Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Light Induced Construction of Porous Covalent Organic Polymeric Networks for Significant Enhancement of CO_2 Gas Sorption

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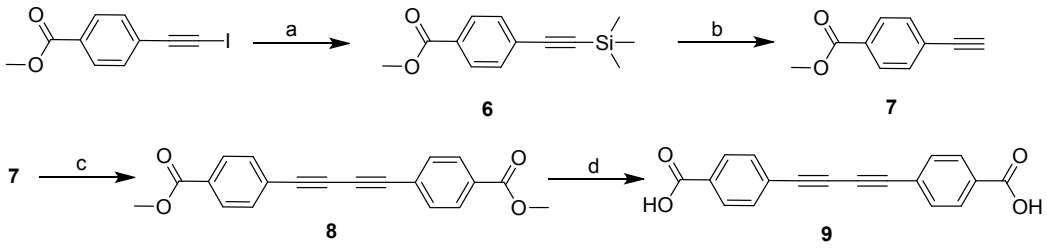
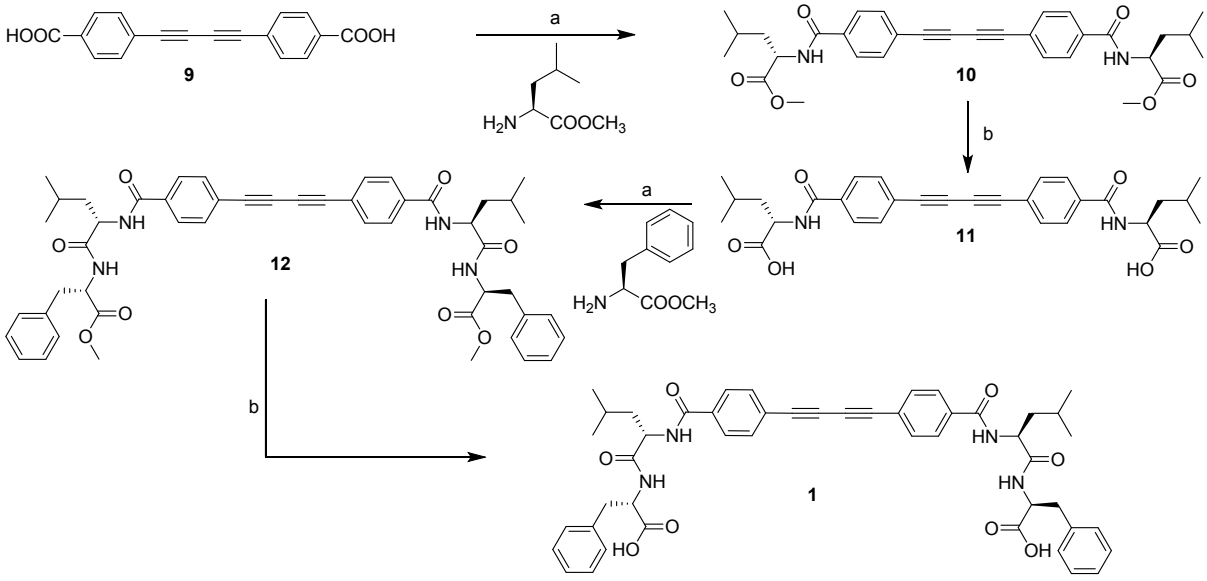
1. Synthesis of diphenylbutadiyne containing peptide bolaamphiphiles:



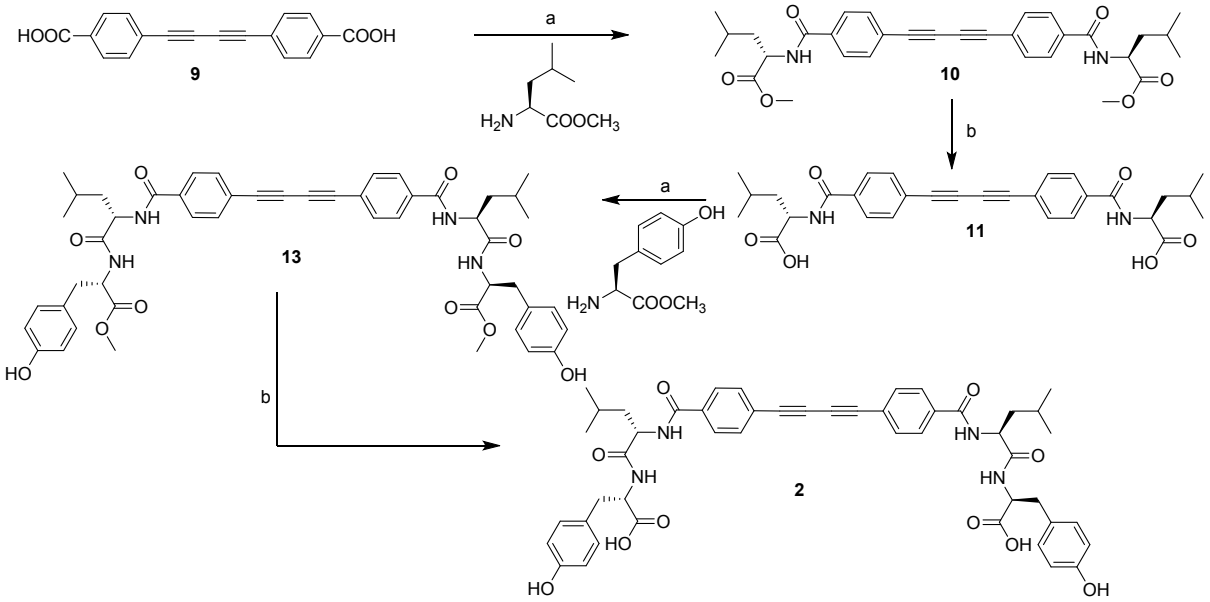
Reagents and conditions: (a) TMSA, $Pd(PPh_3)_2Cl_2$, CuI, Et_3N, 80 °C; (b) K_2CO_3/MeOH, rt; (c) CuCl/TMEDA, acetone, rt; (d) NaOH/THF, reflux.

Scheme S1 Synthetic scheme of 4,4'-(buta-1,3-diyne-1,4-diyl)dibenzoic acid **9**.



Reagents and conditions: (a) DCC, HOBt, DMF; (b) 2N NaOH, MeOH.

Scheme S2 Synthetic scheme of compound **1**.



Reagents and conditions: (a) DCC, HOBt, DMF; (b) 2N NaOH, MeOH.

Scheme S3 Synthetic scheme of compound **2**.

2. Morphological Study:

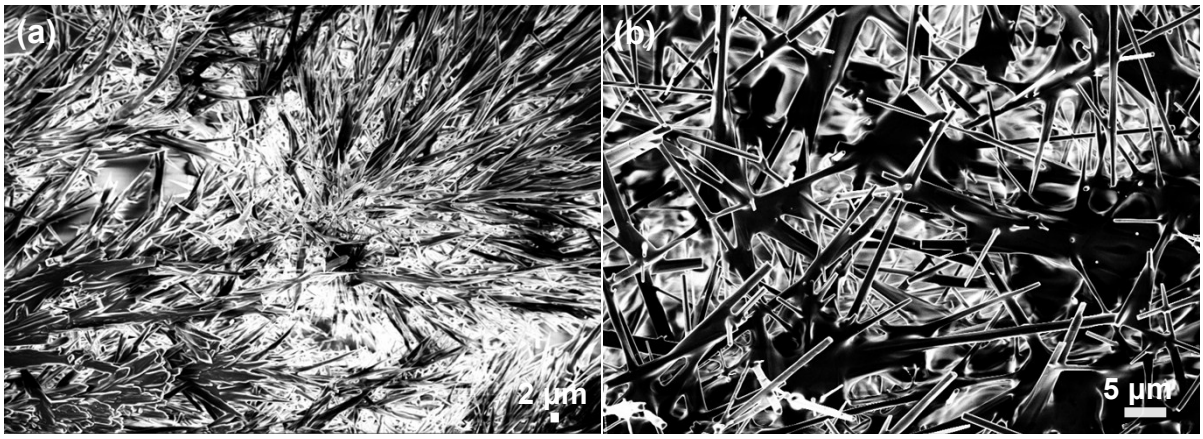


Fig. S1 SEM images of compound **1** (a) before UV irradiation, (b) at 60 min of UV irradiation. (*C* = 15 mmol L^{-1})

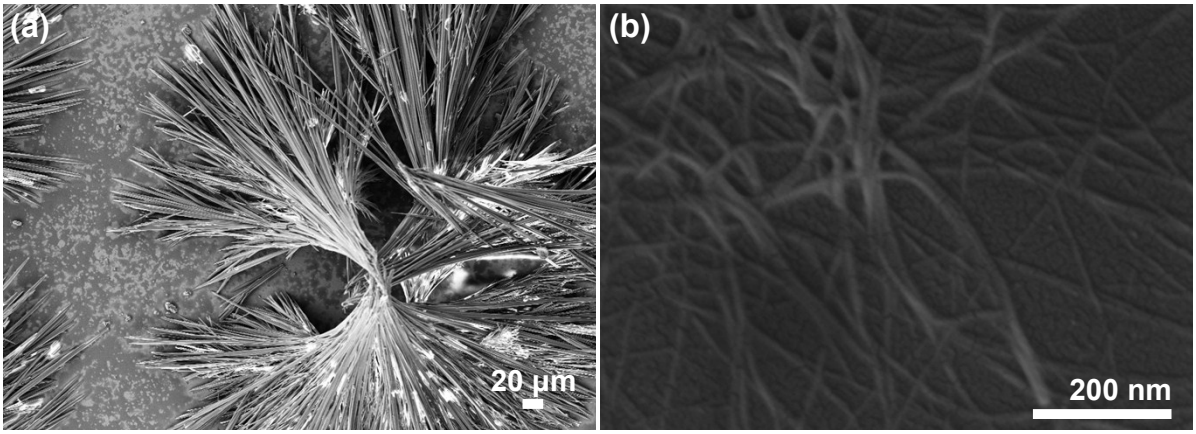


Fig. S2 SEM images of compound **1** (a) before UV irradiation and (d) at 60 min of UV irradiation. (*C* = 30 mmol L^{-1}).

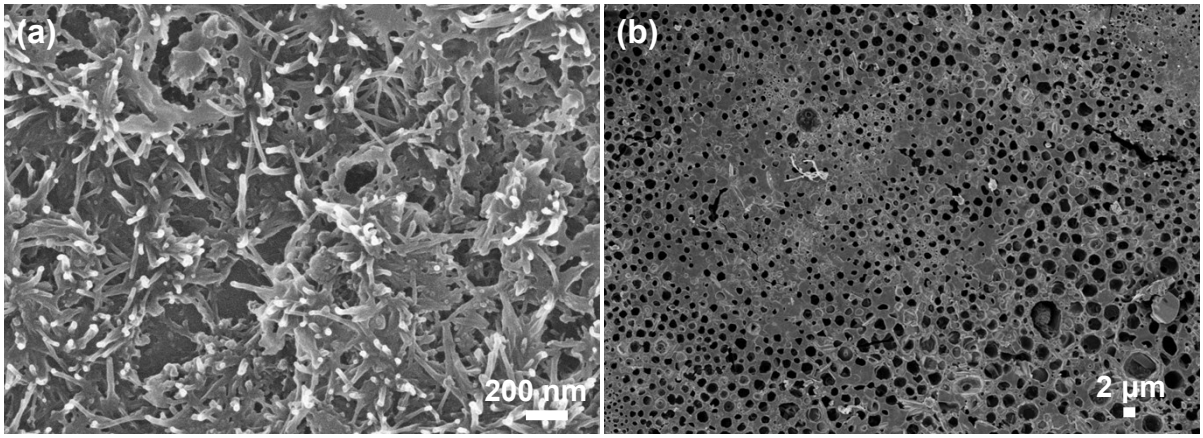


Fig. S3 SEM images of compound **2** (a) before UV reaction and (e) after 60 min of UV irradiation. (*C* = 20 mmol L^{-1})

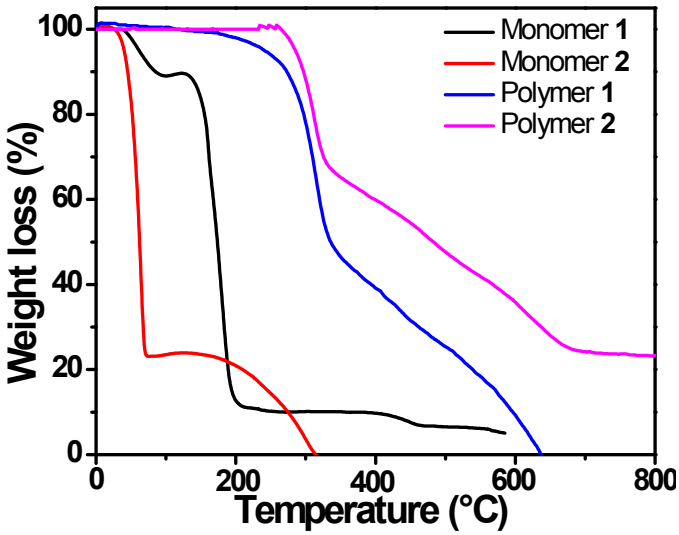


Fig. S4 TGA curves for compound **1**, polymer **1**, compound **2** and polymer **2**.

3. NMR Spectra of all synthesized compounds:

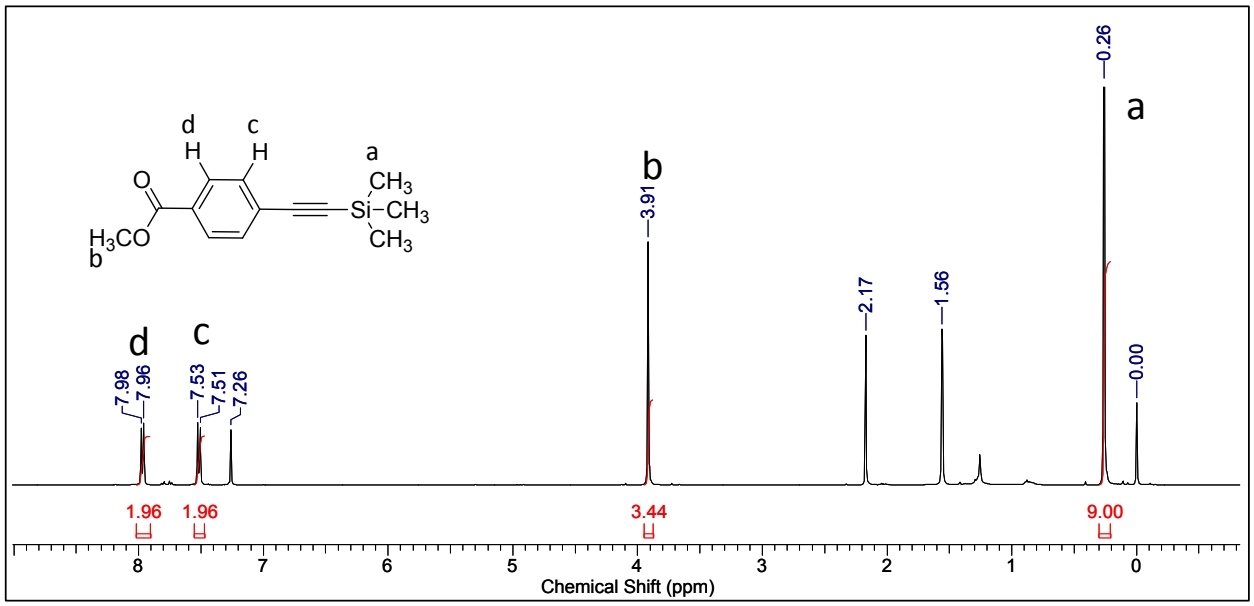


Fig. S5 ^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **6**.

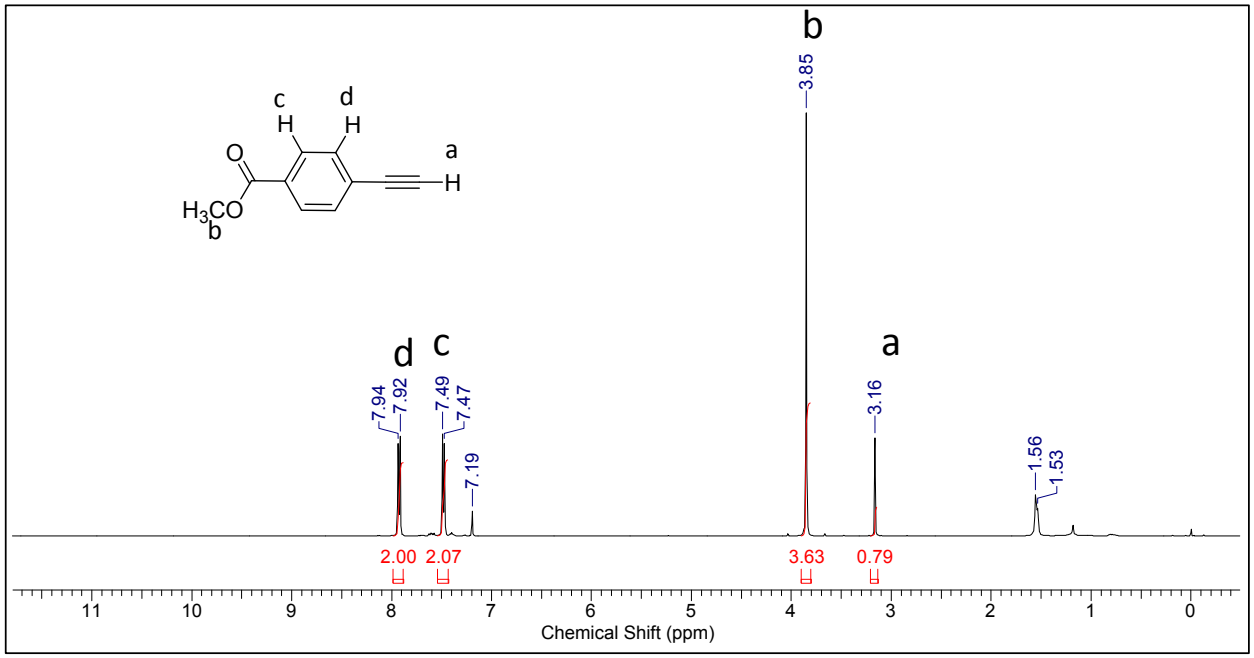


Fig. S6 ^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **7**.

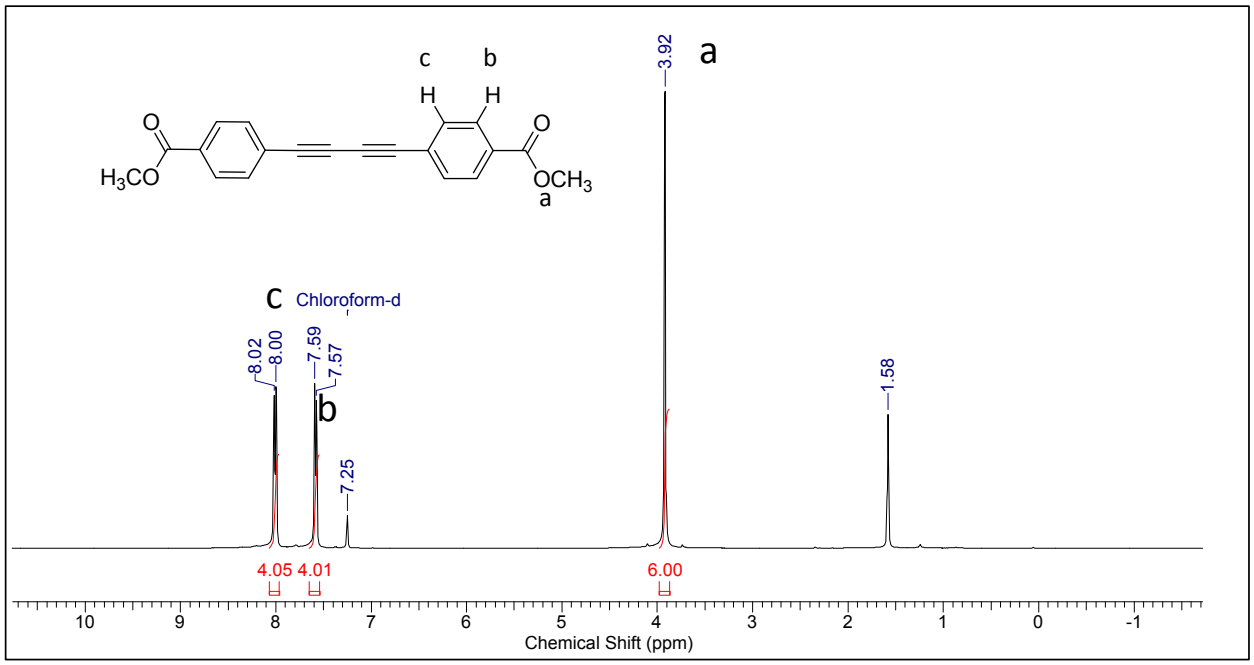


Fig. S7 ^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **8**.

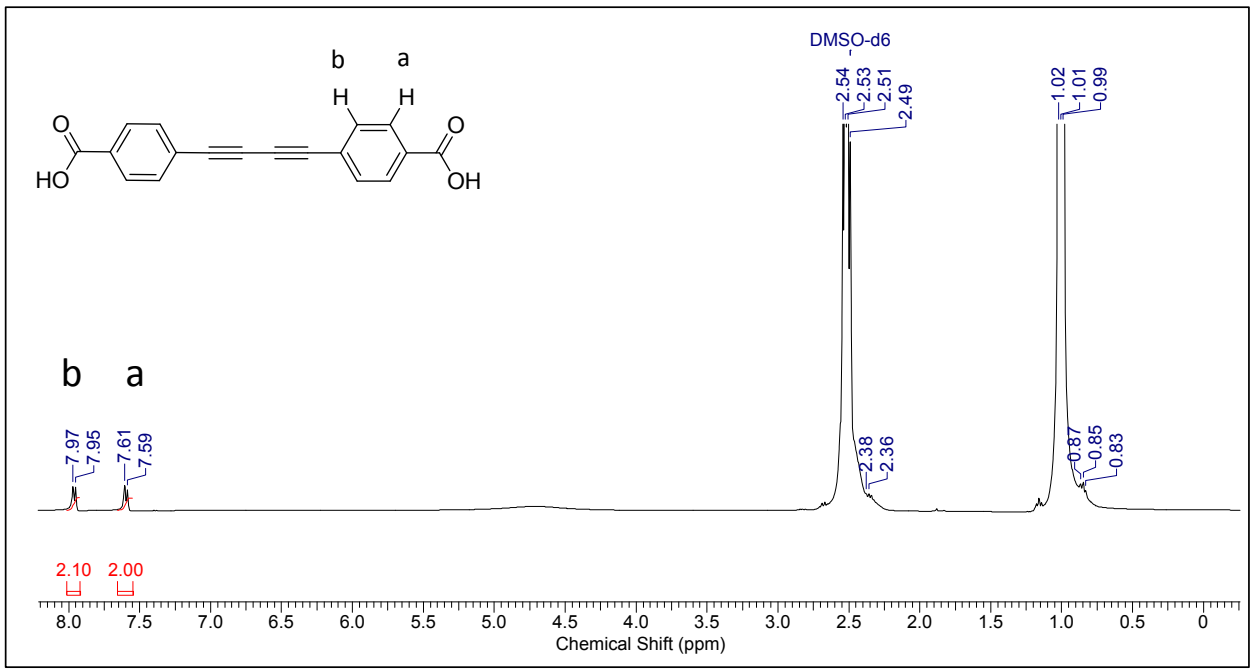


Fig. S8 ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **9**.

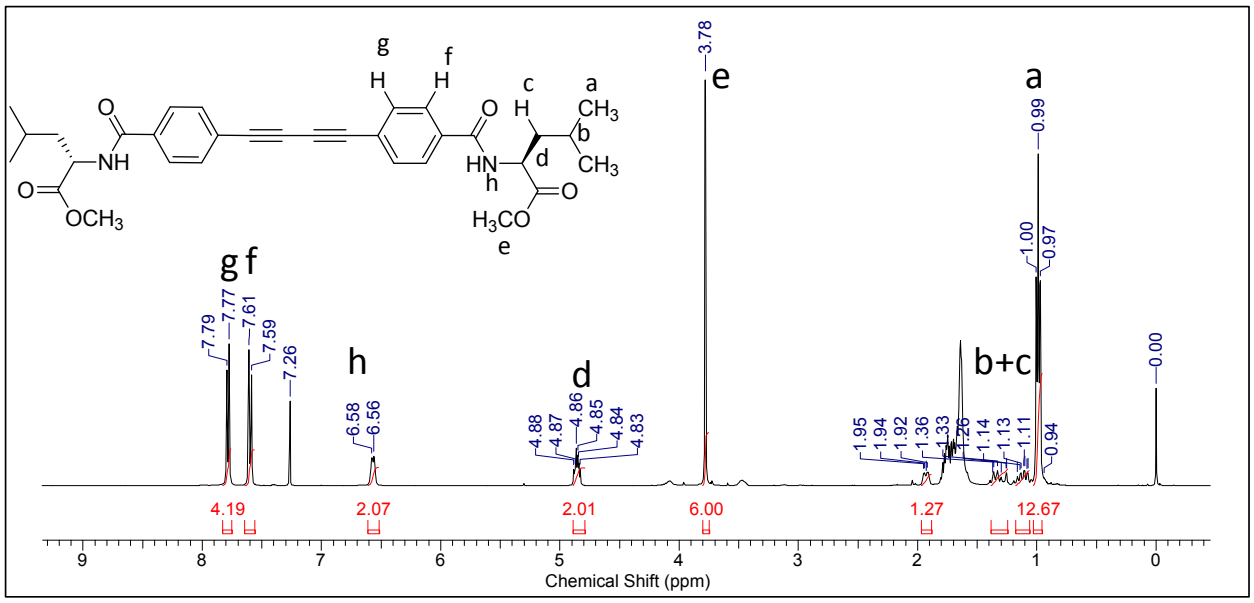


Fig. S9 ^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **10**.

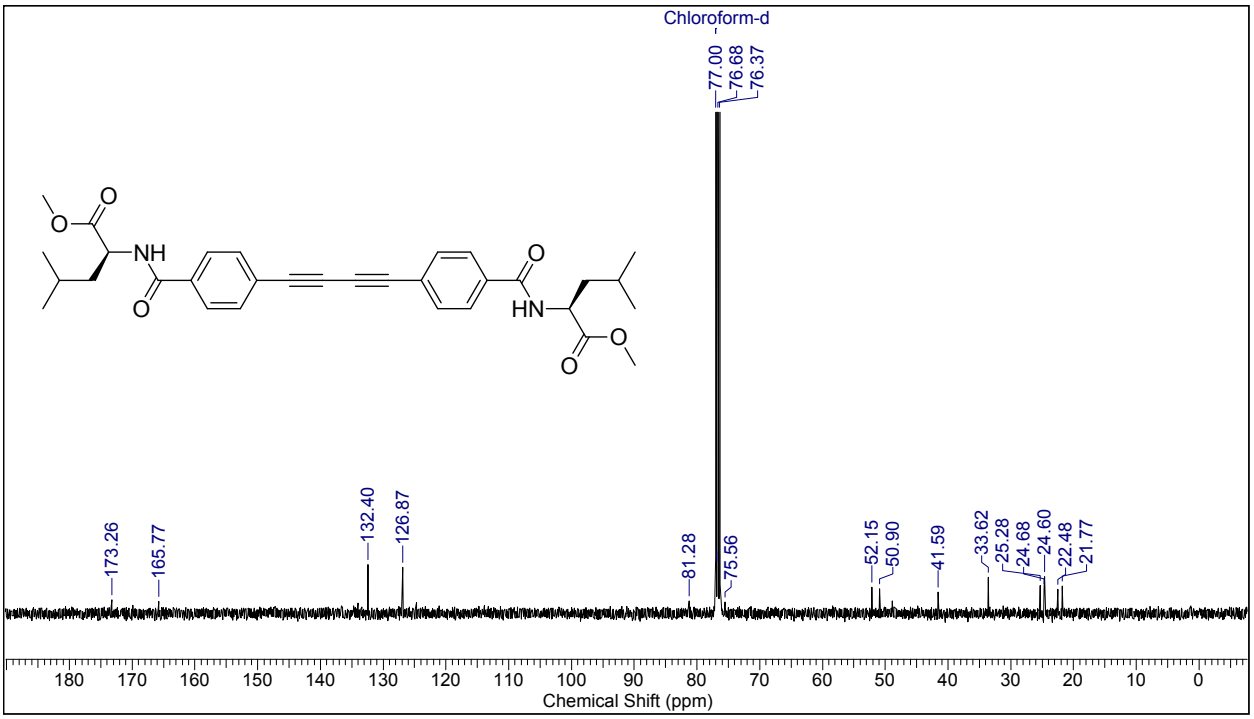


Fig. S10 ^{13}C NMR spectrum (100 MHz, $CDCl_3$) of compound **10**.

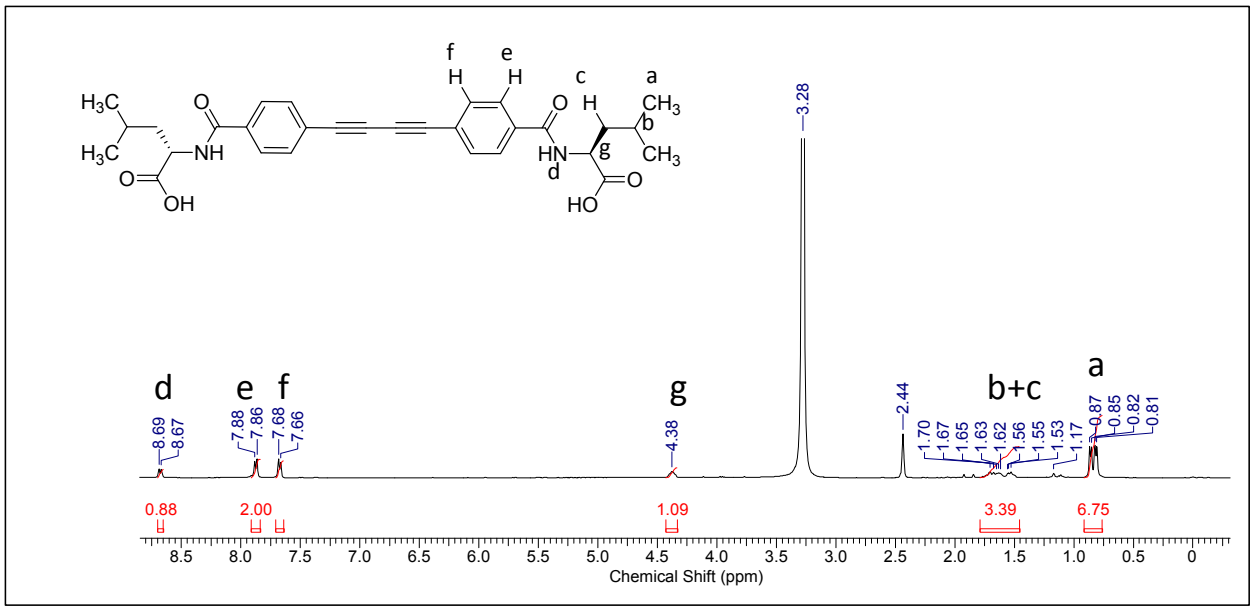


Fig. S11 ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **11**.

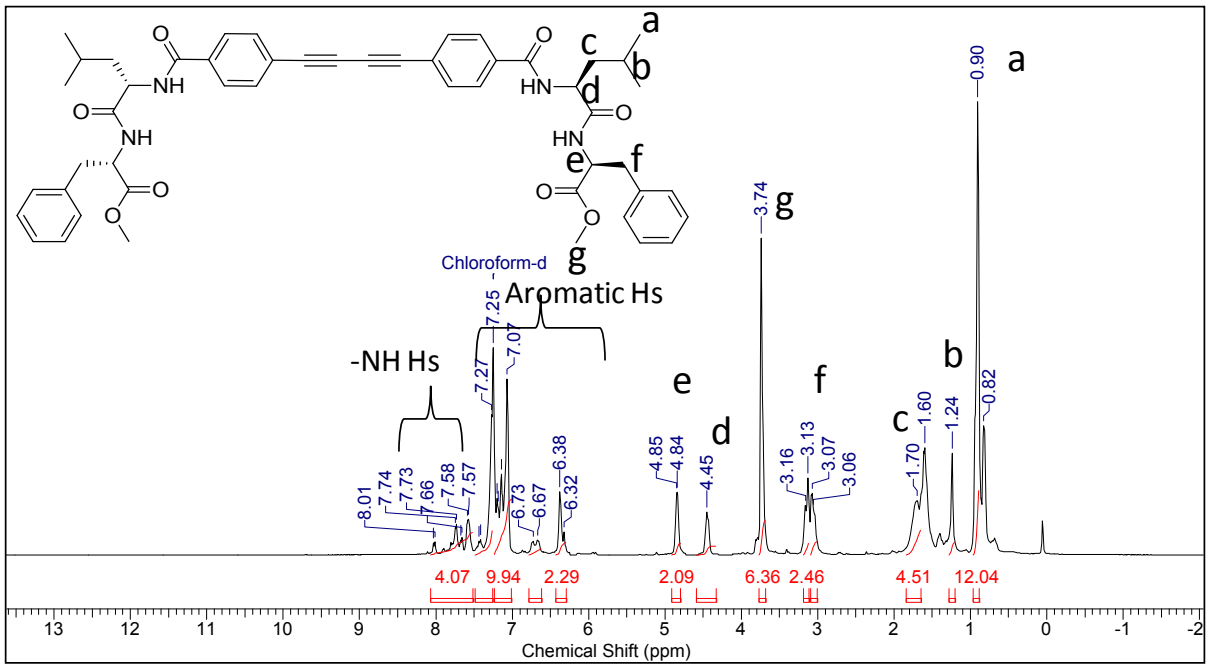


Fig. S12 ^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **12**.

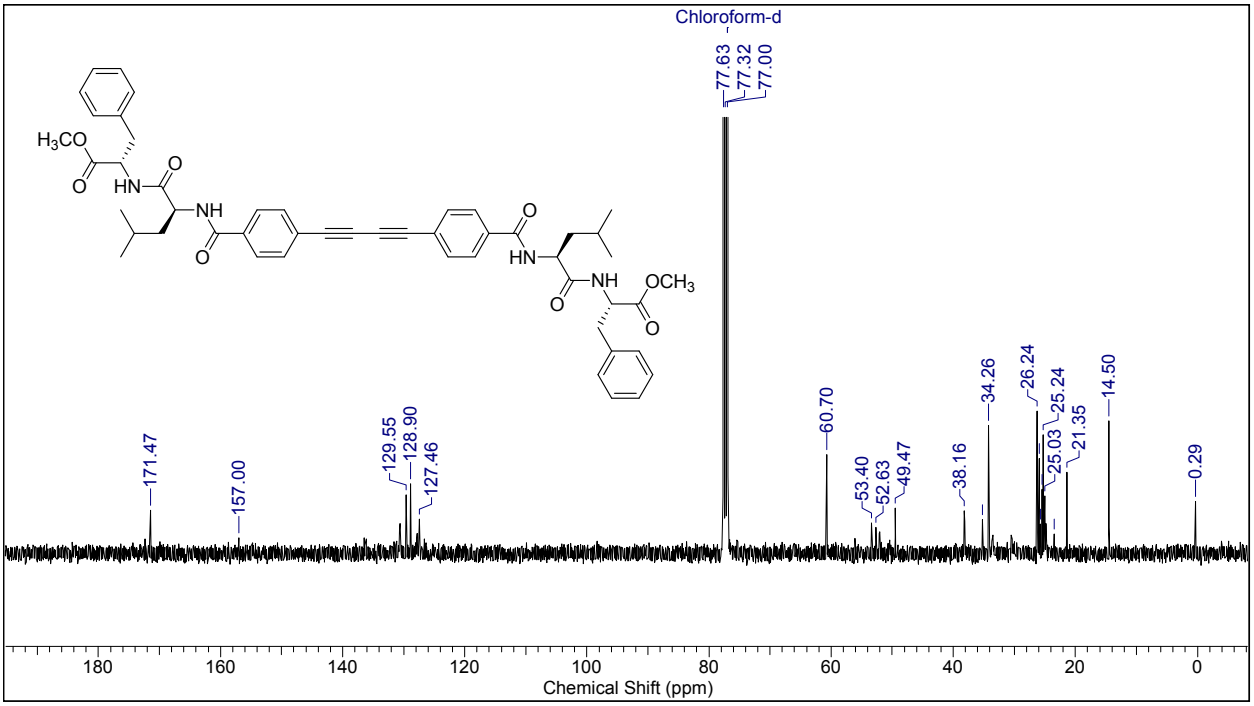


Fig. S13 ^{13}C NMR spectrum (100 MHz, $CDCl_3$) of compound **12**.

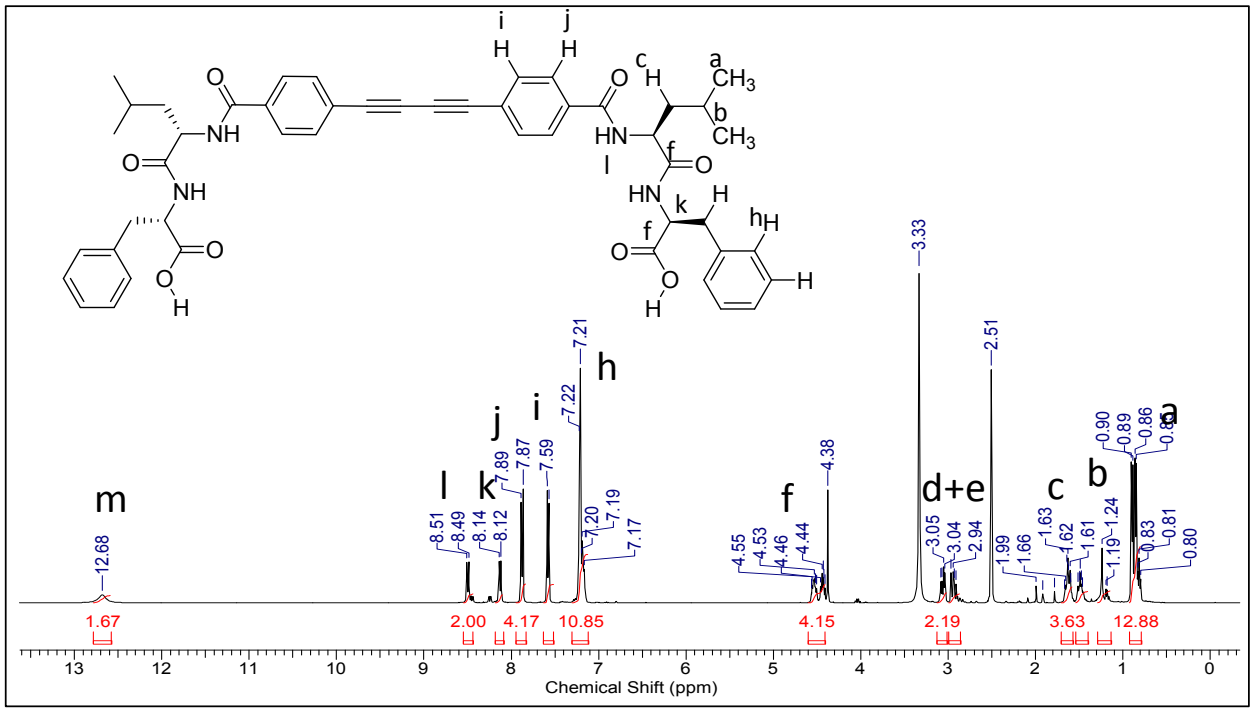


Fig. S14 ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **1**.

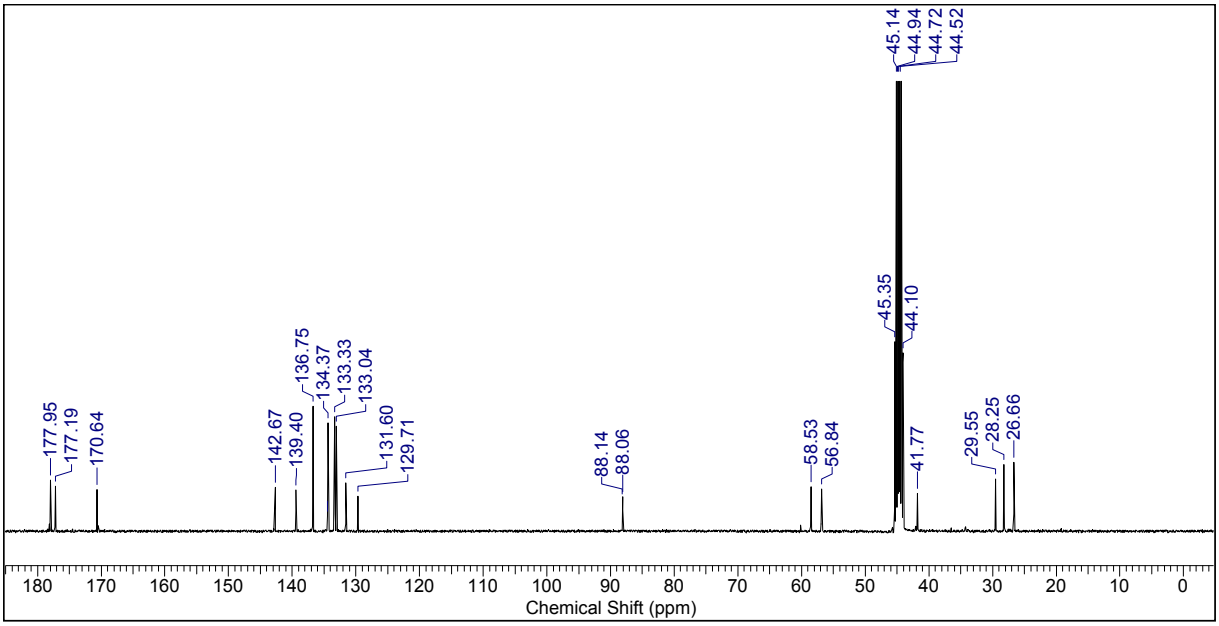


Fig. S15 ^{13}C NMR spectrum (100 MHz, DMSO-d_6) of compound **1**.

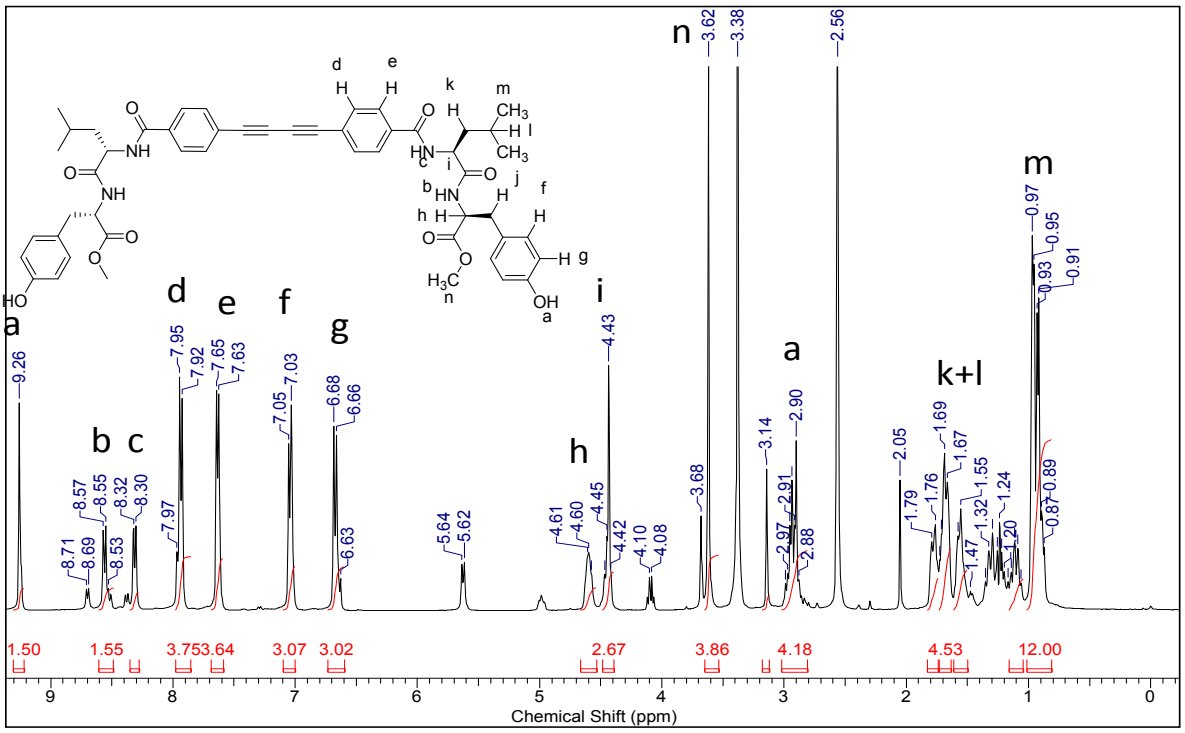


Fig. S16 ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **13**.

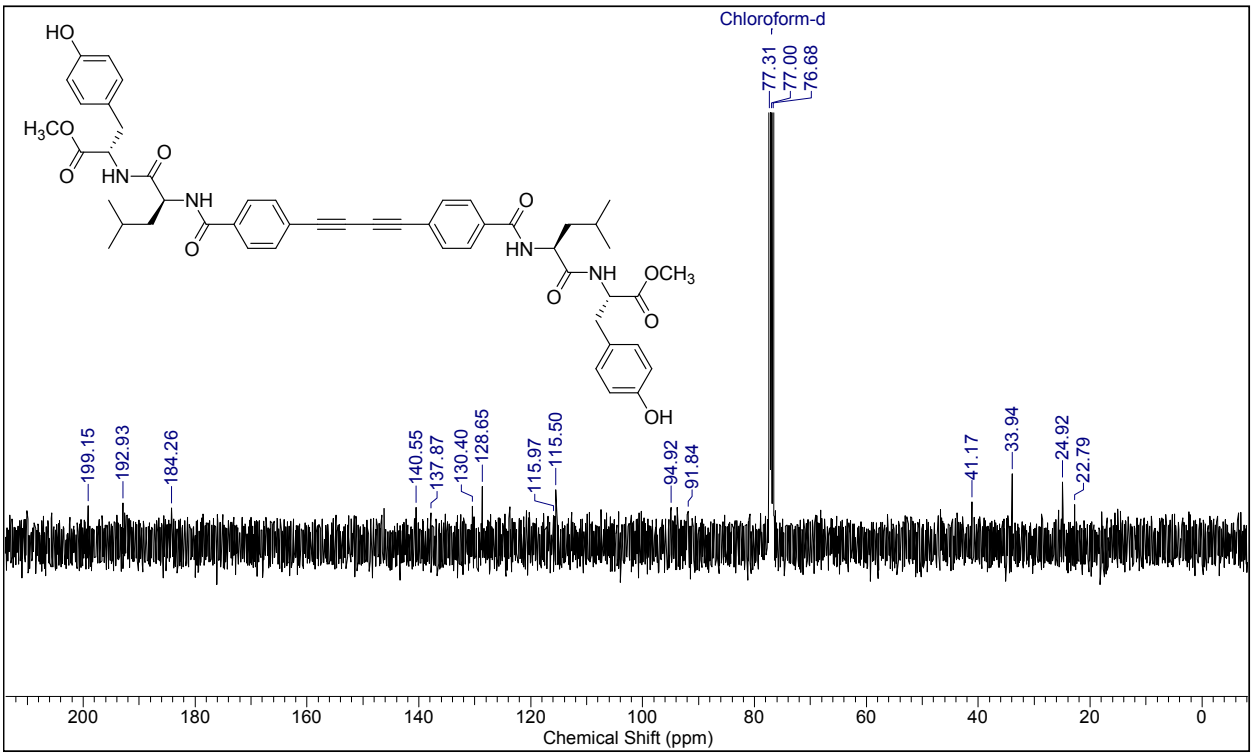


Fig. S17 ^{13}C NMR spectrum (100 MHz, DMSO-d_6) of compound **13**.

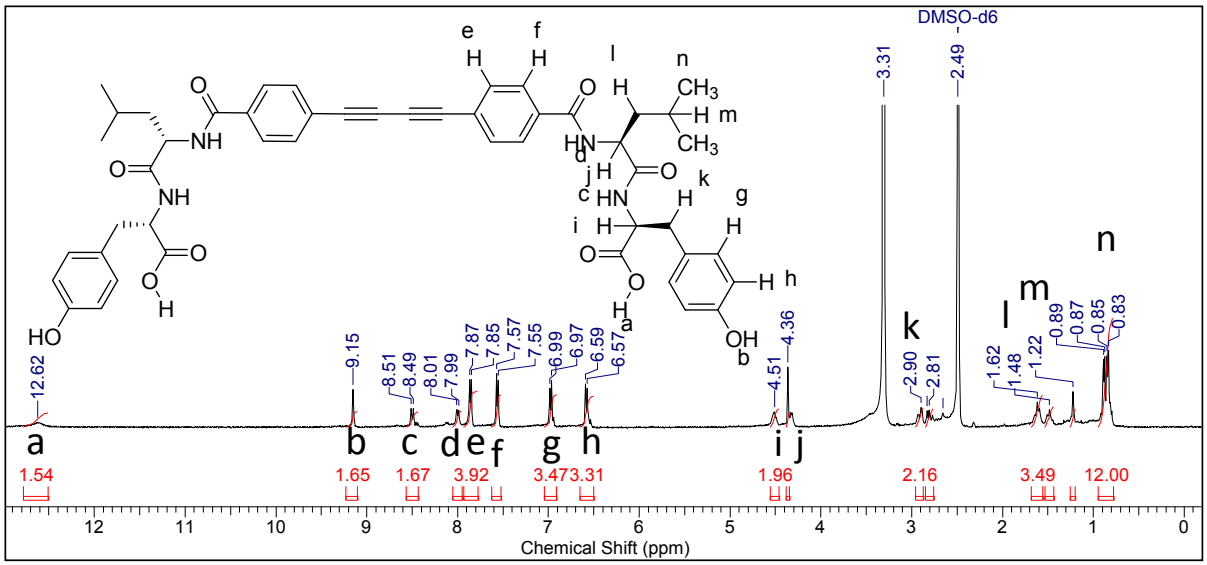


Fig. S18 ^{1}H NMR spectrum (400 MHz, DMSO-d_6) of compound **2**.

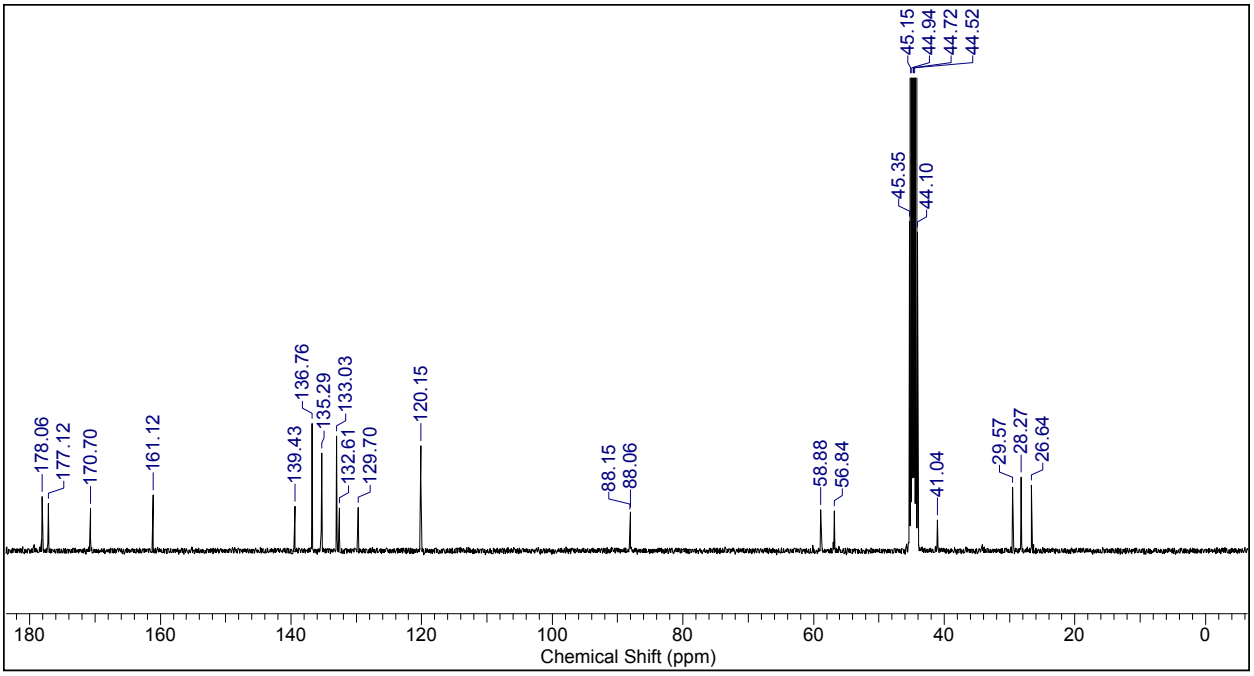


Fig. S19 ^{13}C NMR spectrum (100 MHz, DMSO-d_6) of compound **2**.

4. Mass Spectra of all synthesized compounds:

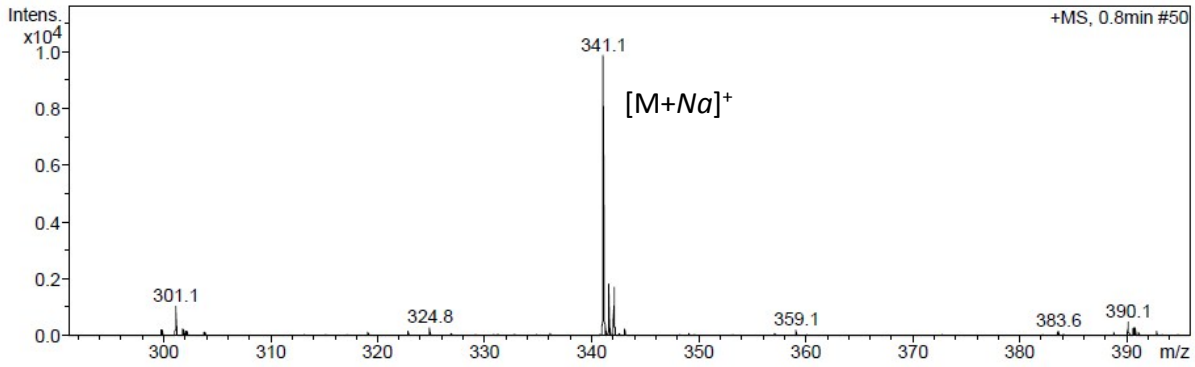


Fig. S20 ESI-MS spectrum of compound **8**.

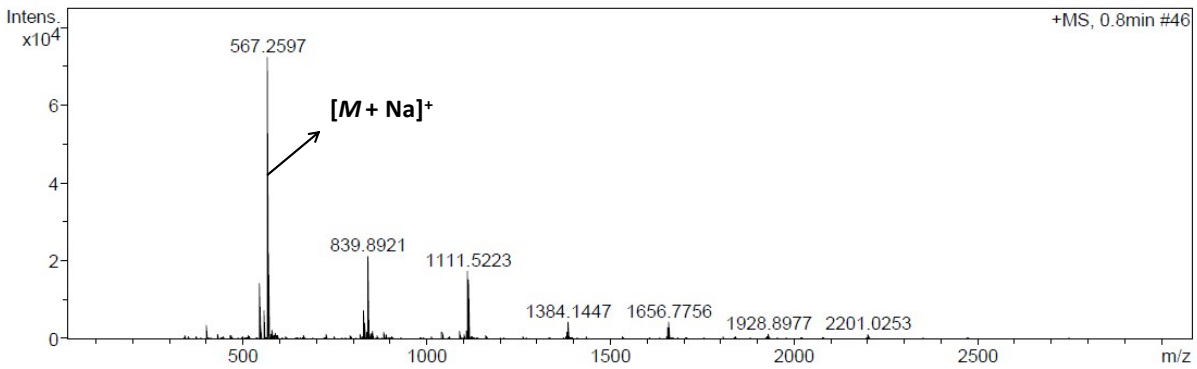


Fig. S21 ESI-MS spectrum of compound **10**.

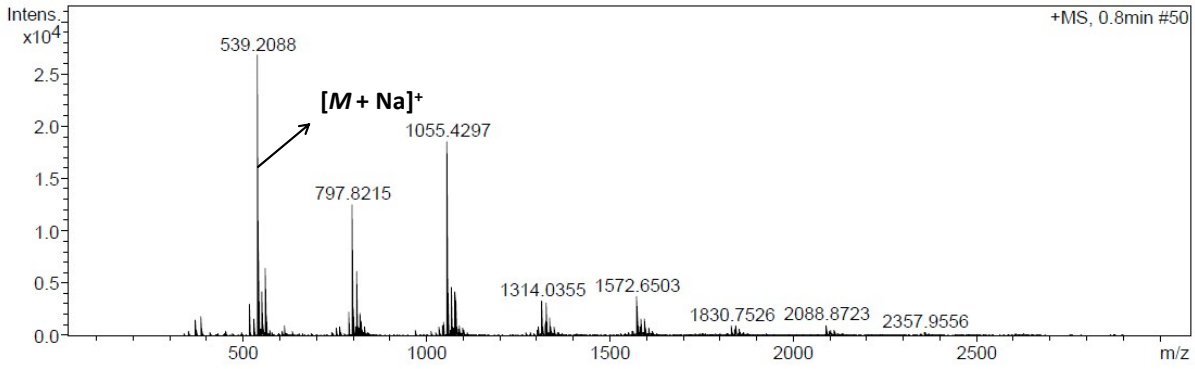


Fig. S22 ESI-MS spectrum of compound **11**.

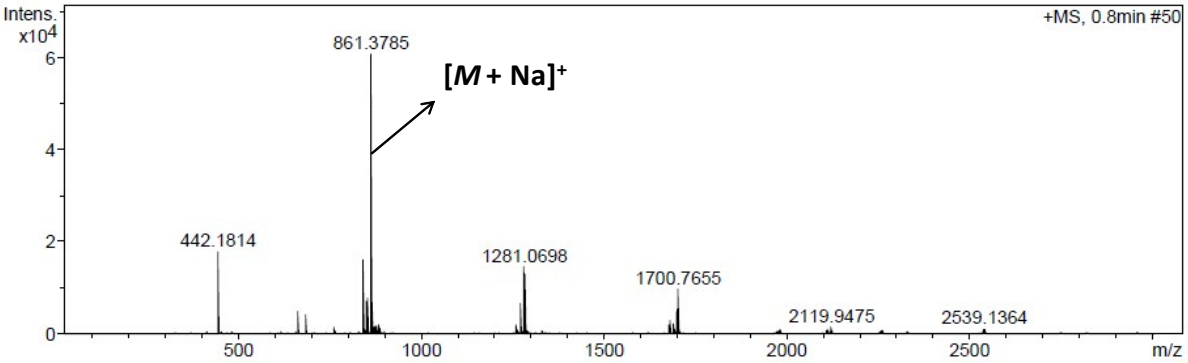


Fig. S23 ESI-MS spectrum of compound **12**.

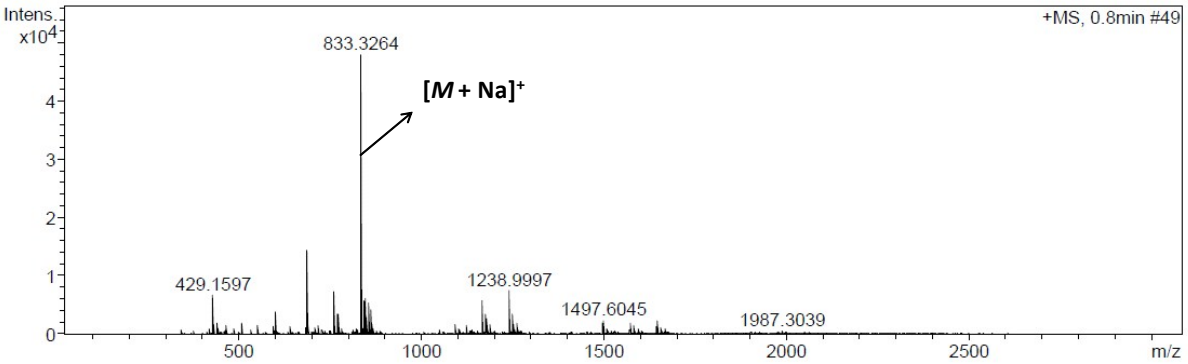


Fig. S24 ESI-MS spectrum of compound **1**.

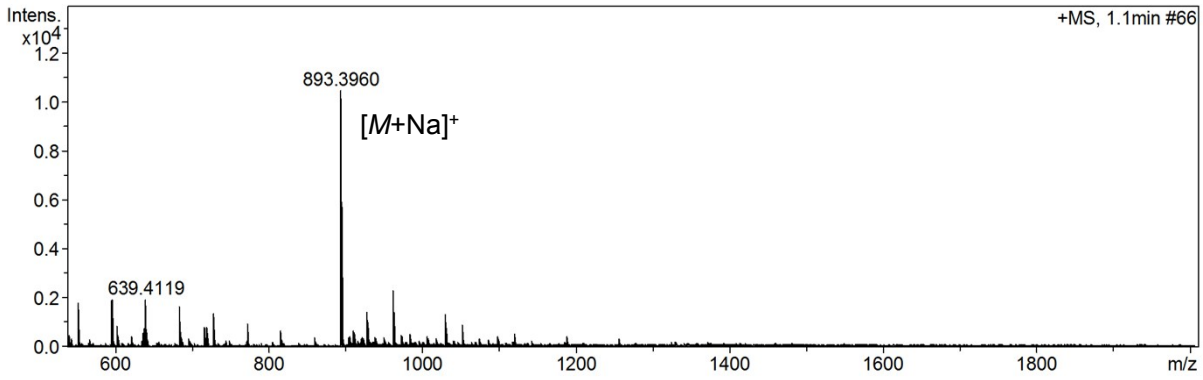


Fig. S25 ESI-MS spectrum of compound **13**.

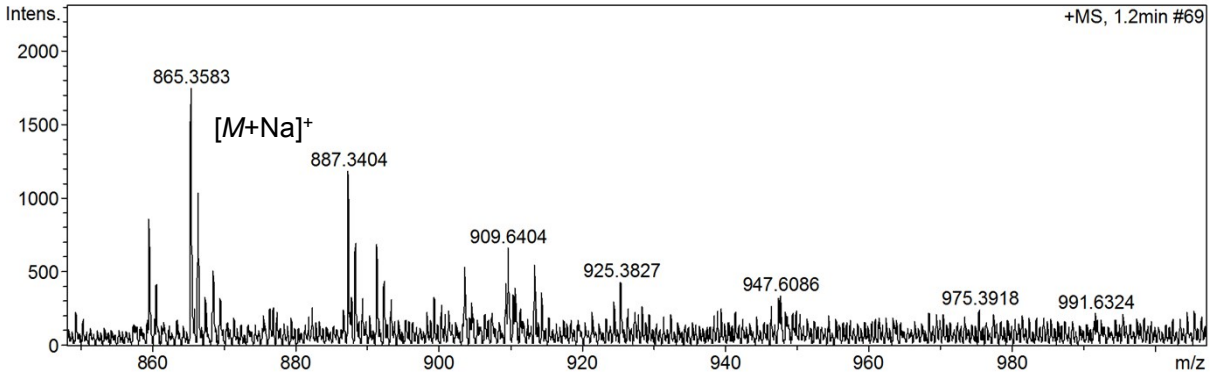


Fig. S26 ESI-MS spectrum of compound **2**.