Electronic Supplementary Information

A Novel Post-Polymerization Modification Route to Functional Poly(disubstituted acetylenes) Through Phenol-Yne Click Reaction

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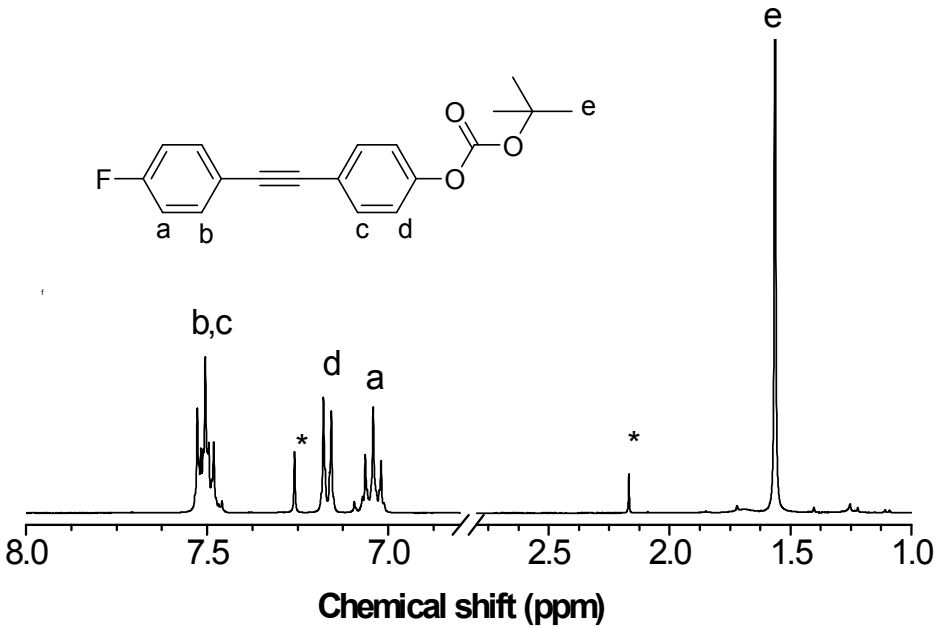


Figure S1. ^{1}H NMR spectra of M**2** in chloroform-*d*. The solvent peak is are marked with asterisks.

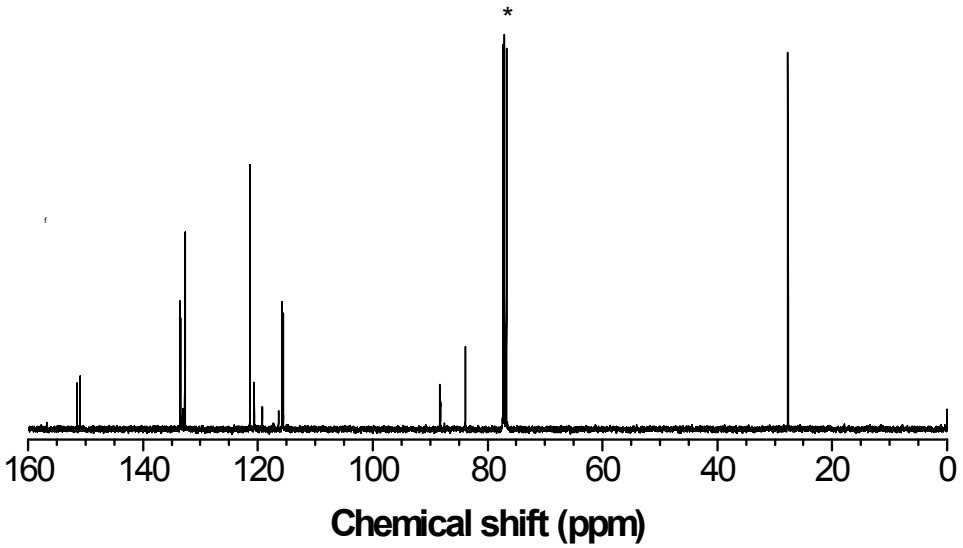


Figure S2. ^{13}C NMR spectra of M**2** in chloroform-*d*. The solvent peak is marked with an asterisk.

Table S1 Polymerization of M**2** in the presence of transition catalysts[a]

entry	Catalyst	temp. (°C)	yield (%)	M_w[b]	M_w/M_n[b]
1	WCl_6-Ph_4Sn	90	< 10	920	1.18
2	WCl_6-Ph_4Sn	80	< 10	1180	1.26
3	WCl_6-Ph_4Sn	60	trace		
4	WCl_6-Ph_4Sn	Rt	trace		
5	$TaCl_5$- *n*-Bu_4Sn	80	0		
6	$MoCl_5$-*n*-Bu_4Sn	80	0		

[a] Polymerization were carried in toluene the N_2 for 24 h. $[M_2]_0$ = 0.2 M. [cat] = [co-cat] = 0.02 M. Catalysts were aged for 10 minutes before initiating the polymerization. [b] Determined by GPC in THF on the basis of a polystyrene calibration at 40 °C.

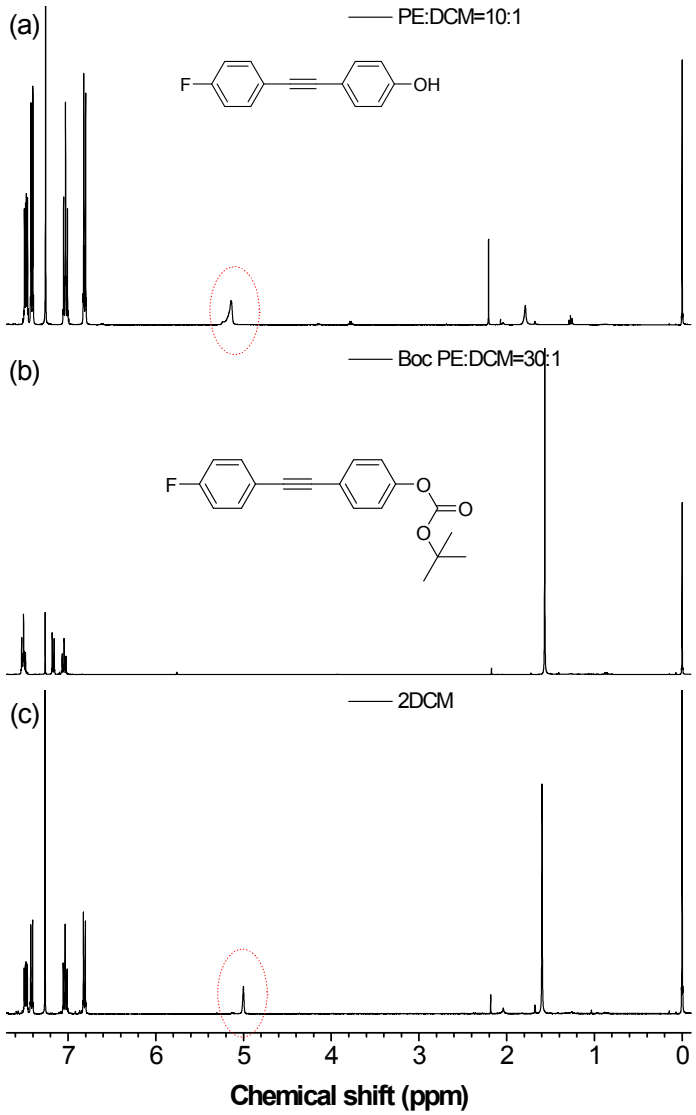


Figure S3. ^{1}H NMR M**2** in different solvents. The solvent peaks are marked with circles.

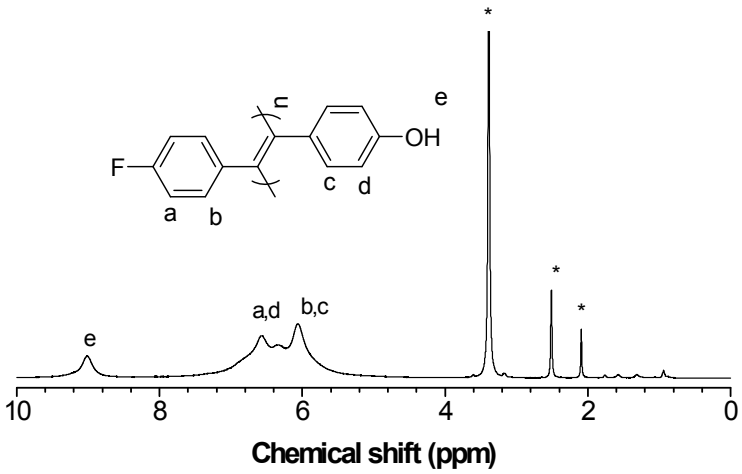


Figure S4. ^{1}H NMR spectra of precursor polymer P**1** in DMSO-d6. The solvent peaks are marked with asterisks.

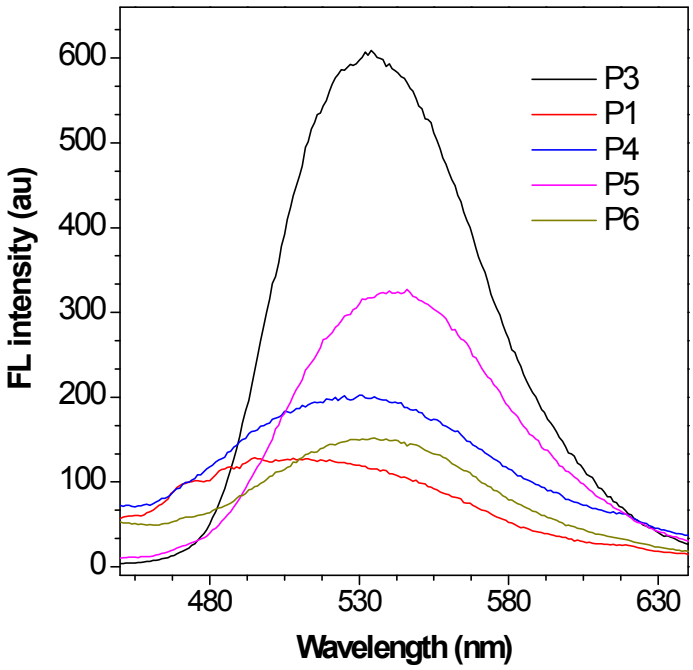


Figure S5. Fluorescence (FL) spectra of solid films (P**1**, P**3**~ P**6**) casted on glass substrates. Excitation at 410 nm.

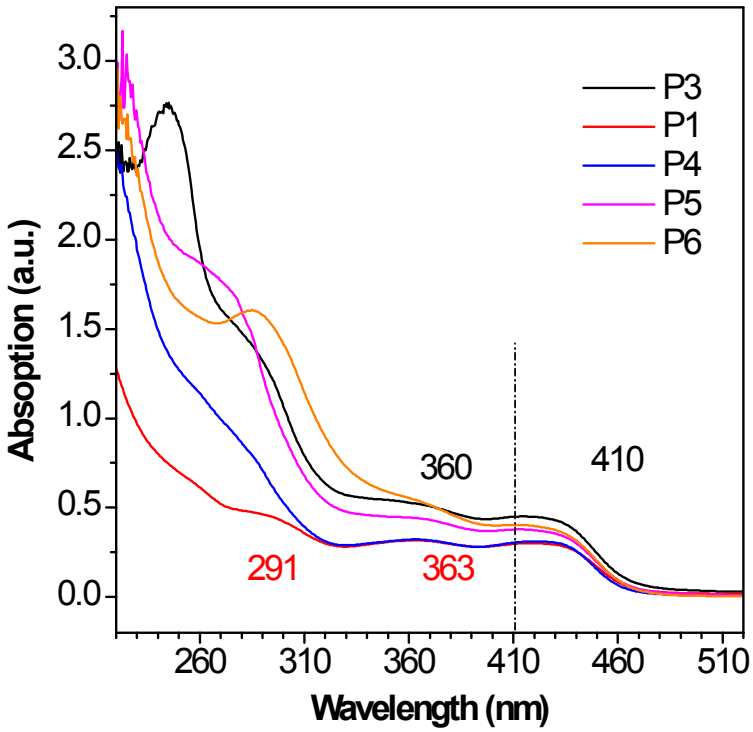


Figure S6. UV-visible absorption spectra of the polymers in the THF solution (100 μM).

Elemental Composition Report **Page 1**

Tolerance = 0.9 mDa / DBE: min = -1.5, max = 50.0
Element prediction: Off

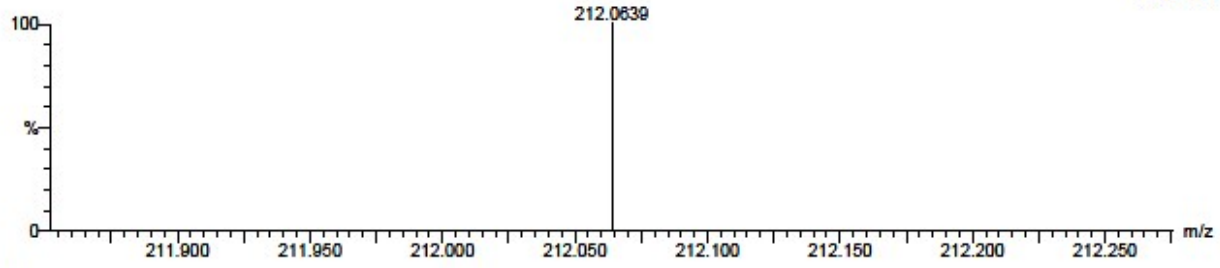
Monoisotopic Mass, Odd and Even Electron Ions
51 formula(e) evaluated with 1 results within limits (up to 70 best isotopic matches for each mass)
Elements Used:
C: 0-50 H: 0-100 O: 0-6 F: 1-3

GCT Premier ZJU
TOF MS EI+

26-Nov-2015

wwj-fep 334 (2.177)

1.81e+003



Minimum:				-1.5		
Maximum:		0.9	10.0	50.0		
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	Formula
212.0639	212.0637	0.2	0.9	10.0	5546903.0	C14 H9 O F

Figure S7. Mass spectrum for M**1**.

Elemental Composition Report **Page 1**

Tolerance = 3.0 mDa / DBE: min = -1.5, max = 50.0
Element prediction: Off

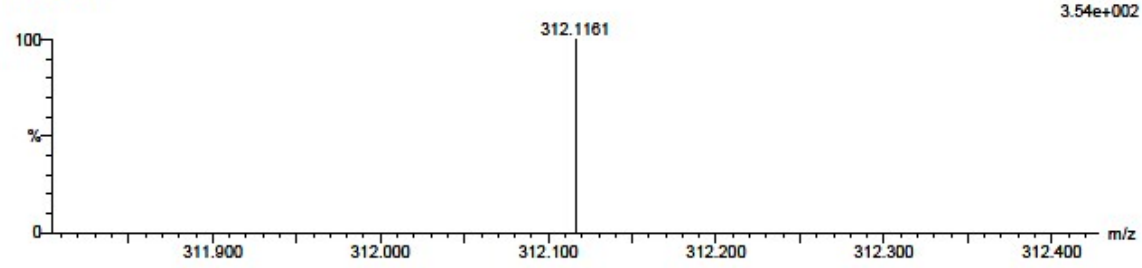
Monoisotopic Mass, Odd and Even Electron Ions
27 formula(e) evaluated with 1 results within limits (up to 70 best isotopic matches for each mass)
Elements Used:
C: 0-60 H: 0-100 O: 0-6 F: 1-1

GCT Premier ZJU
TOF MS EI+

18-Jul-2016

wwj-fep-boc 334 (2.177)

3.54e+002



Minimum:				-1.5		
Maximum:		3.0	10.0	50.0		
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	Formula
312.1161	312.1162	-0.1	-0.3	11.0	5546187.5	C19 H17 O3 F

Figure S8. Mass spectrum for M**2**.

Elemental Composition Report **Page 1**

Tolerance = 0.9 mDa / DBE: min = -1.5, max = 50.0
Element prediction: Off

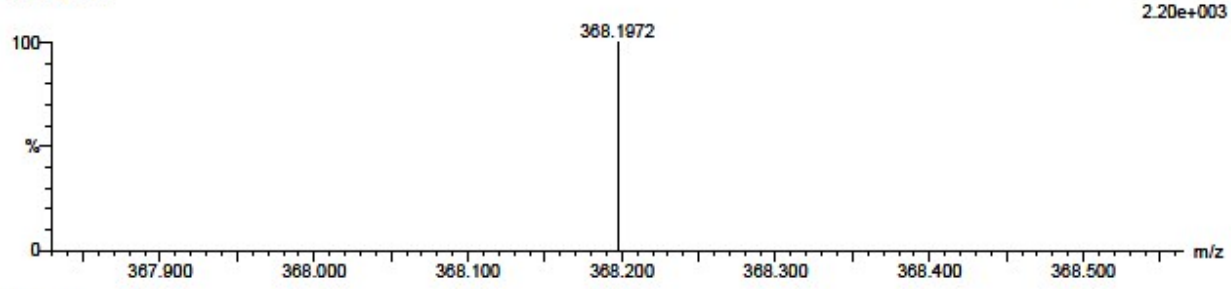
Monoisotopic Mass, Odd and Even Electron Ions
165 formula(e) evaluated with 1 results within limits (up to 70 best isotopic matches for each mass)
Elements Used:
C: 0-50 H: 0-100 O: 0-6 F: 1-3 Si: 1-2

GCT Premier ZJU
TOF MS EI+

26-Nov-2015

wwj-fep-si 561 (3.010)

2.20e+003



Minimum:				-1.5		
Maximum:		0.9	10.0	50.0		
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	Formula
368.1972	368.1972	0.0	0.0	10.0	5547117.0	C23 H29 O F Si

Figure S9. Mass spectrum for M**3**.

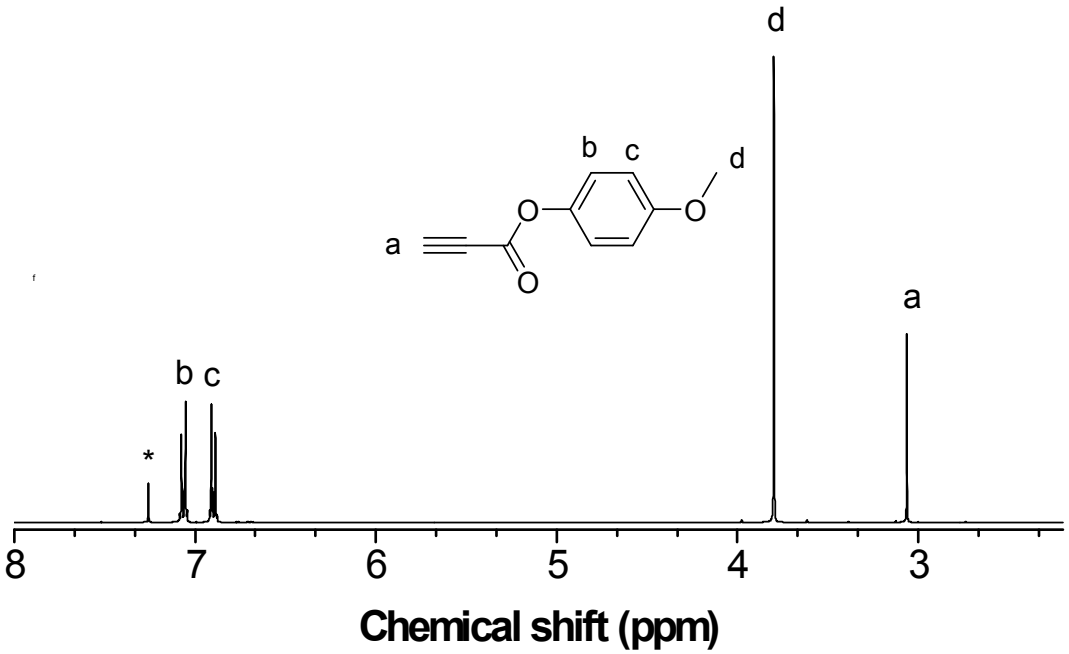


Figure S10. ^{1}H NMR of the modifier para-methoxyphenol propiolate in $CDCl_3$. The solvent peak is marked with an asterisk.

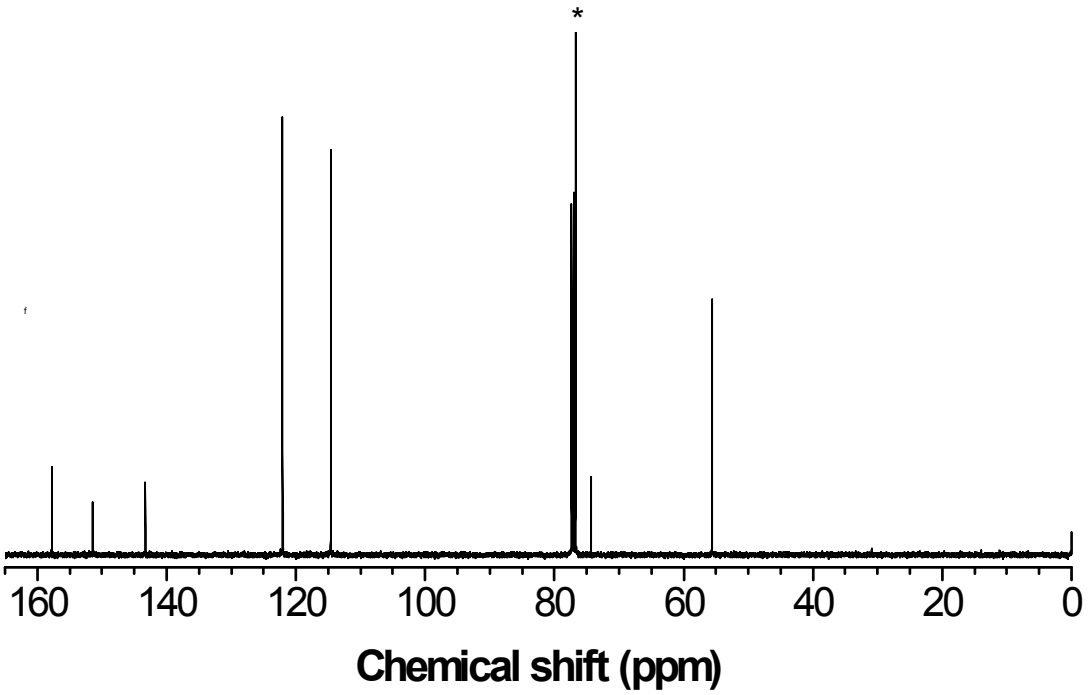


Figure S11. ^{13}C NMR spectrum of the modifier *para*-methoxyphenol propiolate in $CDCl_3$. The solvent peak is marked with an asterisk.

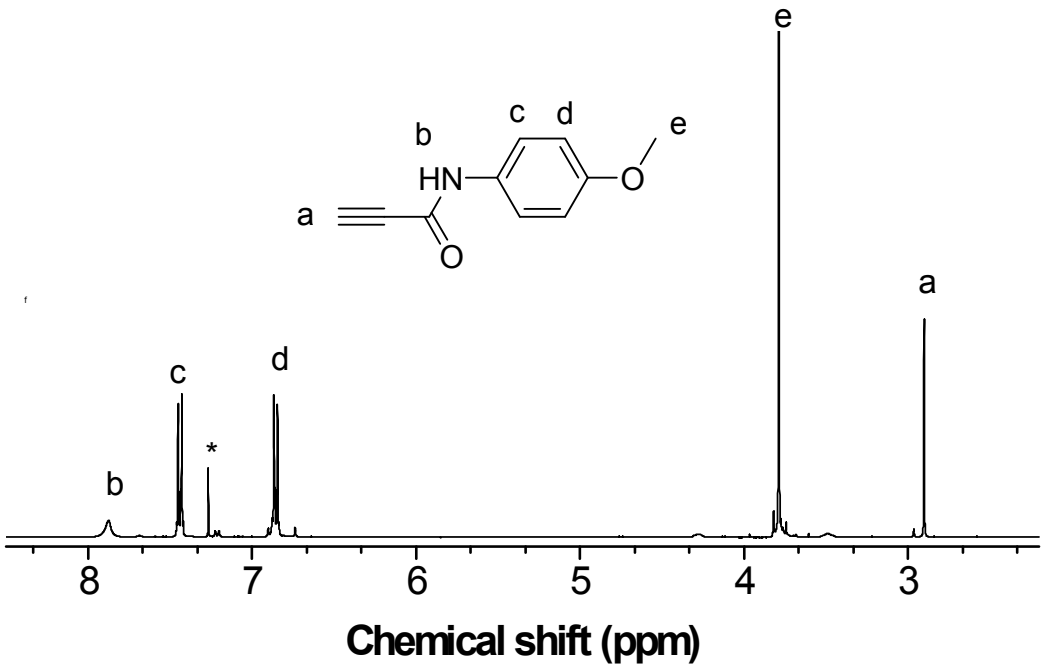


Figure S12. ^{1}H NMR spectrum for the modifier of *para*-methoxyl phenyl propiolamide in $CDCl_3$**.** The solvent peak is marked with an asterisk.

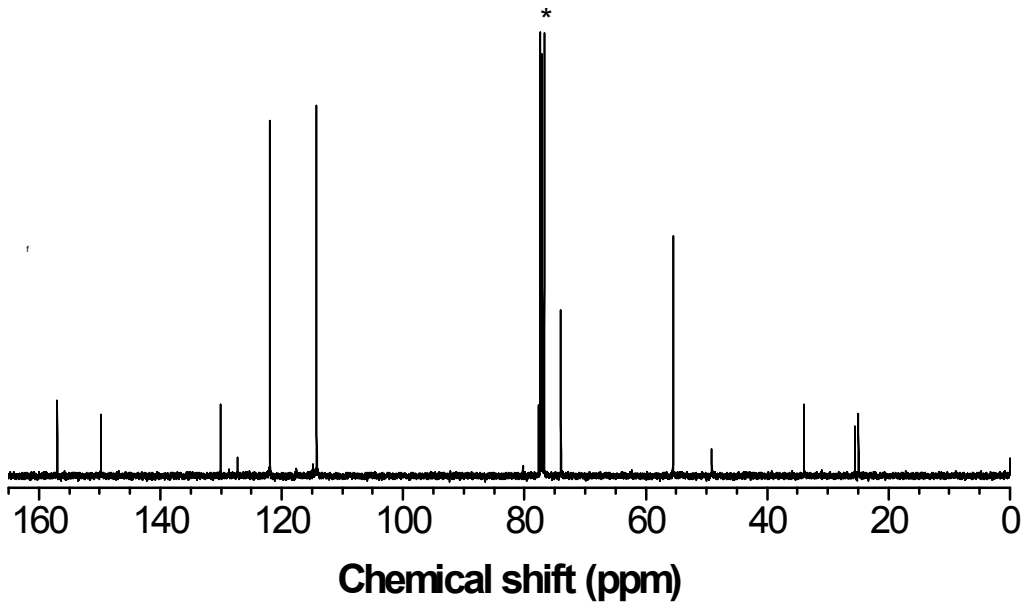


Figure S13. ^{13}C NMR spectrum for the modifier of *para*-methoxyl phenyl propiolamide in $CDCl_3$. The solvent peak is marked with an asterisk.