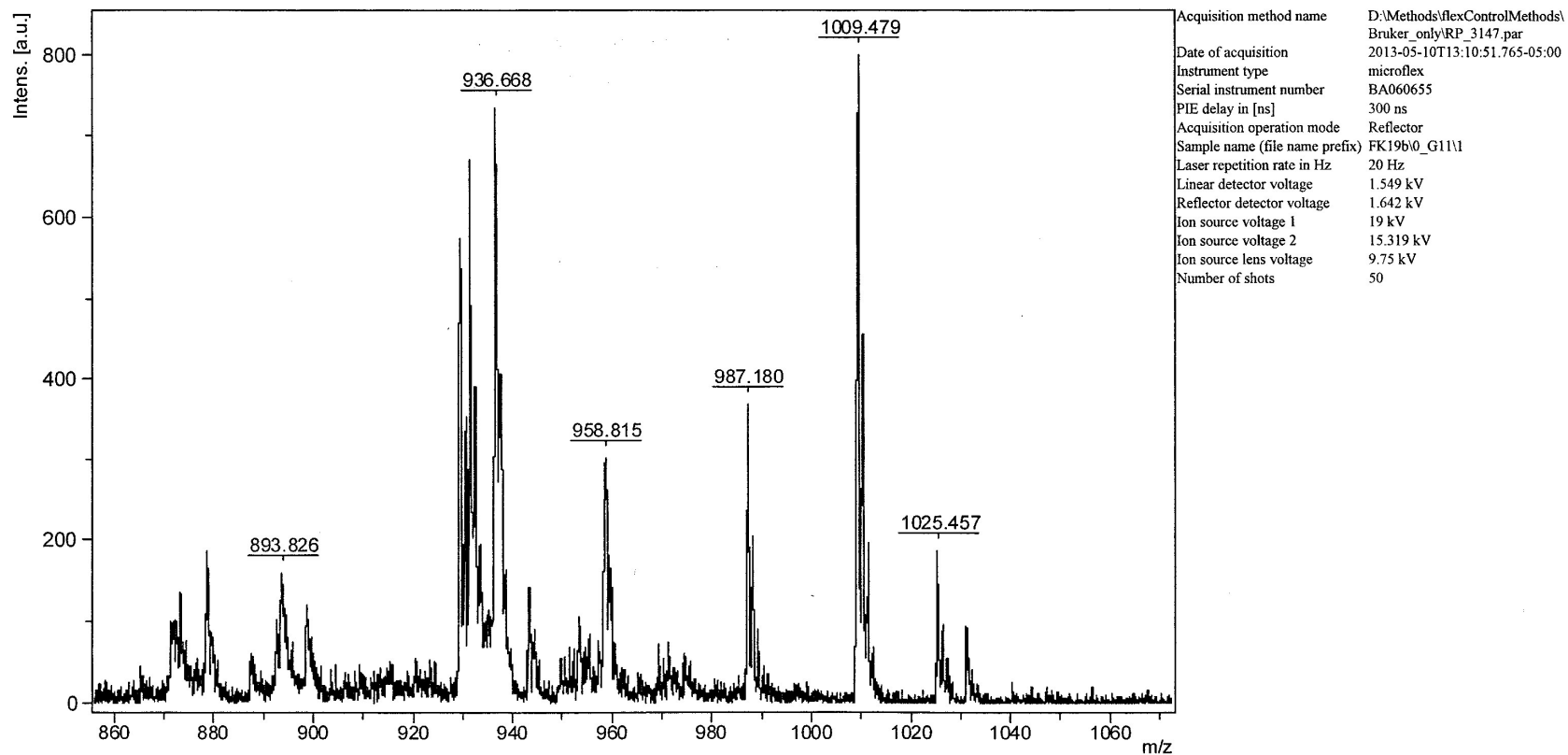


**Fig. S8** <sup>1</sup>H NMR spectrum for *N*-(Acp-Arg(Pbf)-Gly-Asp(OtBu)-Val)-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxamide in CDCl<sub>3</sub>.





**Fig. S9** <sup>13</sup>C NMR spectrum for *N*-(Acp-Arg(Pbf)-Gly-Asp(O<sup>t</sup>Bu)-Val)-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxamide in CDCl<sub>3</sub>.



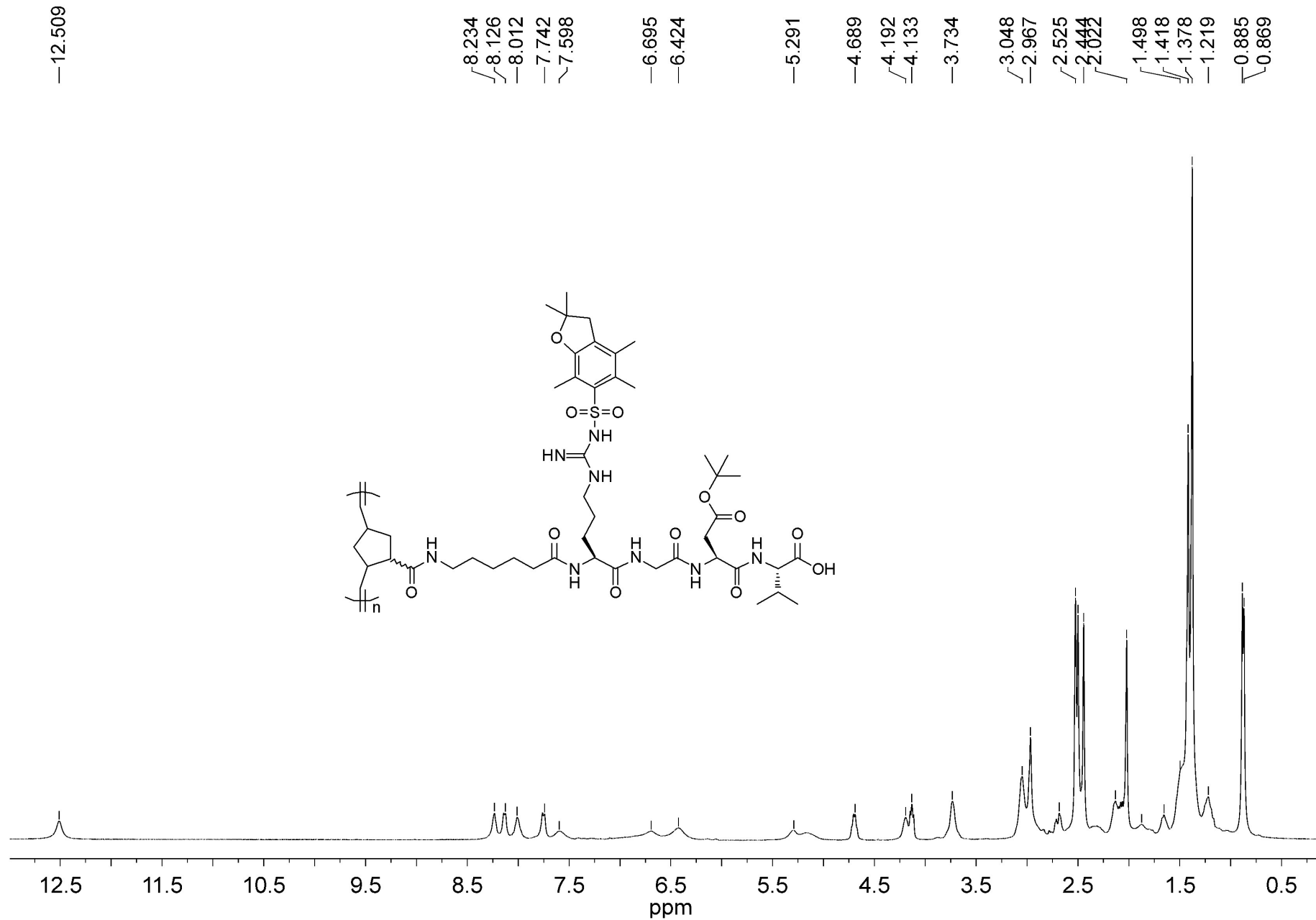
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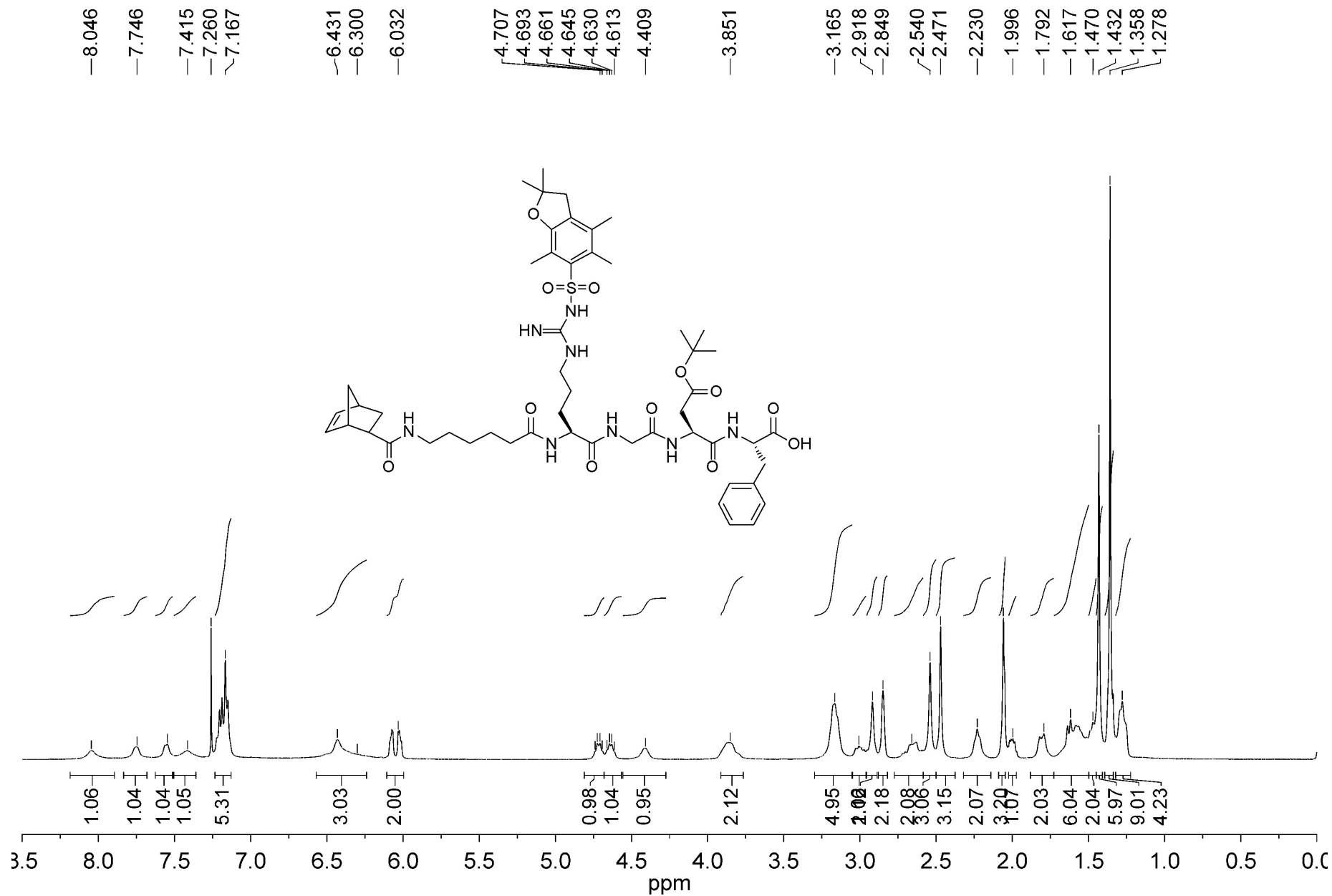
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**Fig. S10** MALDI-TOF MS spectrum for *N*-(Acp-Arg(Pbf)-Gly-Asp(O<sup>t</sup>Bu)-Val)-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxamide.

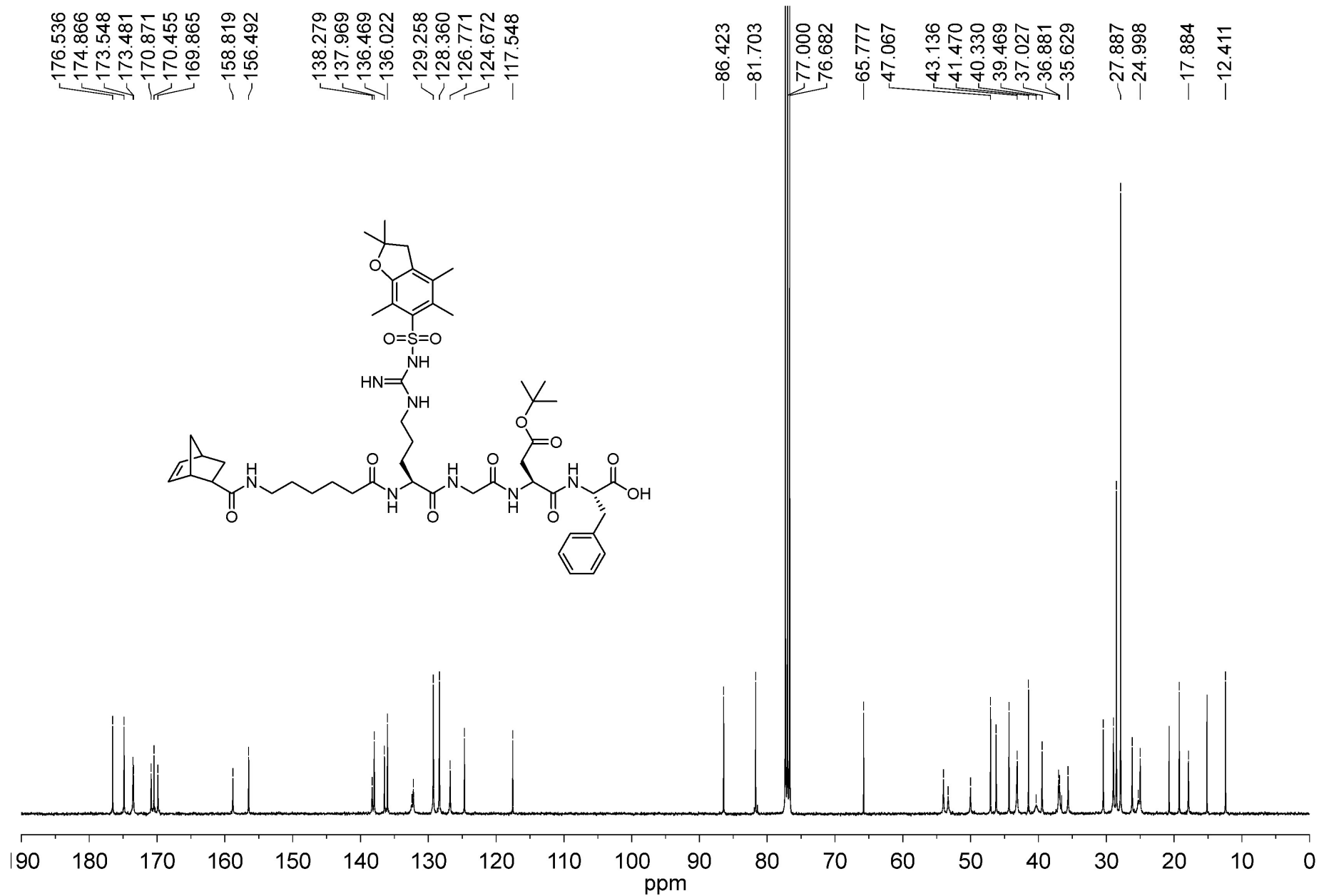
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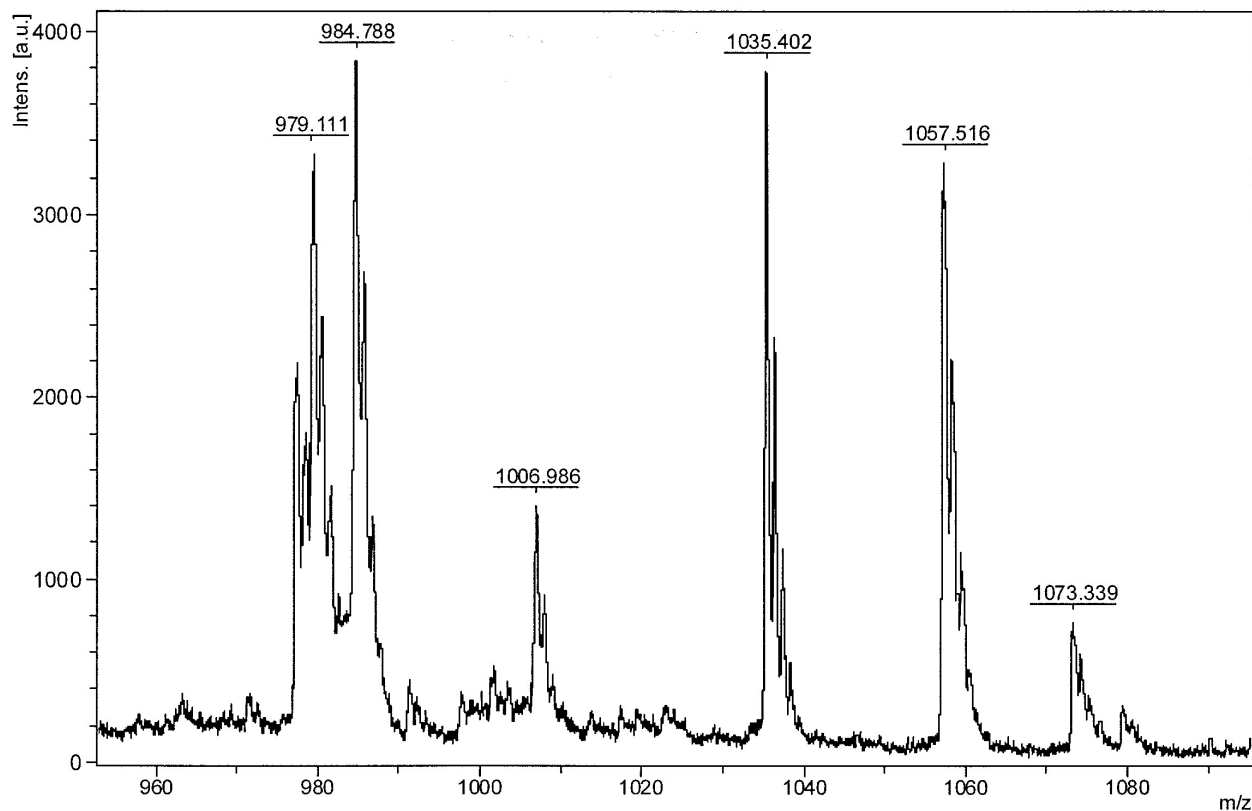
**Fig. S11**  $^1\text{H}$  NMR spectrum for PNB-pRGDV polymer in  $\text{DMSO-}d_6$ .



**Fig. S12** <sup>1</sup>H NMR spectrum for *N*-(Acp-Arg(Pbf)-Gly-Asp(O<sup>t</sup>Bu)-Phe)-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxamide in CDCl<sub>3</sub>.



**Fig. S13** <sup>13</sup>C NMR spectrum for *N*-(AcP-Arg(Pbf)-Gly-Asp(OtBu)-Phe)-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxamide in CDCl<sub>3</sub>.



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Reflector detector voltage 1.642 kV  
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Ion source voltage 2 15.319 kV  
Ion source lens voltage 9.75 kV  
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**Fig. S14** MALDI-TOF MS spectrum for *N*-(Acp-Arg(Pbf)-Gly-Asp(O<sup>t</sup>Bu)-Phe)-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxamide.

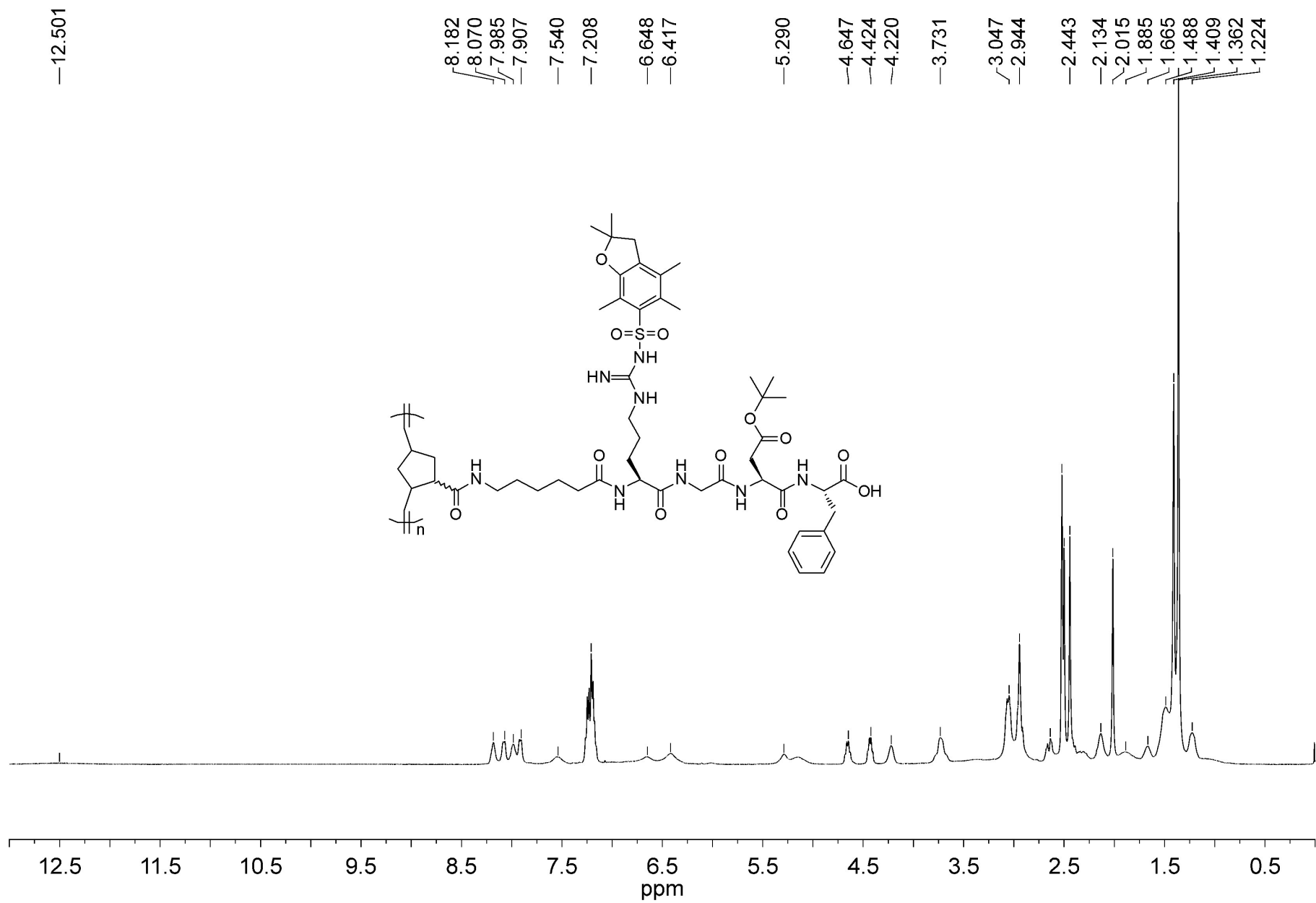
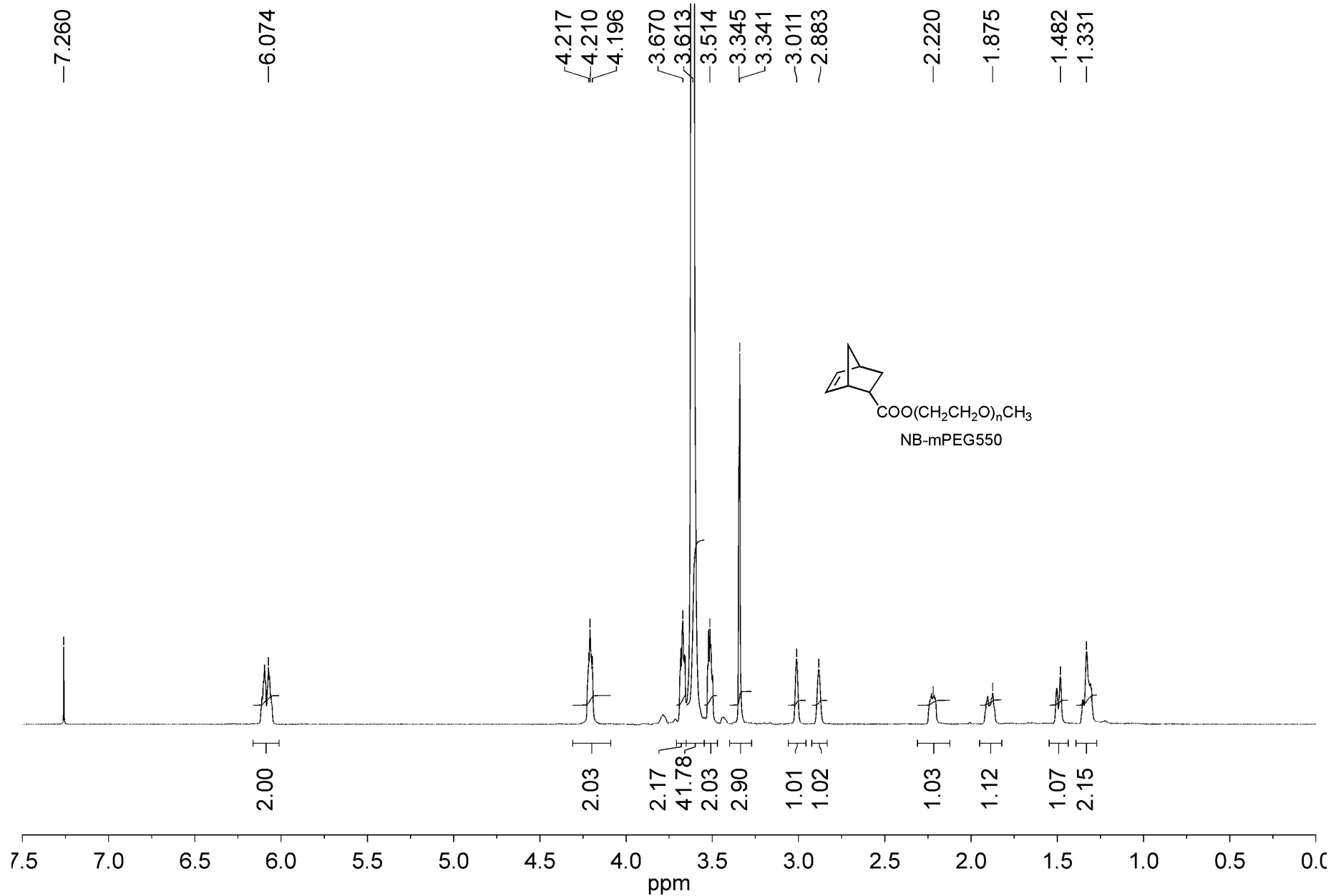
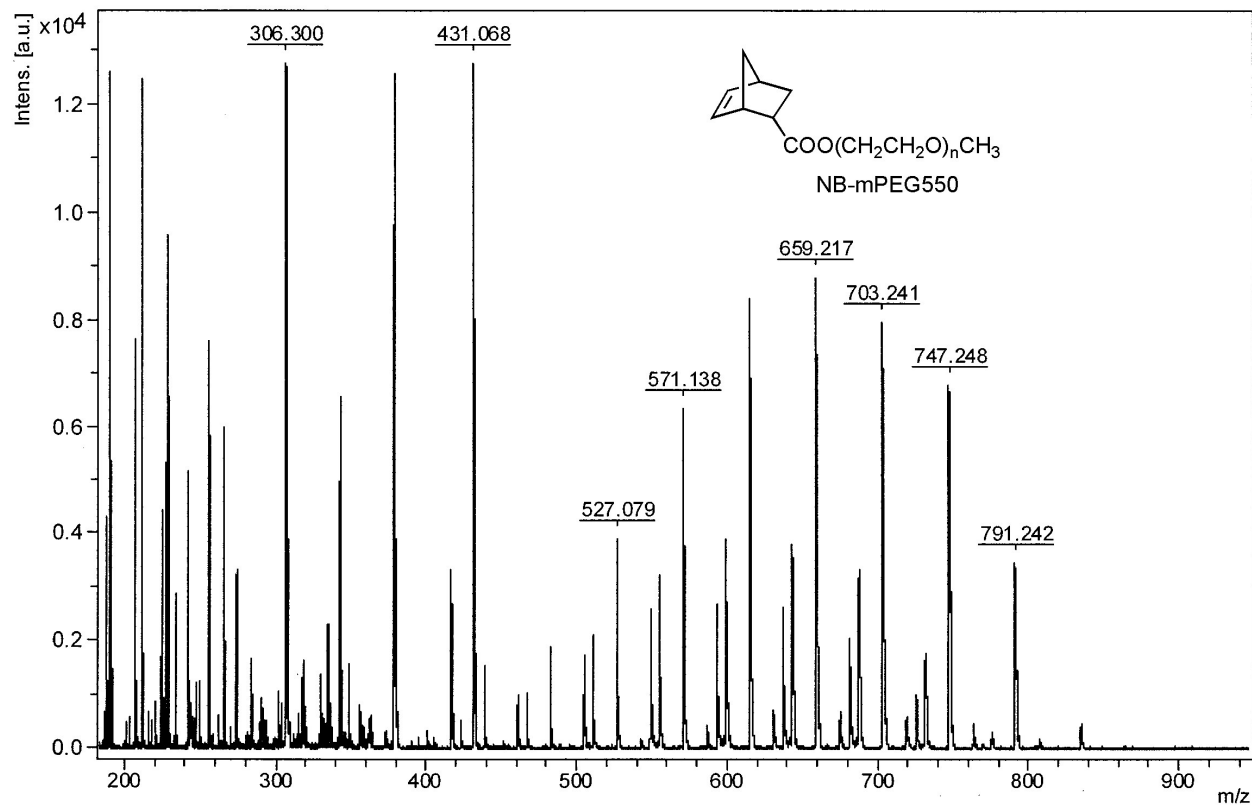


Fig. S15  $^1\text{H}$  NMR spectrum for PNB-pRGDF polymer in  $\text{DMSO-}d_6$ .



**Fig. S16**  $^1\text{H}$  NMR spectrum for methoxypolyethylene-glycol-550-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxylate in  $\text{CDCl}_3$ .





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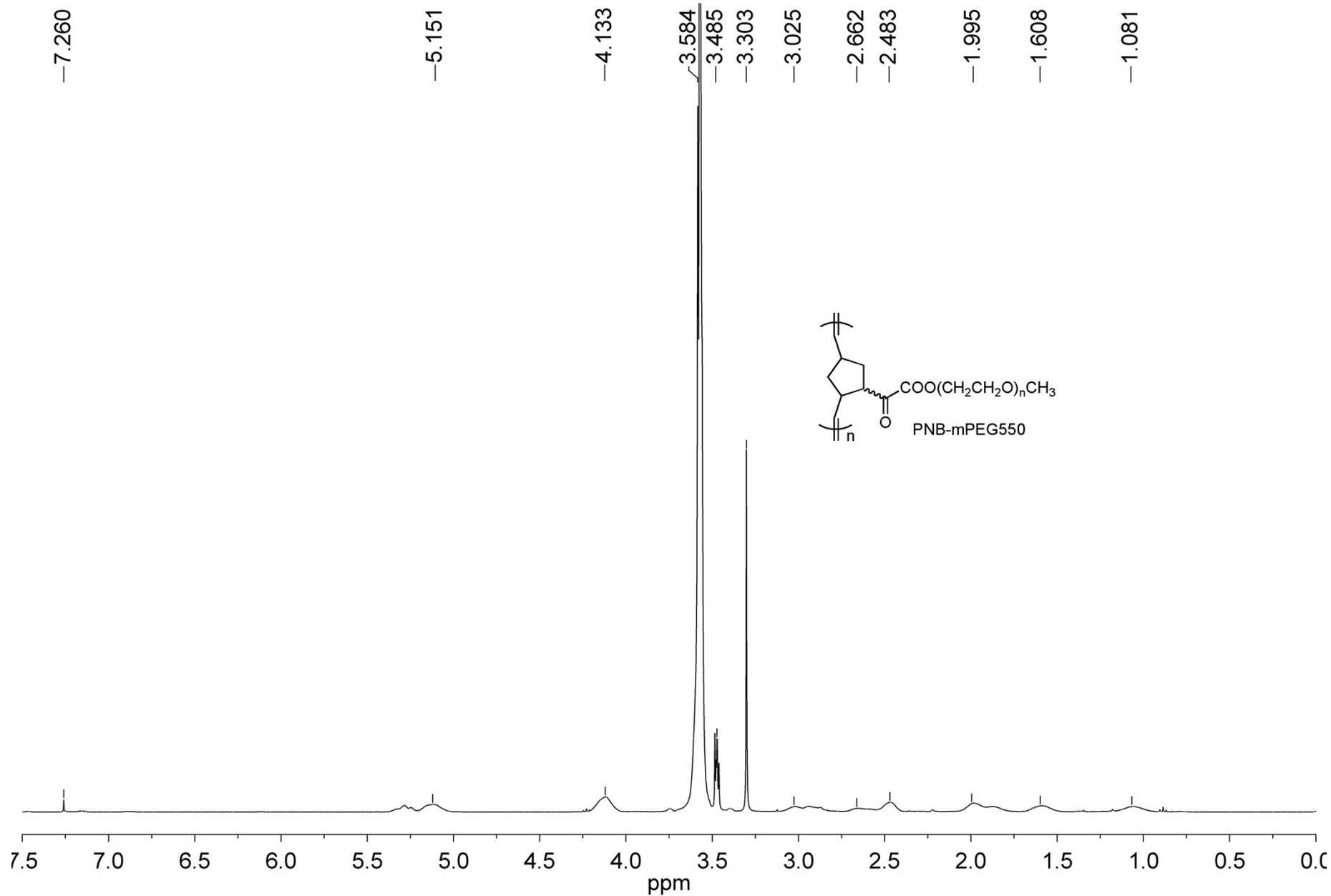
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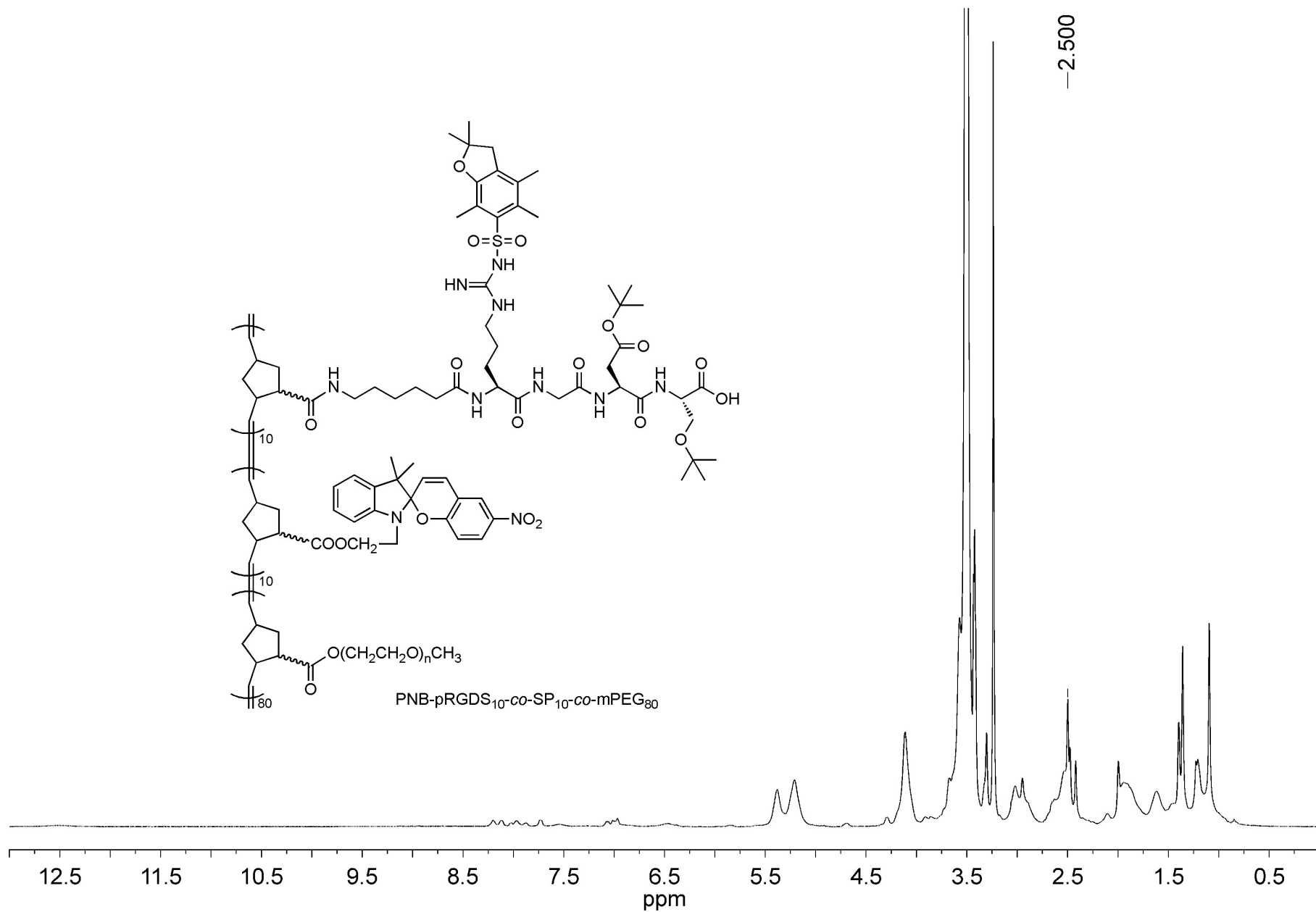
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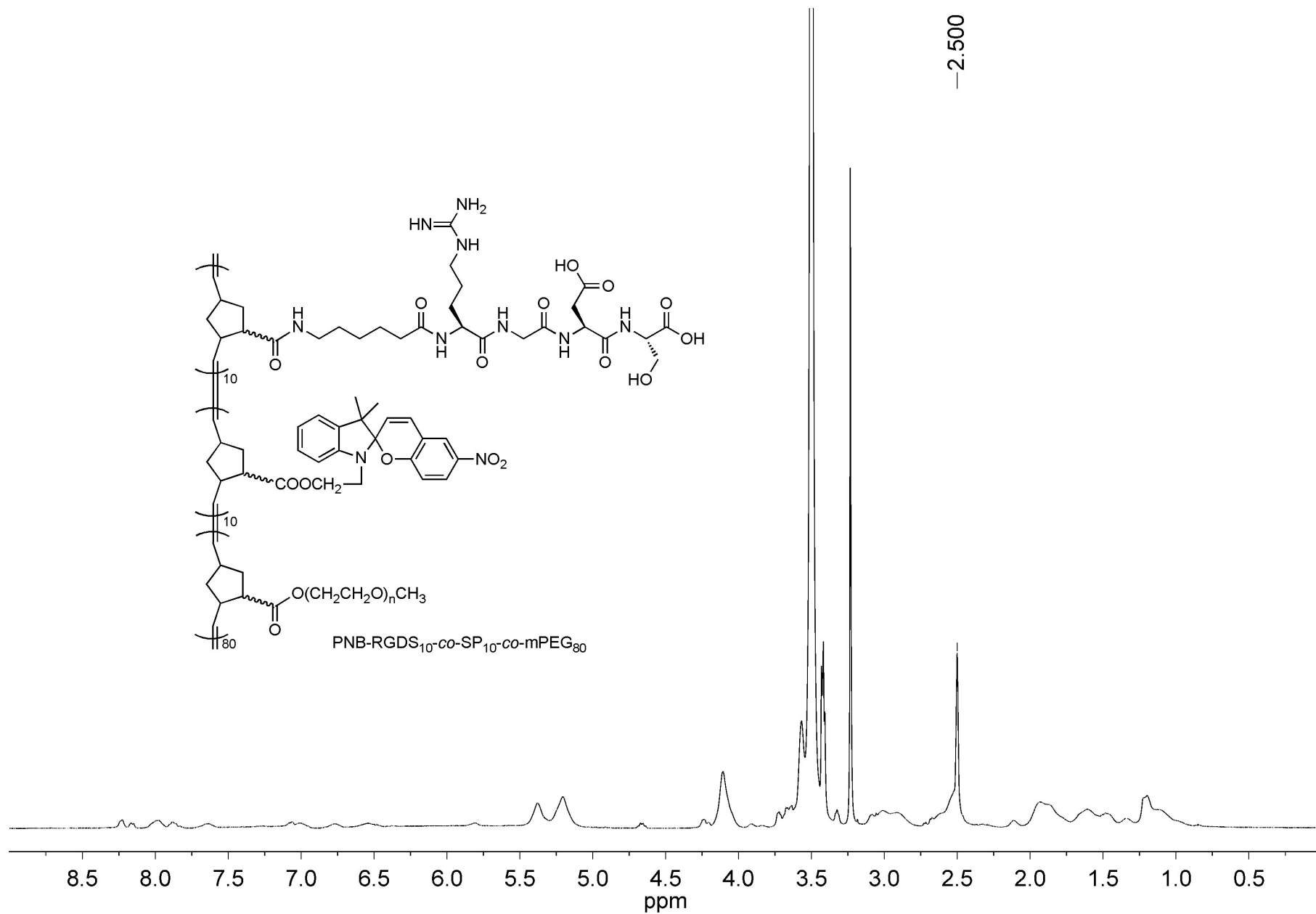
**Fig. S17** MALDI-TOF MS spectrum for methoxypolyethylene-glycol-550-*exo*-bicyclo[2.2.1]-hept-5-ene-2-carboxylate.



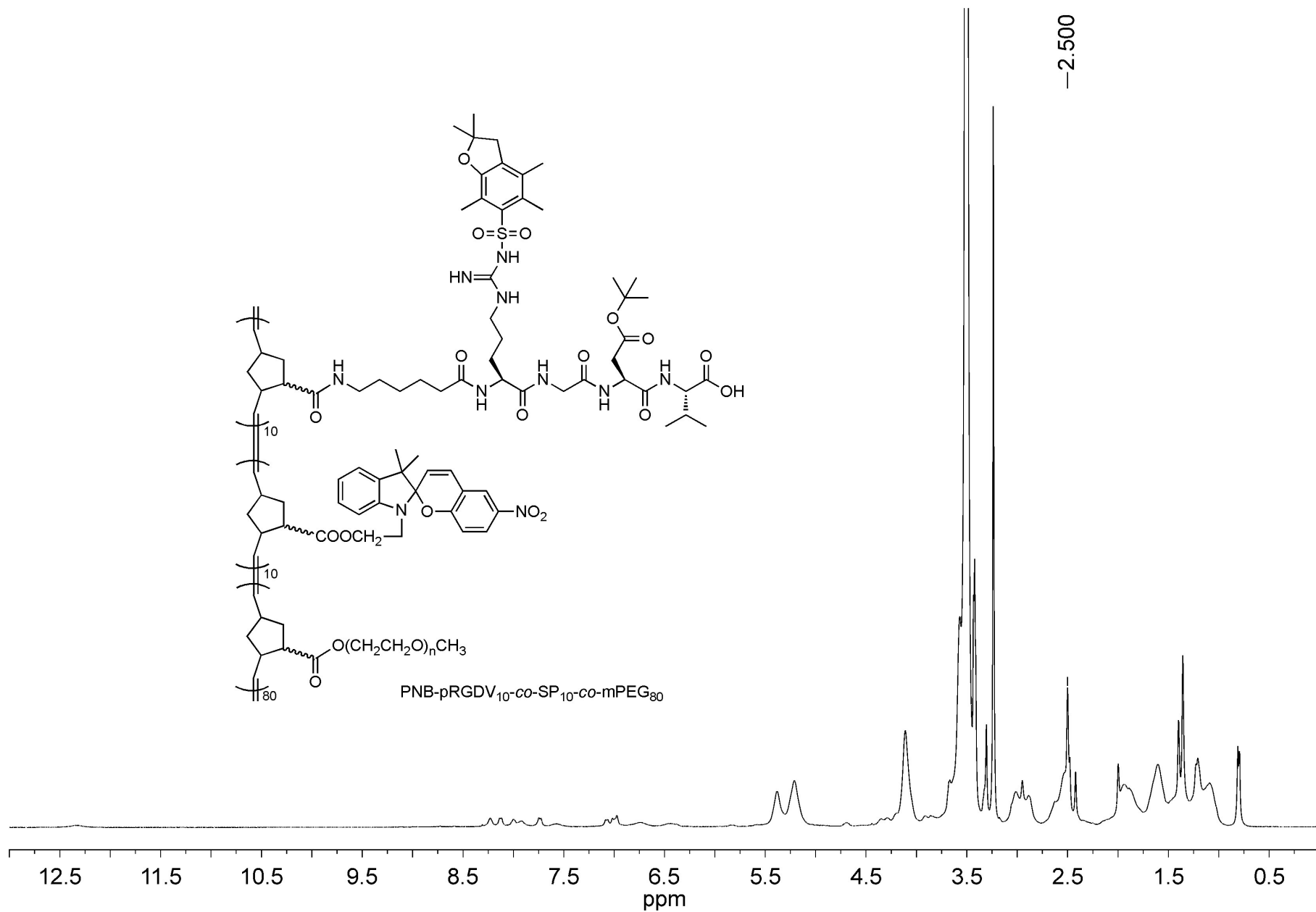
**Fig. S18**  $^1\text{H}$  NMR spectrum for PNB-mPEG550 in  $\text{CDCl}_3$ .



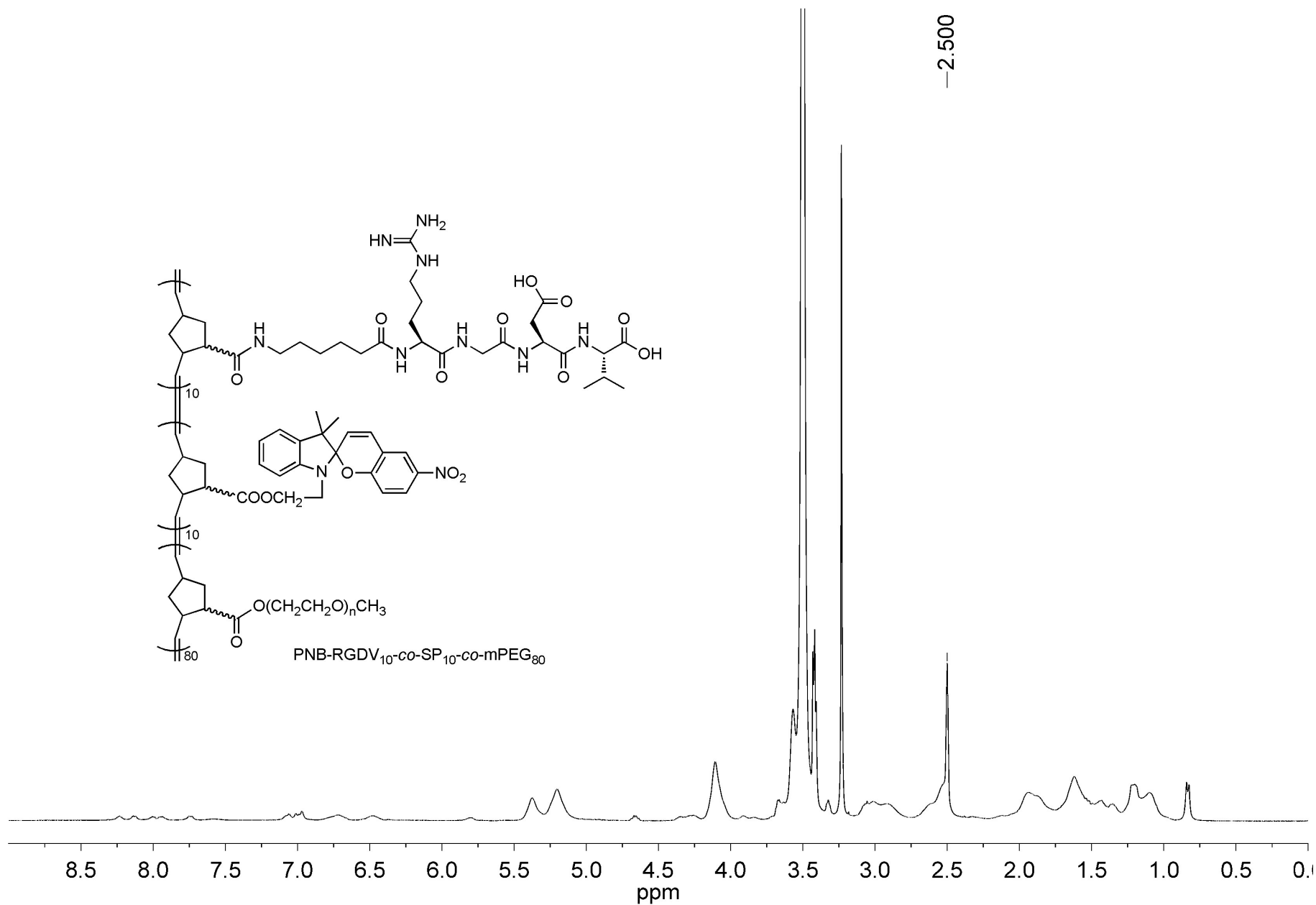
**Fig. S19** <sup>1</sup>H NMR spectrum for PNB-pRGDS<sub>10</sub>-co-SP<sub>10</sub>-co-mPEG<sub>80</sub> in DMSO-*d*<sub>6</sub>.



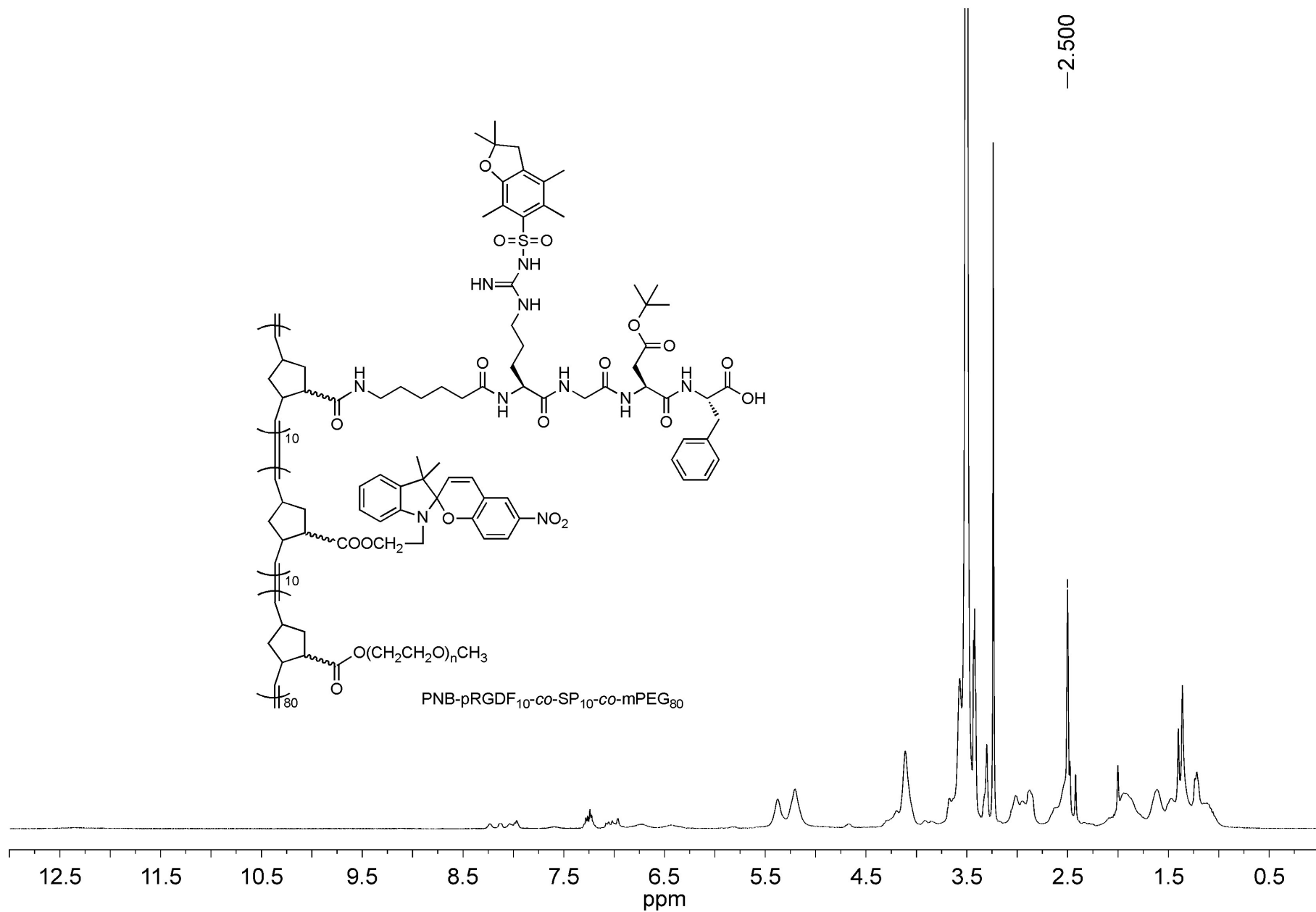
**Fig. S20** <sup>1</sup>H NMR spectrum for PNB-RGDS<sub>10</sub>-co-SP<sub>10</sub>-co-mPEG<sub>80</sub> in DMSO-*d*<sub>6</sub>.



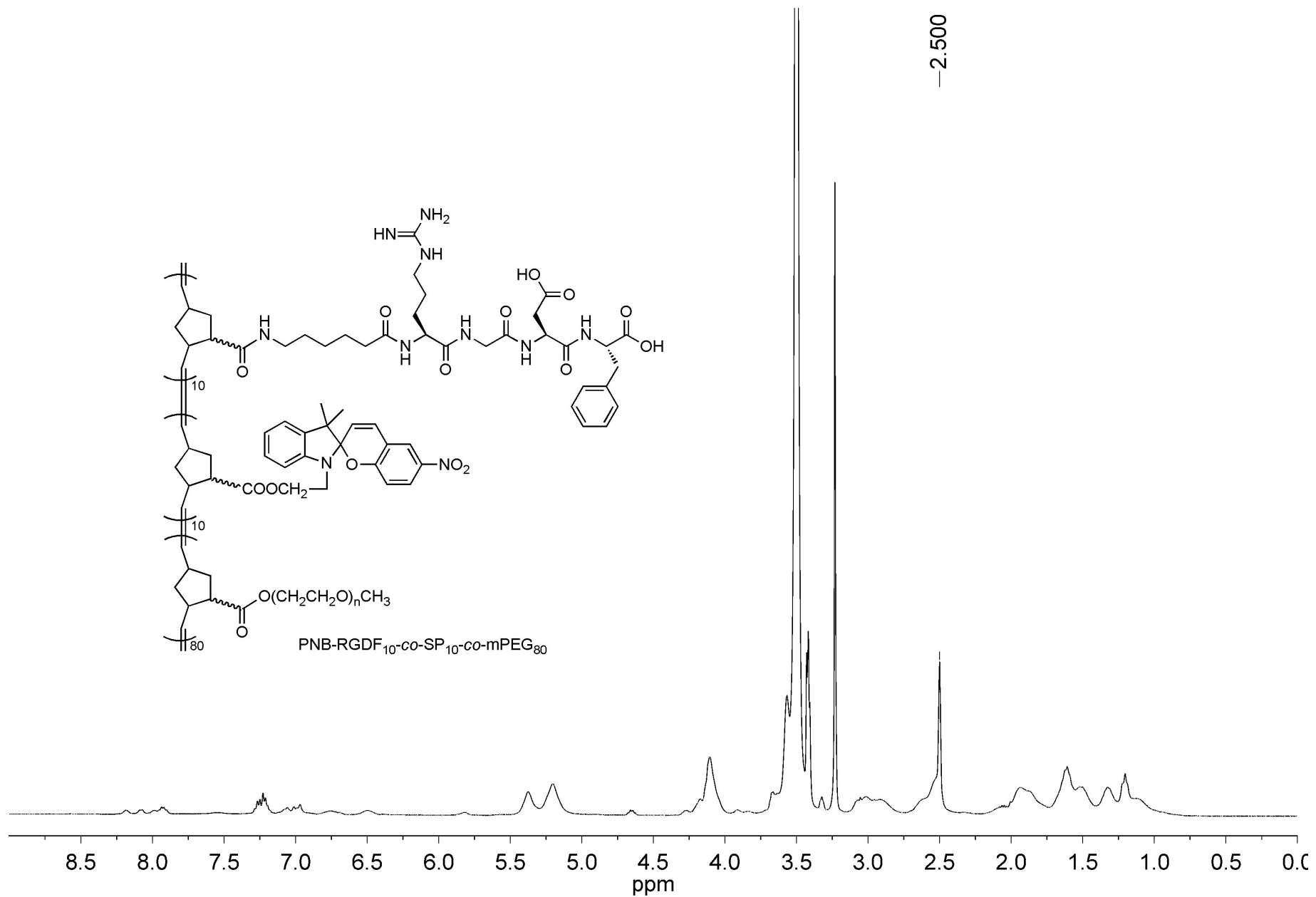
**Fig. S21**  $^1\text{H}$  NMR spectrum for PNB-pRGDV<sub>10</sub>-co-SP<sub>10</sub>-co-mPEG<sub>80</sub> in DMSO-*d*<sub>6</sub>.



**Fig. S22** <sup>1</sup>H NMR spectrum for PNB-RGDV<sub>10</sub>-co-SP<sub>10</sub>-co-mPEG<sub>80</sub> in DMSO-*d*<sub>6</sub>.



**Fig. S23**  $^1\text{H}$  NMR spectrum for PNB-pRGDF<sub>10</sub>-co-SP<sub>10</sub>-co-mPEG<sub>80</sub> in DMSO-*d*<sub>6</sub>.



**Fig. S24** <sup>1</sup>H NMR spectrum for PNB-RGDF<sub>10-co</sub>-SP<sub>10-co</sub>-mPEG<sub>80</sub> in DMSO-*d*<sub>6</sub>.



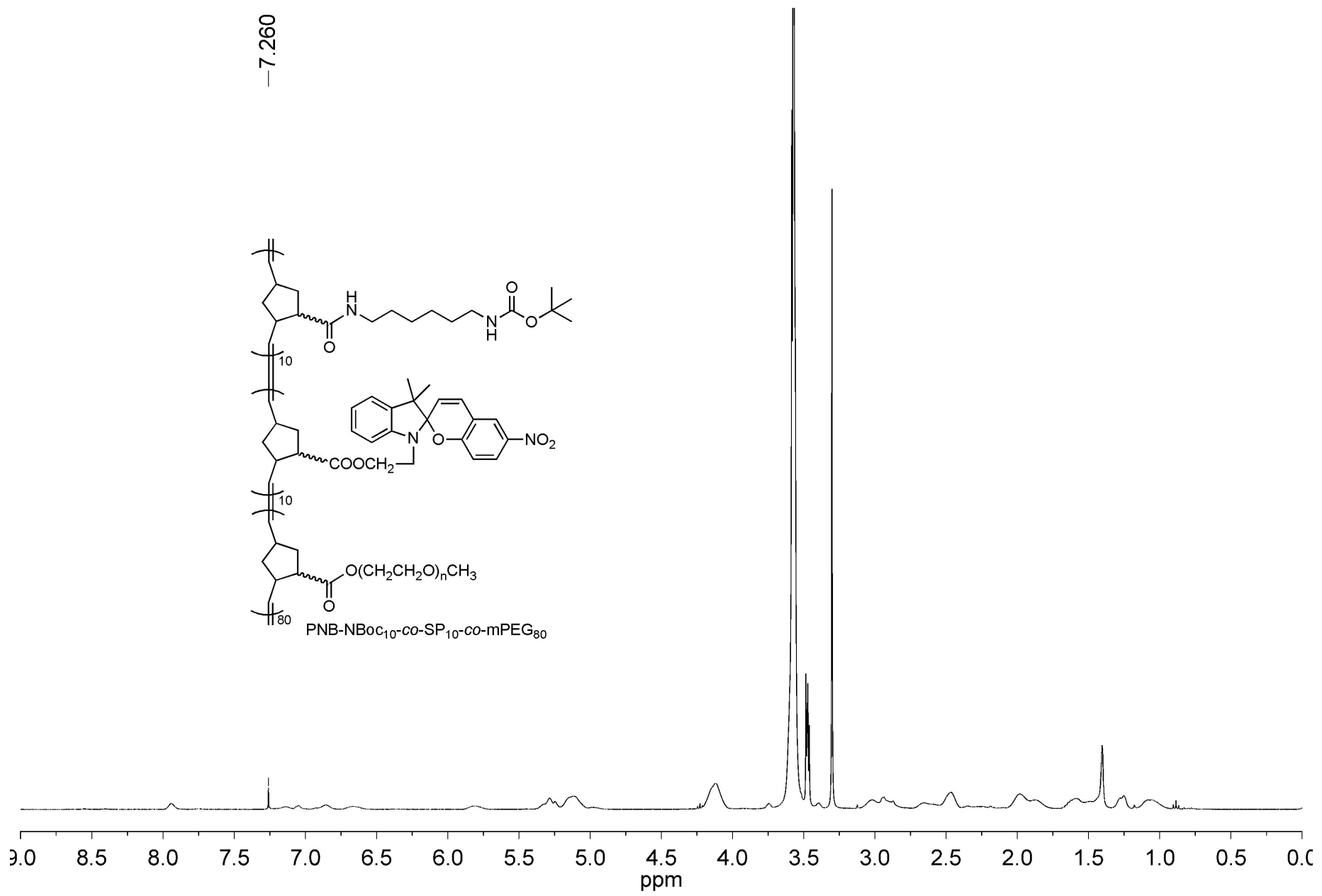


Fig. S25  $^1\text{H}$  NMR spectrum for  $\text{PNB-NBoc}_{10}\text{-co-SP}_{10}\text{-co-mPEG}_{80}$  in  $\text{CDCl}_3$ .

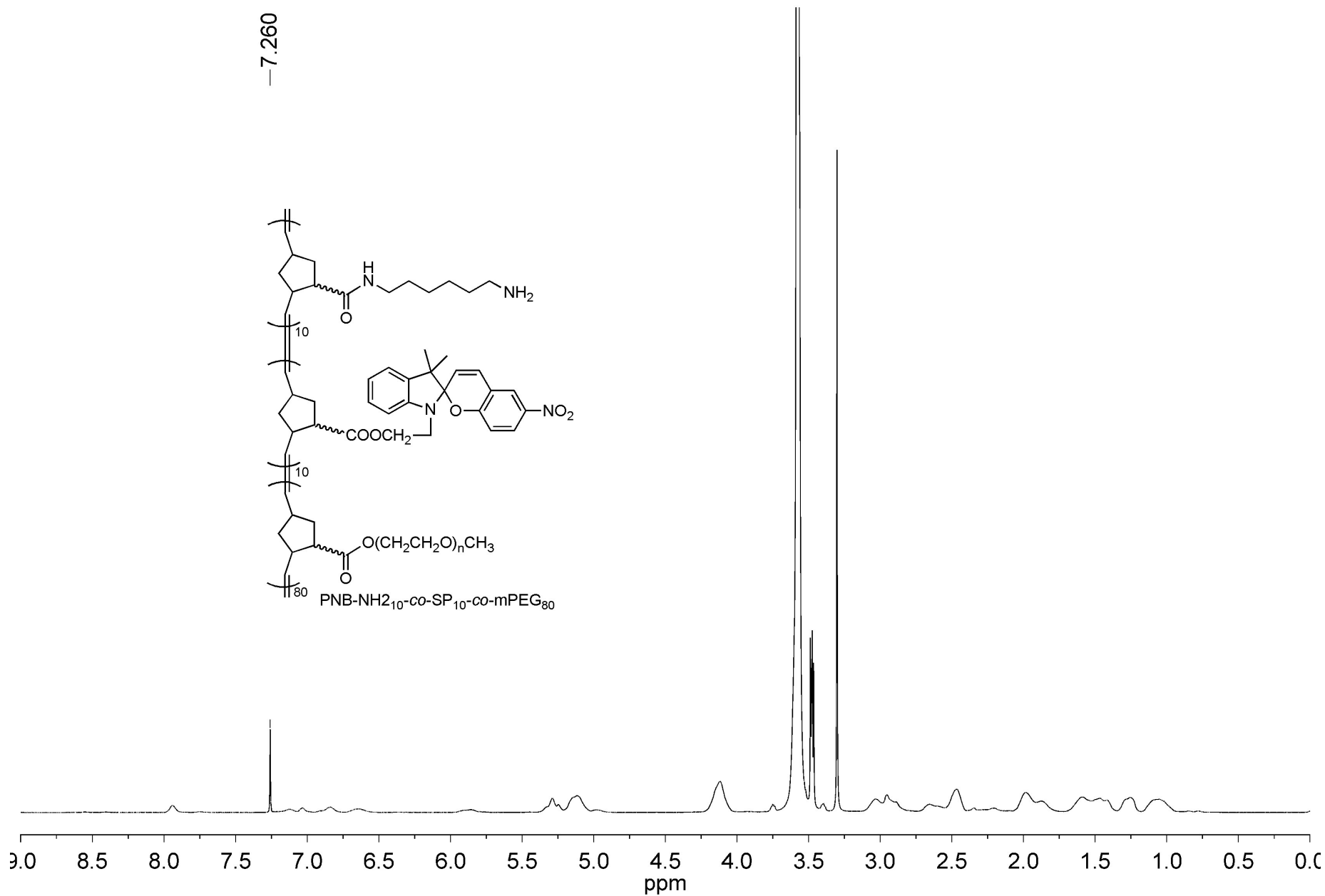


Fig. S26 <sup>1</sup>H NMR spectrum for PNB-NH<sub>2</sub><sub>10</sub>-co-SP<sub>10</sub>-co-mPEG<sub>80</sub> in CDCl<sub>3</sub>.