Supporting information for

Synthesis, Characterization and Applications of Selenocysteine Responsive Nanoprobe Based on Dinitrobenzene Sulfonyl-modified Poly(carbonate)s Micelles

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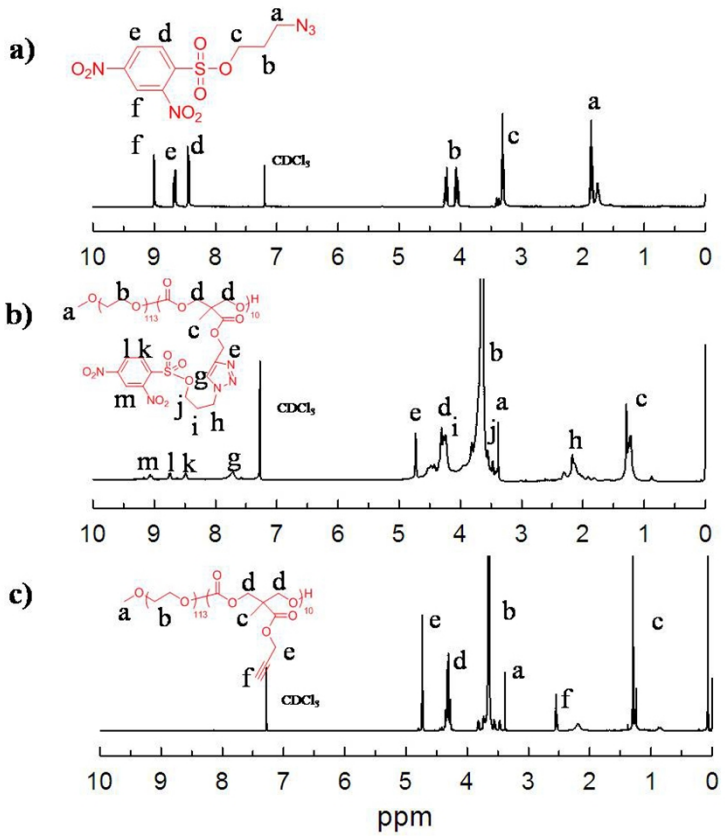


Figure S1^{1}H NMR spectra of (a) Dns-N_3, (b) PMPC-Dns and (c) PEG-*b*-poly(MPC).

Entry	M_w/M_n[a]	$M_{n,GPC}$[a]	$M_{n,NMR}$[b]	CMC[c] (mg mL^{-1})
PEG-*b*-poly(MPC)	1.0483	7263	6984	0.01159
PMPC-Dns	1.0756	11353	10293	0.01245

[a] Both molecular weight ($M_{n,GPC}$) and the polydispersity (M_w/M_n) of the amphiphiles were determined by GPC. [b]$M_{n,NMR}$ was determined by ^{1}H NMR. [c] CMC: the critical micelle concentration of the amphiphiles was determined by fluorescence spectroscopy (Figure S3).

Table S1 Molecular characteristics of amphiphiles PEG-*b*-poly(MPC) and PMPC-Dns

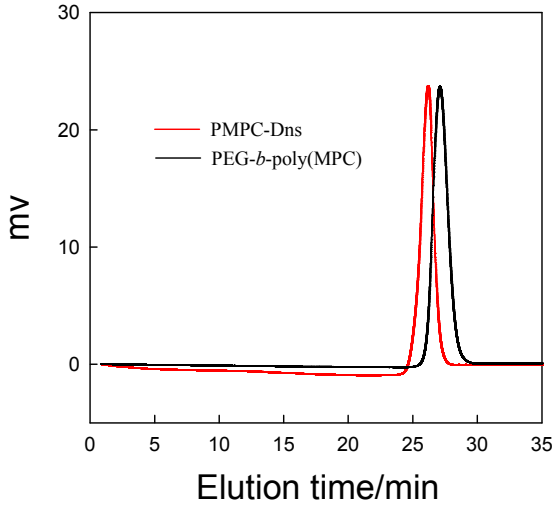


Figure S2GPC traces of PEG-*b*-poly(MPC) (black line) and PMPC-Dns (red line)

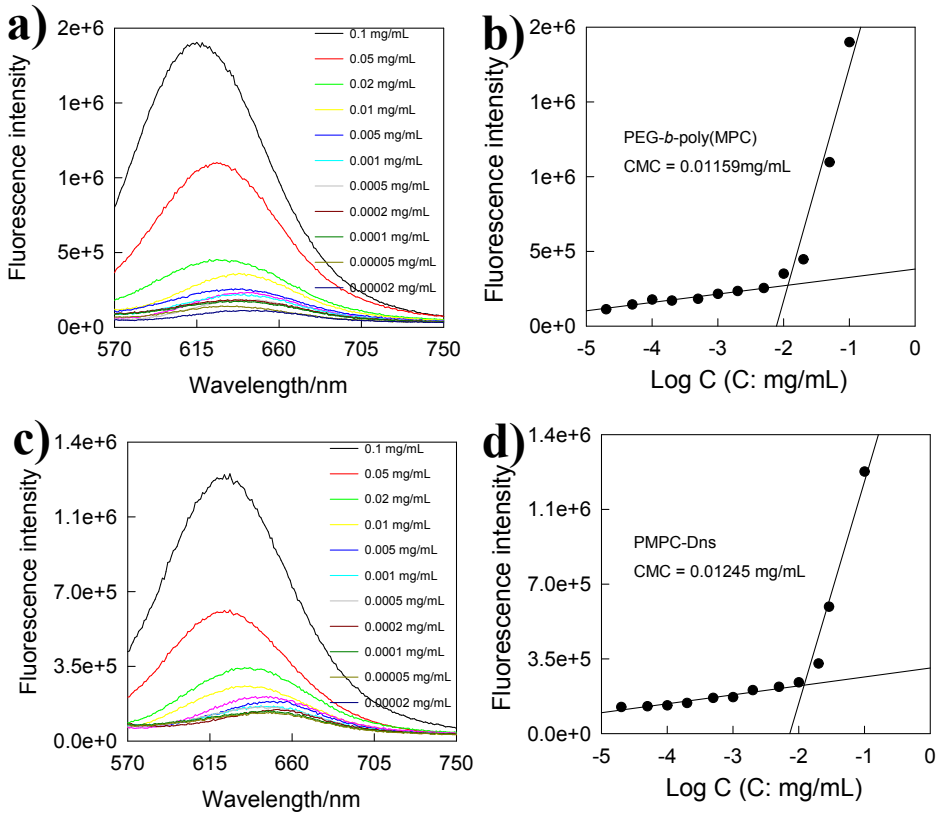


Figure S3 Fluorescence emission spectra of Nile Red in (a) PEG-*b*-poly(MPC) micelles and (c) PMPC-Dns micelles of varying concentrations, and the relevant emission intensity at 630 nm versus the log of concentration for (b) PEG-*b*-poly(MPC) micelles and (c) PMPC-Dns micelles.

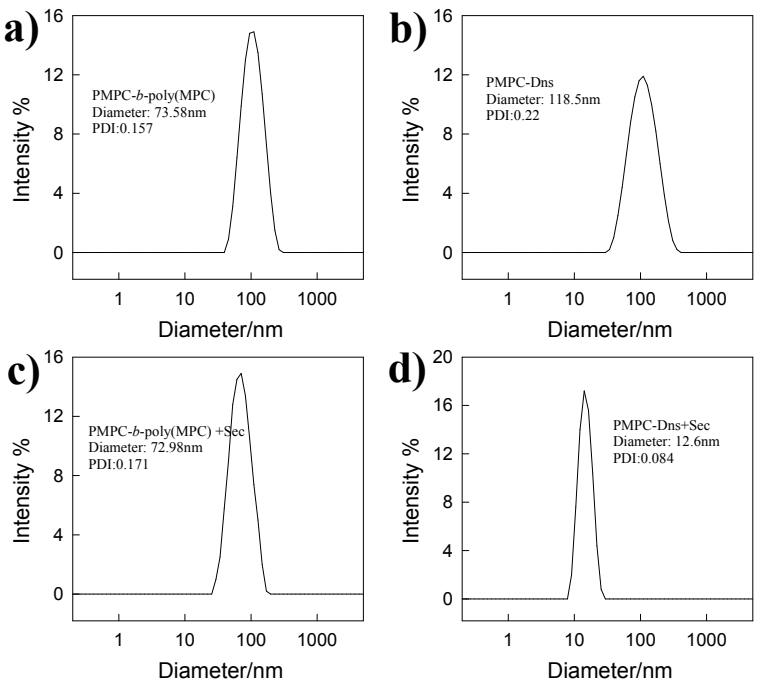


Figure S4 Mean size distributions of the micelles determined by DLS: (a) PEG-*b*-poly(MPC), (b) PMPC-Dns, (c) PEG-*b*-poly(MPC) treated with Sec, and (d) PMPC-Dns after being treated with Sec for 60 min.

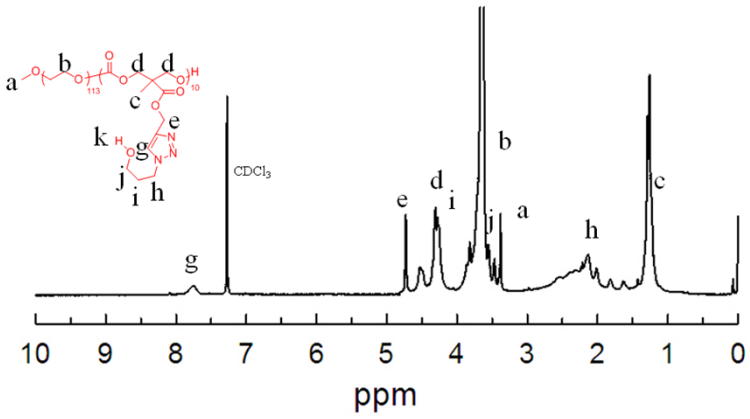


Figure S5^{1}H NMR of PMPC-Dns micelles (0.5 mg mL^{-1}) treated with Sec (0.5 mM). (The product was allowed to dialyze in aqueous solution and lyophilize for ^{1}H NMR detection.)

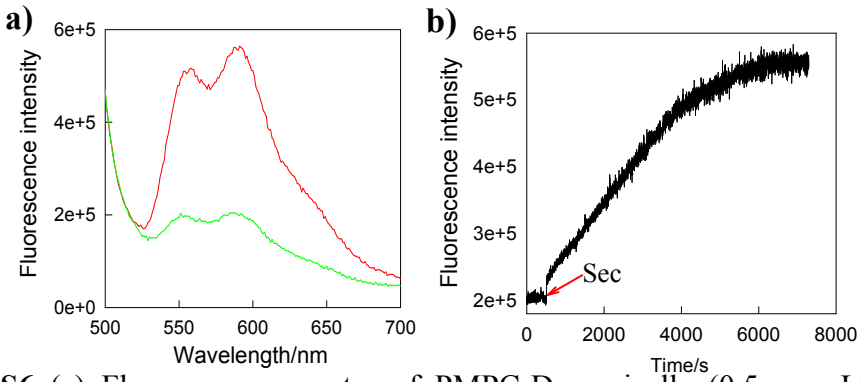


Figure S6 (a) Fluorescence spectra of PMPC-Dns micelle (0.5mg mL^{-1}) in PBS solution (pH = 7.4, 20 mM): free PMPC-Dns micelle (green) and that treated with Sec 1μM for 90 min (red). (b) Time history of the PMPC-Dns micelle responses to Sec in terms of fluorescence intensity. (Fluorescence intensity was recorded at 595 nm with an excitation of 490 nm in wavelength.)

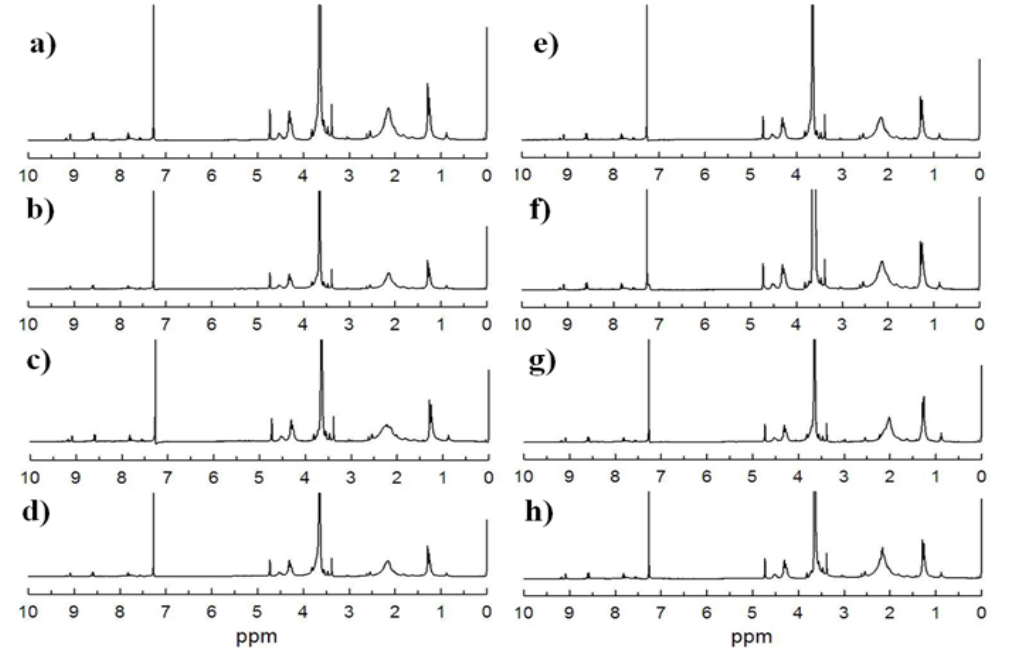


Figure S7 PMPC-Dns micelle (0.5mg mL^{-1}) responses to various thiols and other sulfur compounds as confirmed by ^{1}H NMR. PMPC-Dns micelles treated with 1μMa) DTT, b) NAC, c) Vitamin C, d) H_2S, e) Cys, f) GSH, g) Na_2SeO_3 and h) NAC for 90 min. The product was purified by means of dialysis against deionised water that was renewed regularly (dialysis tubing 3500 MWCO, for three days).

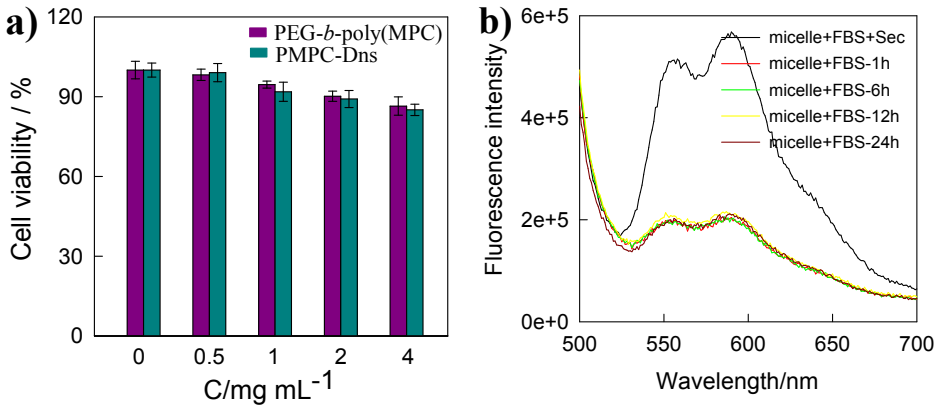
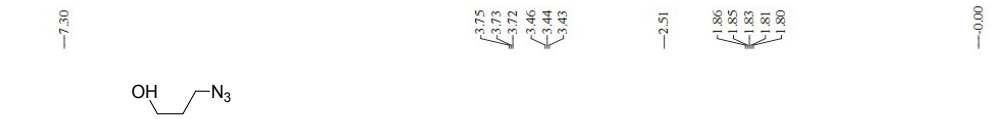
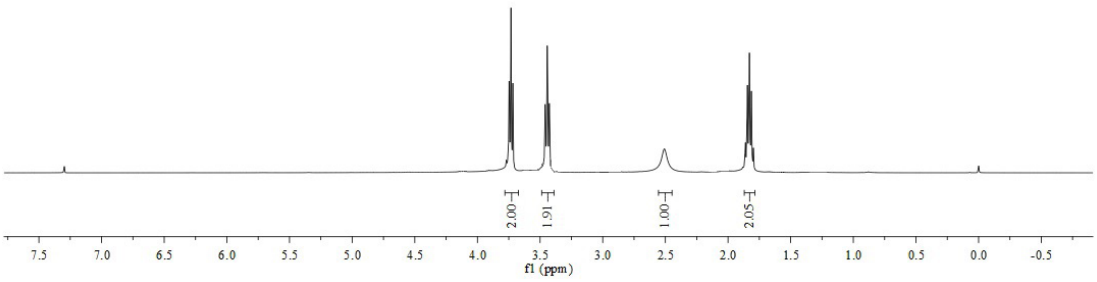


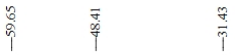
Figure S8(a) Cell viability of Hela cells after 48 h exposure to different concentrations of PMPC-Dns and PEG-*b*-poly(MPC) at 37℃. (b)PMPC-Dns micelles treated with high concentrations of bovine serum albumin in the absence of Sec.

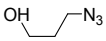
^{1}H NMR and ^{13}C NMR



Chemical Formula: $C_3H_7N_3O$
Molecular Weight: 101.11







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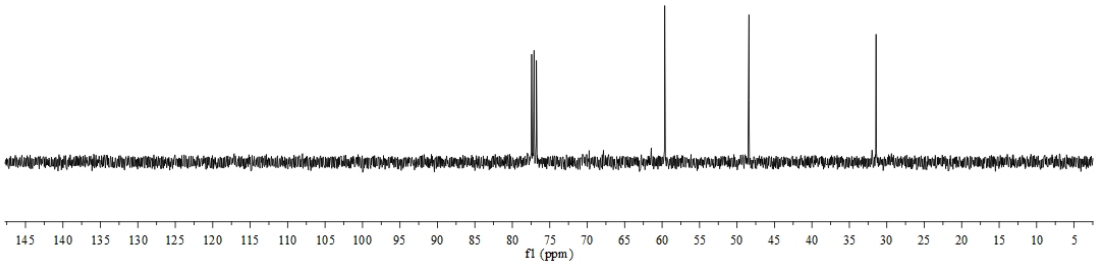
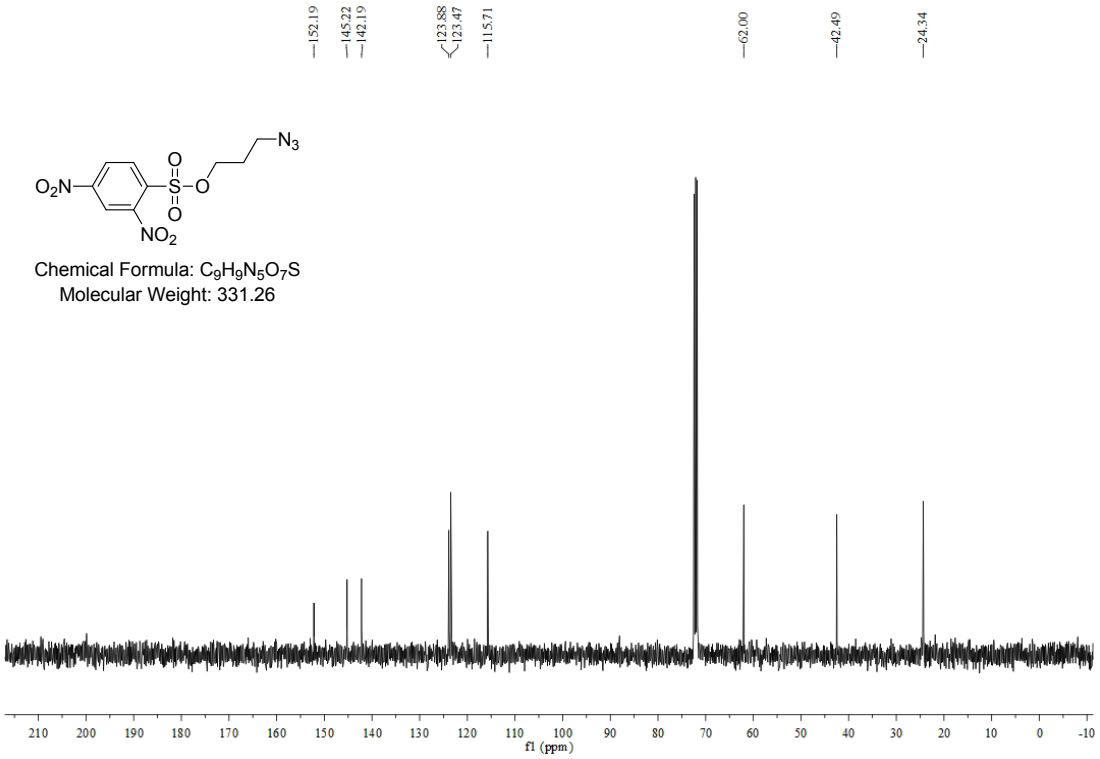
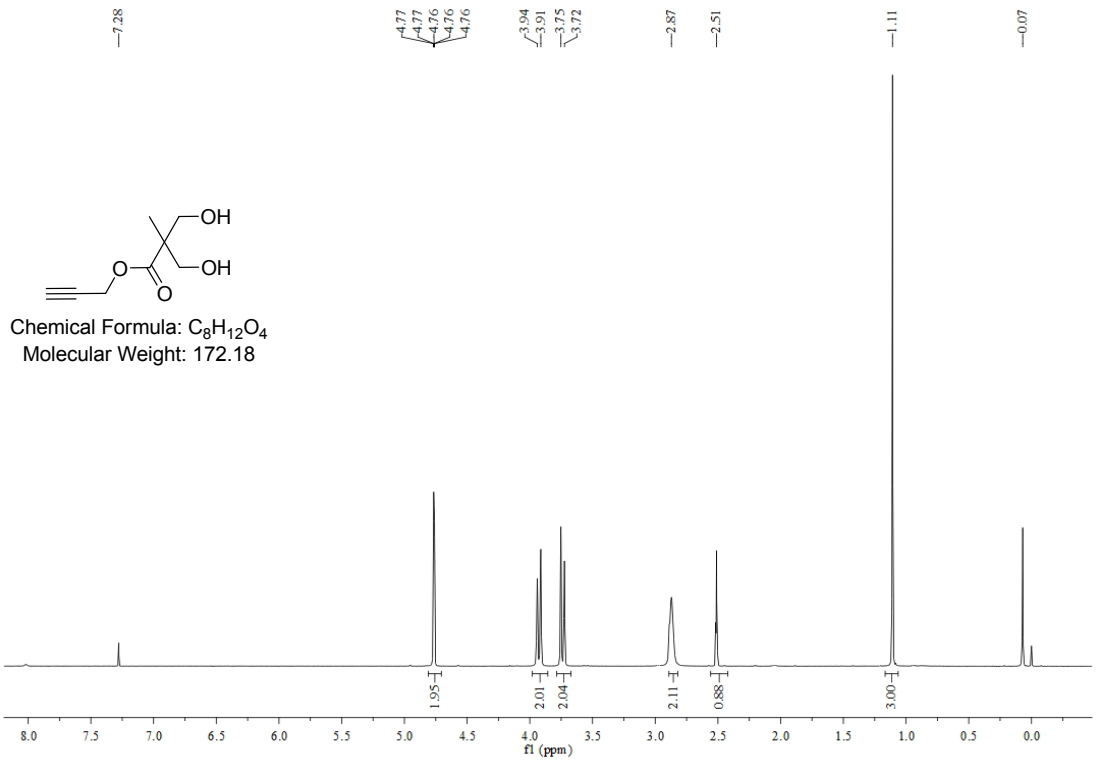
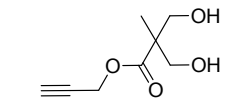


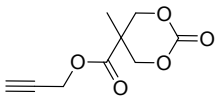




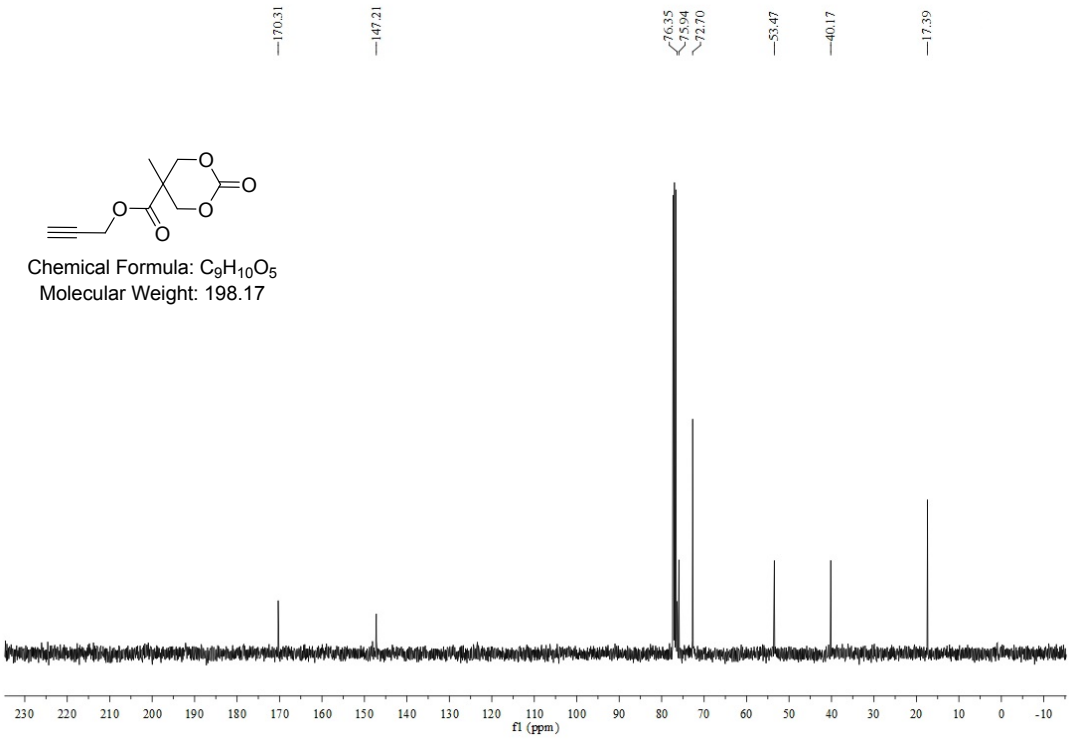
Chemical Formula: $C_8H_{12}O_4$
Molecular Weight: 172.18



Chemical Formula: $C_8H_{12}O_4$
Molecular Weight: 172.18



Chemical Formula: $C_9H_{10}O_5$
Molecular Weight: 198.17


170.31
147.21
76.35
75.94
72.70
53.47
40.17
17.39
O
O
O
O
O
Chemical Formula: $C_9H_{10}O_5$
Molecular Weight: 198.17
230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)