Electronic Supplementary Material (ESI) for Polymer Chemistry.
This journal is © The Royal Society of Chemistry 2019

Electronic Supporting Information for

Substituted Stilbene-based Oxime Esters used as Highly Reactive Wavelength-dependent Photoinitiators for LEDs Photopolymerization

Shixiong Chen[a], Ming Jin*[,a], Jean-Pierre Malval*[,b], Jingming Fu[a], Fabrice Morlet-Savary[b], Haiyan Pan[a], Decheng Wan[a]

[a]*Department of Polymer Materials, School of Materials Science and Engineering, Tongji University, 4800 Caoan Road, Shanghai, 201804, P.R. China*
[b]*Institut de Science des Matériaux de Mulhouse, UMR CNRS 7361, Université de Haute-Alsace, 15 rue Jean Starcky, Mulhouse, 68057, France*
Correspondence to: M. Jin (mingjin@tongji.edu.cn), J.P. Malval (jean-pierre.malval@uha.fr)

Table of Contents

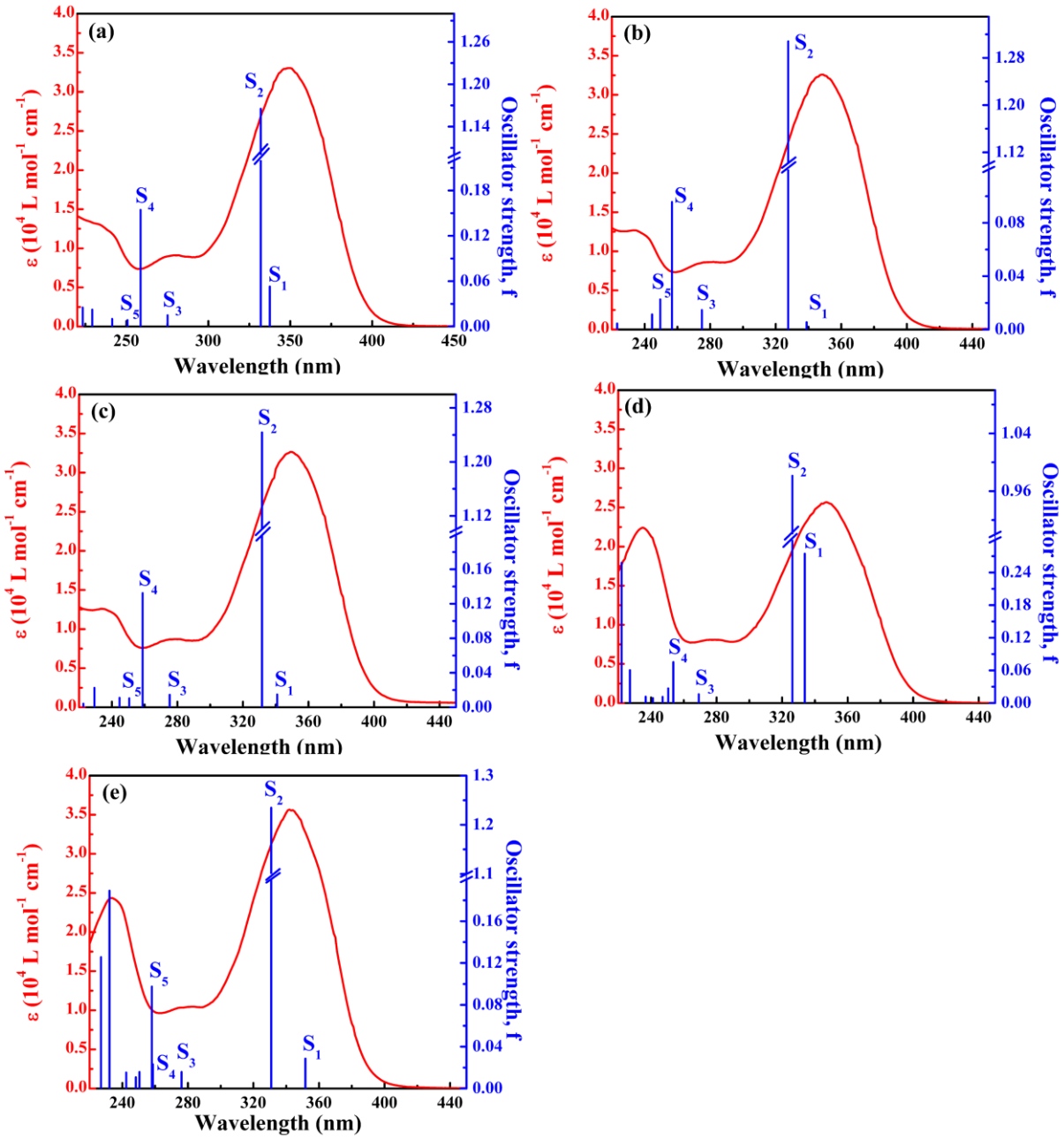

Fig. S1 The experimental spectra and theoretical spectra of (a) **MMM**, (b) **MME**, (c) **MMP**, (d)**MPE** and (e) **CPE** in ACN

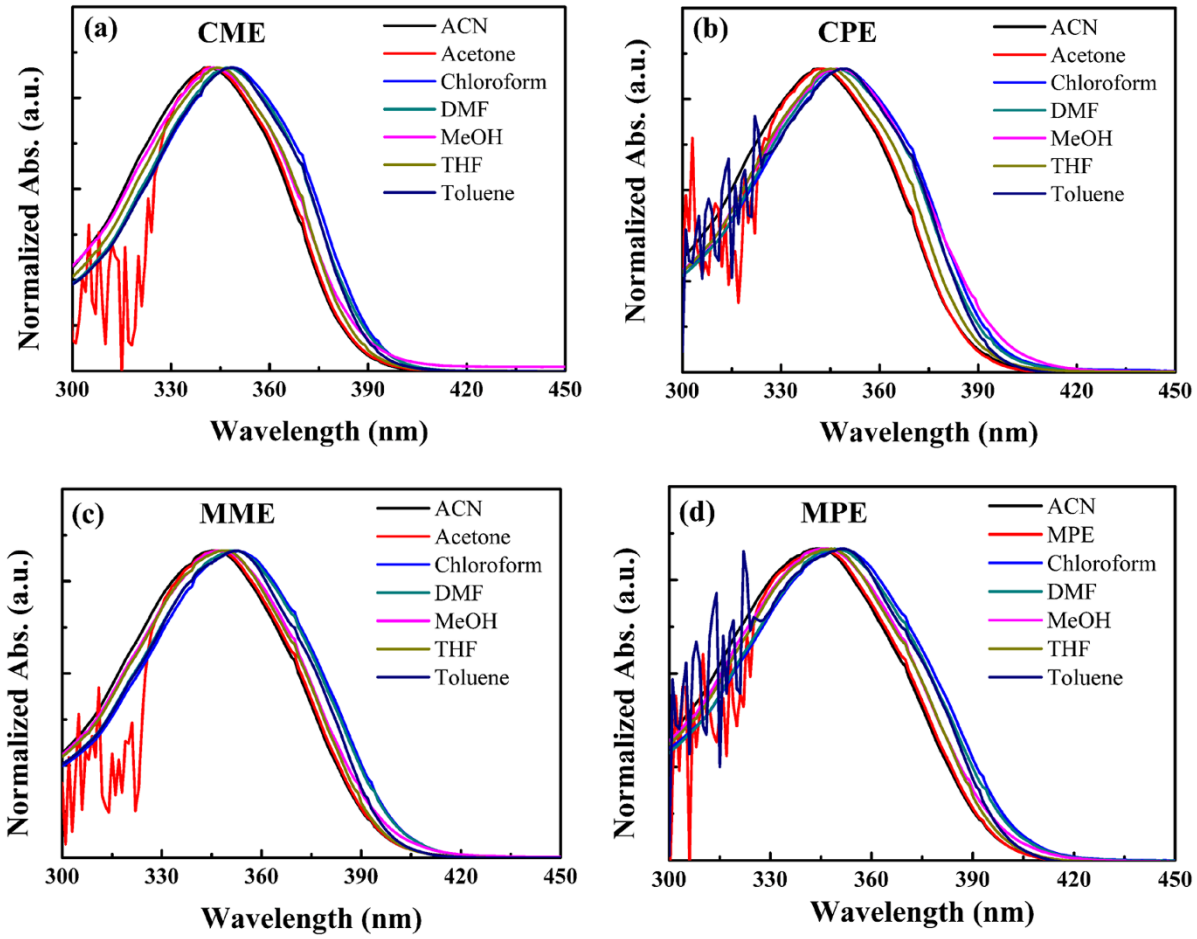

Fig. S2 The normalized UV-Vis spectrum of (a) **MME**, (b) **MPE**, (c) **CME** and (d) **CPE** in different solvents

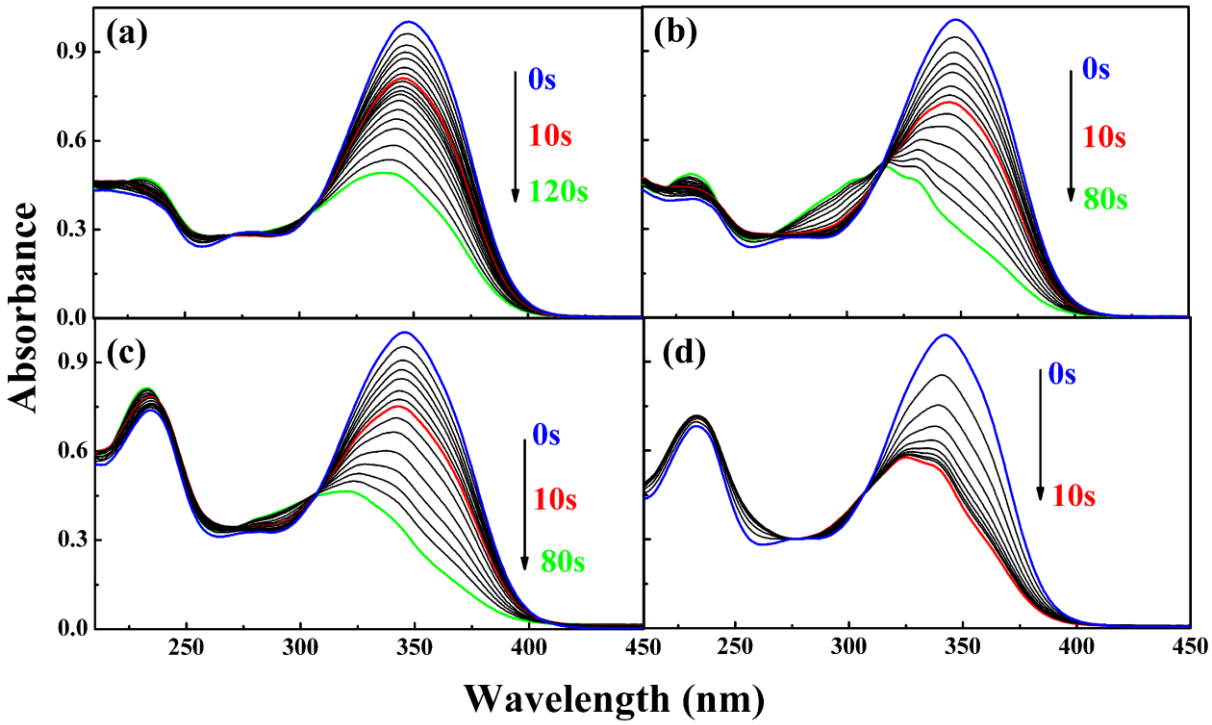

Fig. S3 Evolution of the absorption spectra of (a) **MMM**, (b) **MMP**, (c) **MPE** and (d) **CPE** in CAN

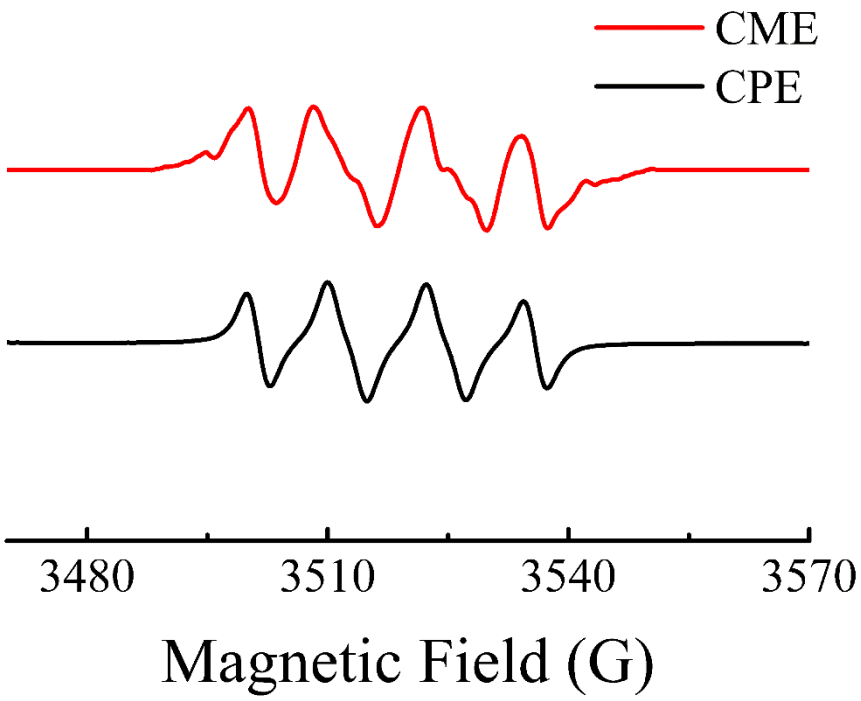

Fig. S4 ESR-ST spectra obtained after light irradiation of CME and CPE in benzene (DMPO is used as spin-trap reactant. For CME, a_N= 14.50 G, a_H= 21.51 G; for CPE, a_N= 14.86 G, a_H= 22.29 G).

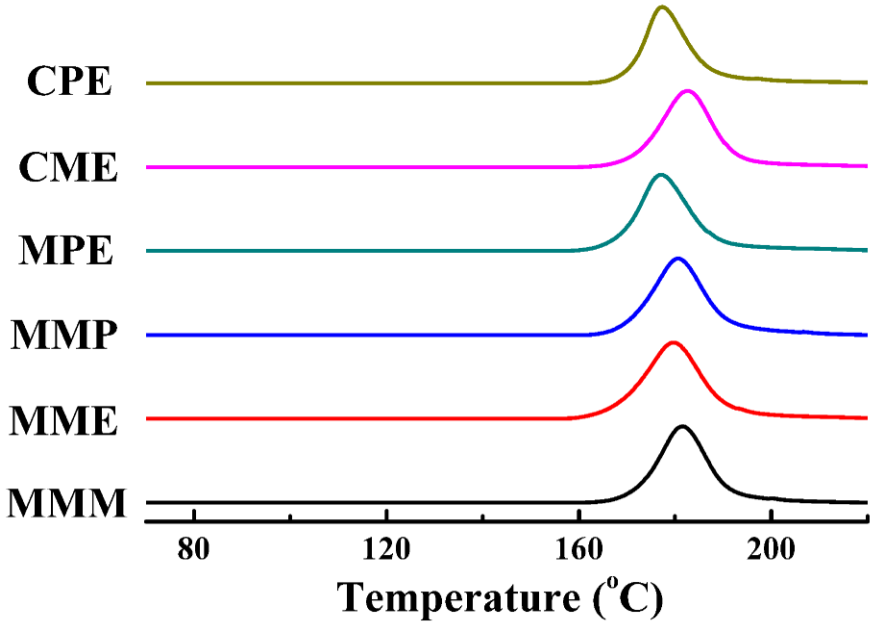

Fig. S5 The DSC curve of OXEs in air (1 wt% in TMPTA, 10 K min^{-1})

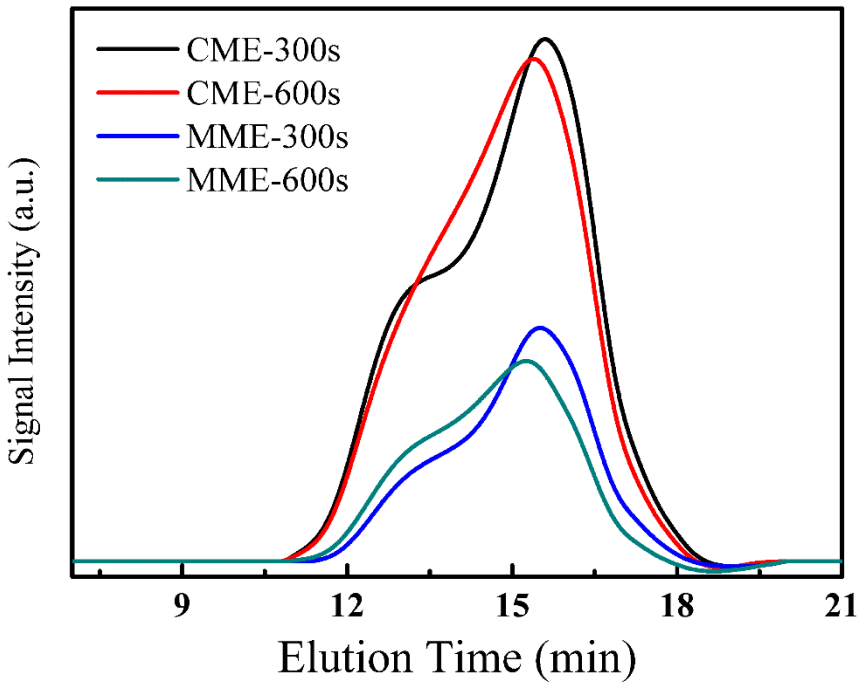

Fig. S6 The GPC elution curve using CME or MME as the photoinitiators.

OXEs	λ_{max} (nm)						
	ACN	Acetone	Chloroform	DMF	MeOH	THF	Toluene
CME	342	341	349	347	343	344	348
CPE	341	342	349	347	343	345	350
MME	348	347	353	352	349	348	348
MPE	344	345	351	349	347	348	352

Table S1 The maximum absorption wavelength (λ_{max}) of four OXEs in different solvents

	Relative changes of the integrated ^{1}H-NMR signal								
	1	1’	2	2’	3	3’	3’’	4	4’
0min	0	0	0	0	0	0	0	0	0
5min	-0.32	0.23	-0.13	0.12	-0.7	0.46	0.04	-0.73	0.47
10min	-0.88	0.62	-0.34	0.31	-0.98	0.68	0.16	-1.44	0.84
20min	-1.39	0.84	-0.63	0.43	-1.48	0.92	0.32	-2.19	1.32
30min	-1.63	0.78	-0.71	0.45	-1.76	0.98	0.57	-2.64	1.23

Table S2. The change of integral area of the hydrogens (ΔI, $\Delta I = I_t - I_0$. It is the integral area when irradiated for t minutes. I0 is the initial integral area of the origin peaks) at different time under irradiation at 365 nm LED (The integral area of peaks is calculated when the integral of all the aryl peaks are 10.)

OXE	Irradiation Time	M_n ($\times 10^5$ g mol^{-1})	M_w ($\times 10^5$ g mol^{-1})	M_w/M_n	Conversion (%)
CME	300s	1.47	5.99	4.07	20.59
	600s	1.65	5.94	3.60	33.33
MME	300s	1.28	4.01	3.13	11.80
	600s	1.84	5.78	3.14	22.59

Table S3 GPC data results using CME or MME (0.1 wt%) as photoinitiator

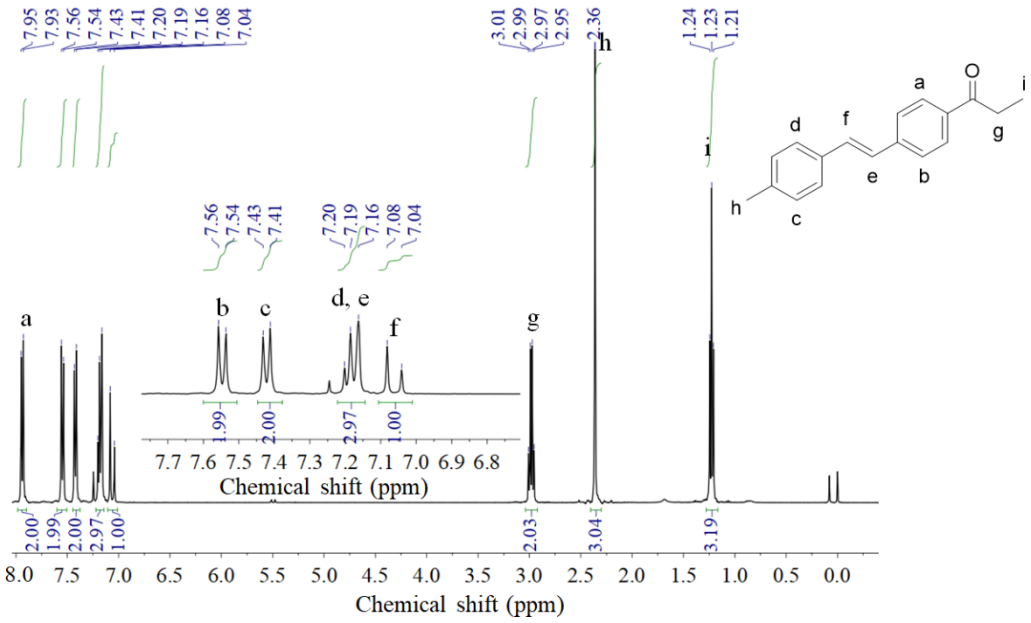

Fig. S7 ^{1}H-NMR spectra of **1a** in $CDCl_3$

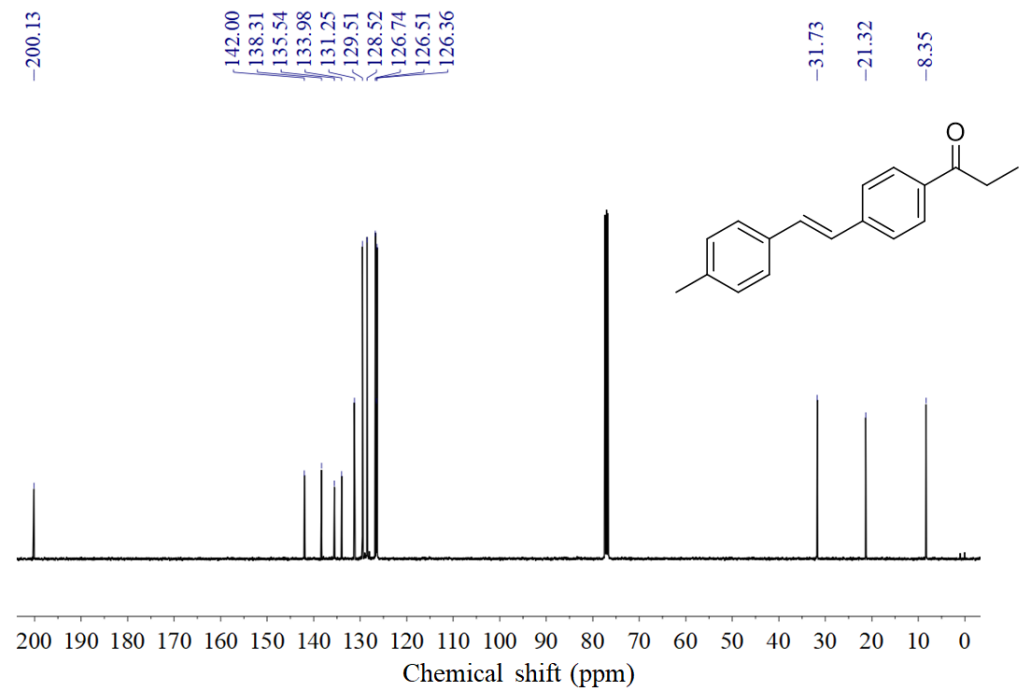

Fig. S8 ^{13}C-NMR spectrum of **1a** in $CDCl_3$

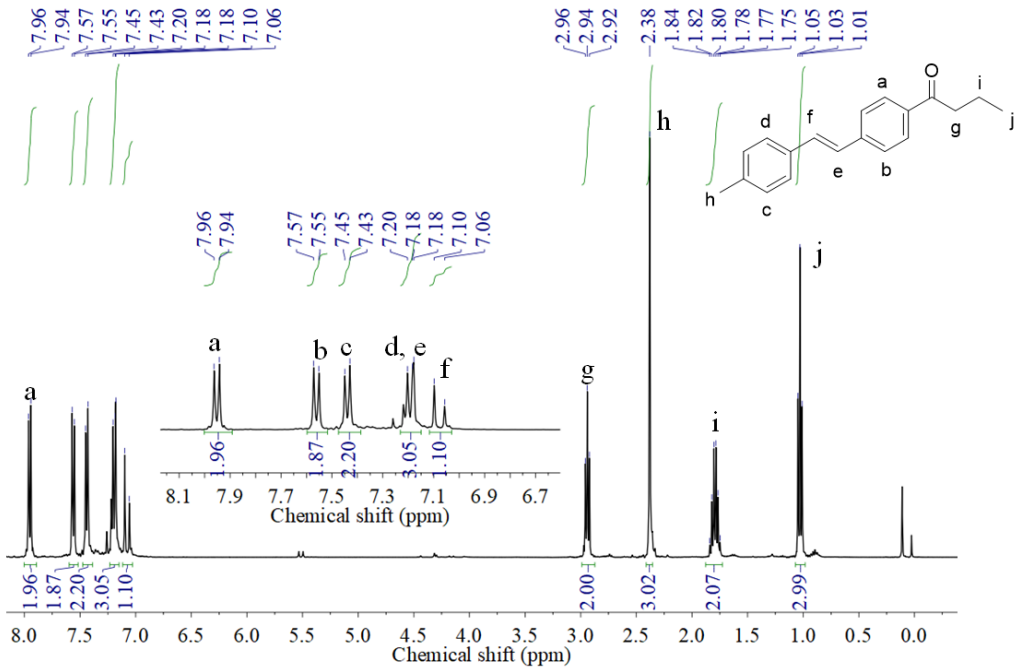

Fig. S9 ^{1}H-NMR spectrum of **1b** in $CDCl_3$

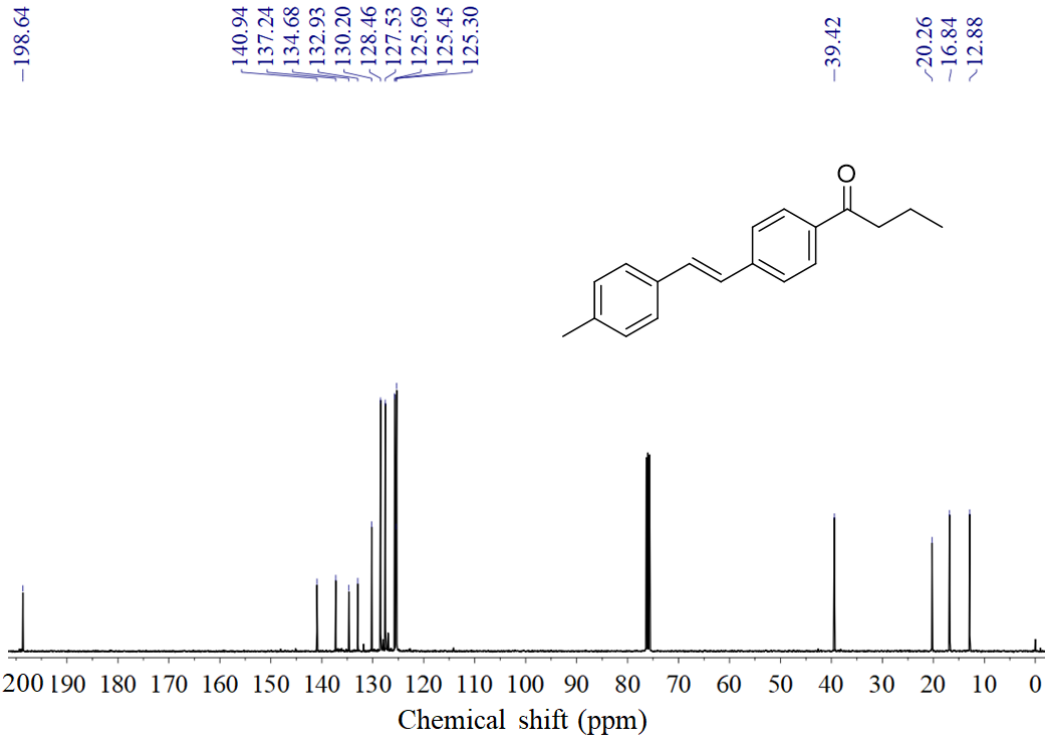

Fig. S10 ^{13}C-NMR spectrum of **1b** in $CDCl_3$

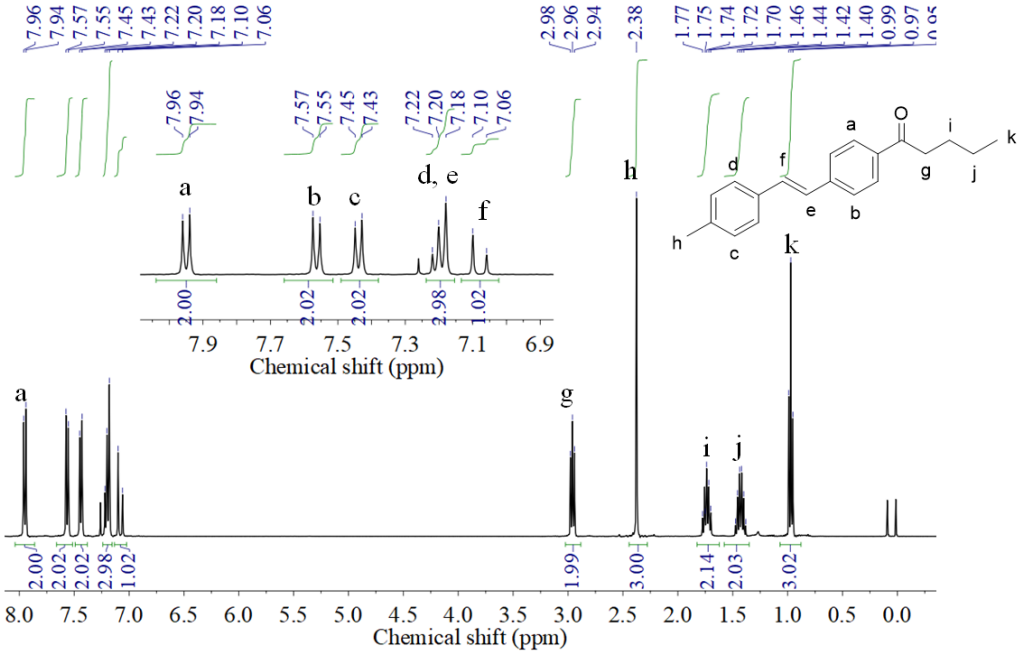

Fig. S11 ^{1}H-NMR spectrum of **1c** in $CDCl_3$

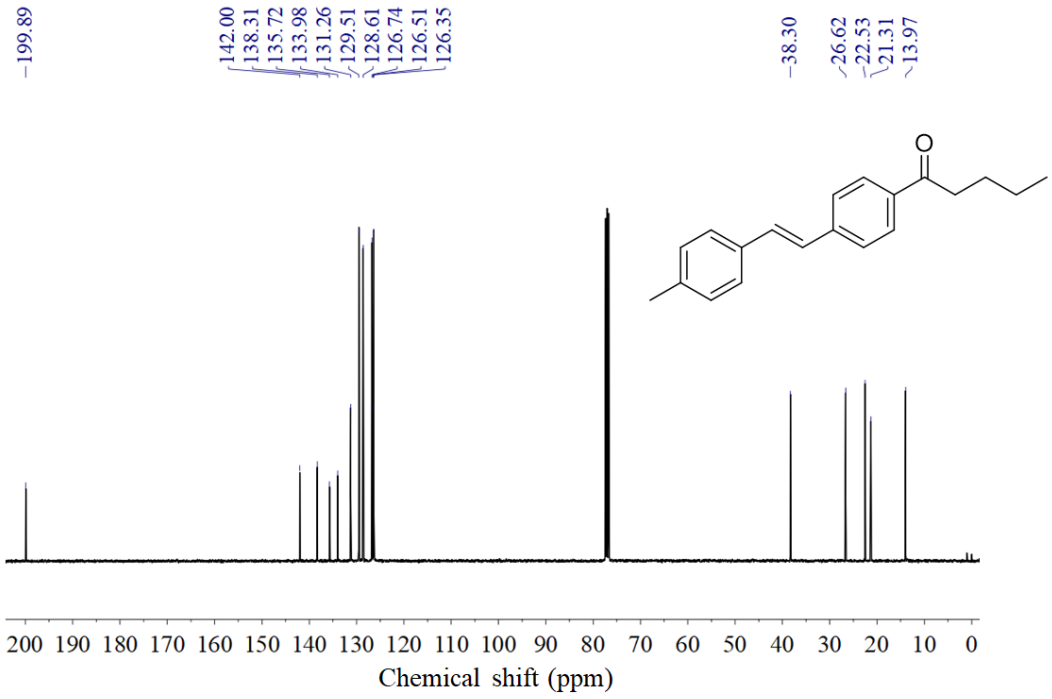

Fig. S12 ^{13}C-NMR spectrum of **1c** in $CDCl_3$

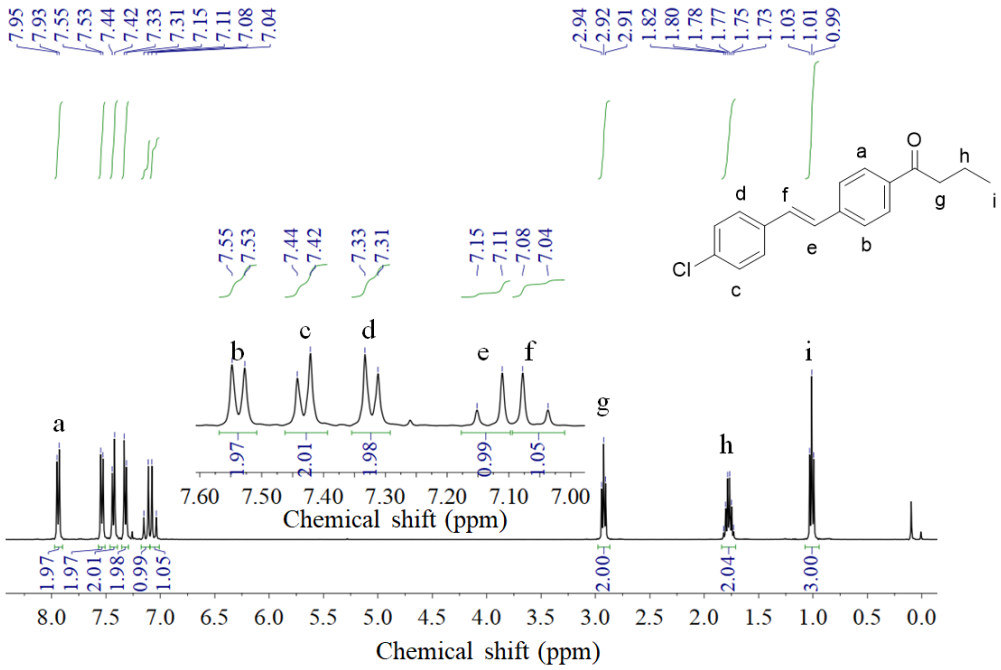

Fig. S13 ^{1}H-NMR spectrum of **1d** in $CDCl_3$

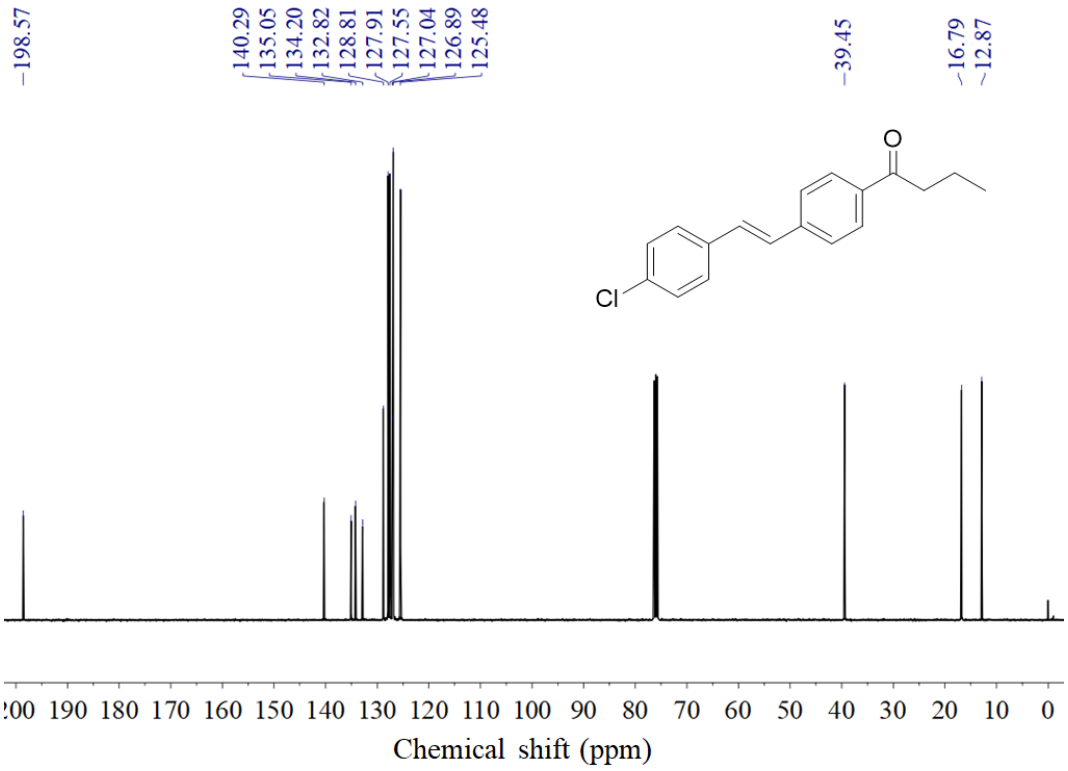

Fig. S14 ^{13}C-NMR spectrum of **1d** in $CDCl_3$

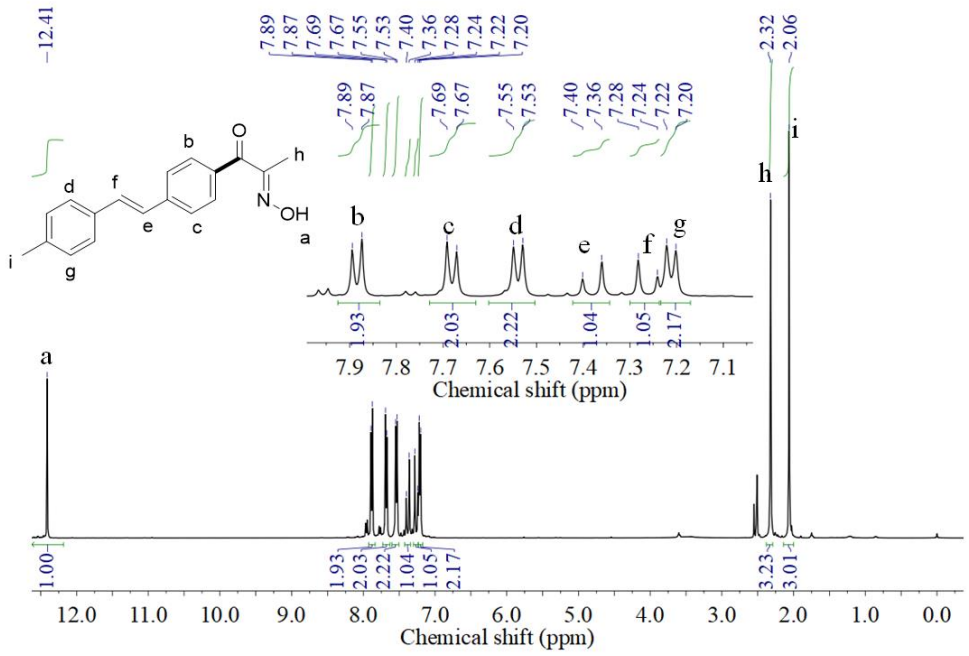

Fig. S15 ^{1}H-NMR spectrum of **2a** in DMSO-d_6

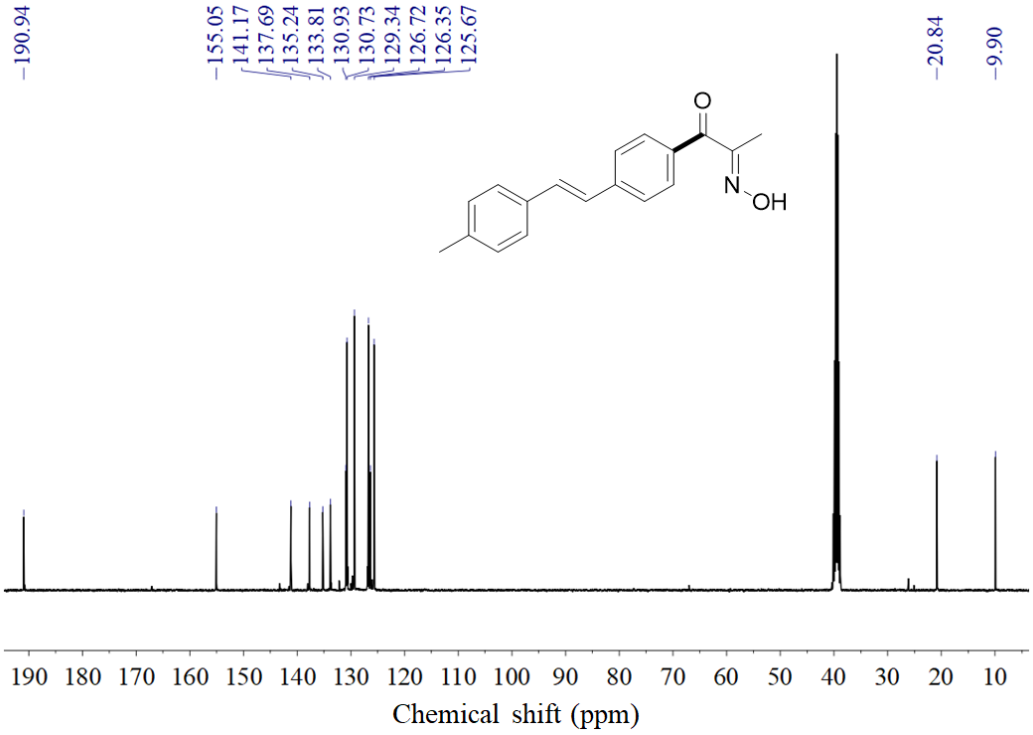

Fig. S16 ^{13}C-NMR spectra of **2a** in DMSO-d_6

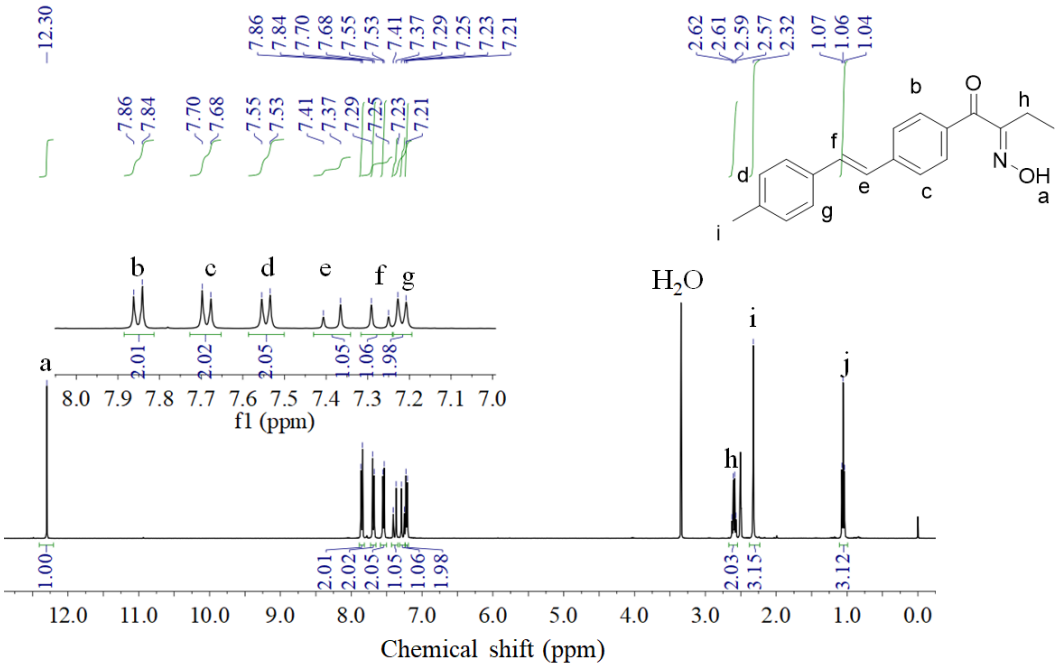

Fig. S17 [1]H-NMR spectrum of **2b** in DMSO-d_6

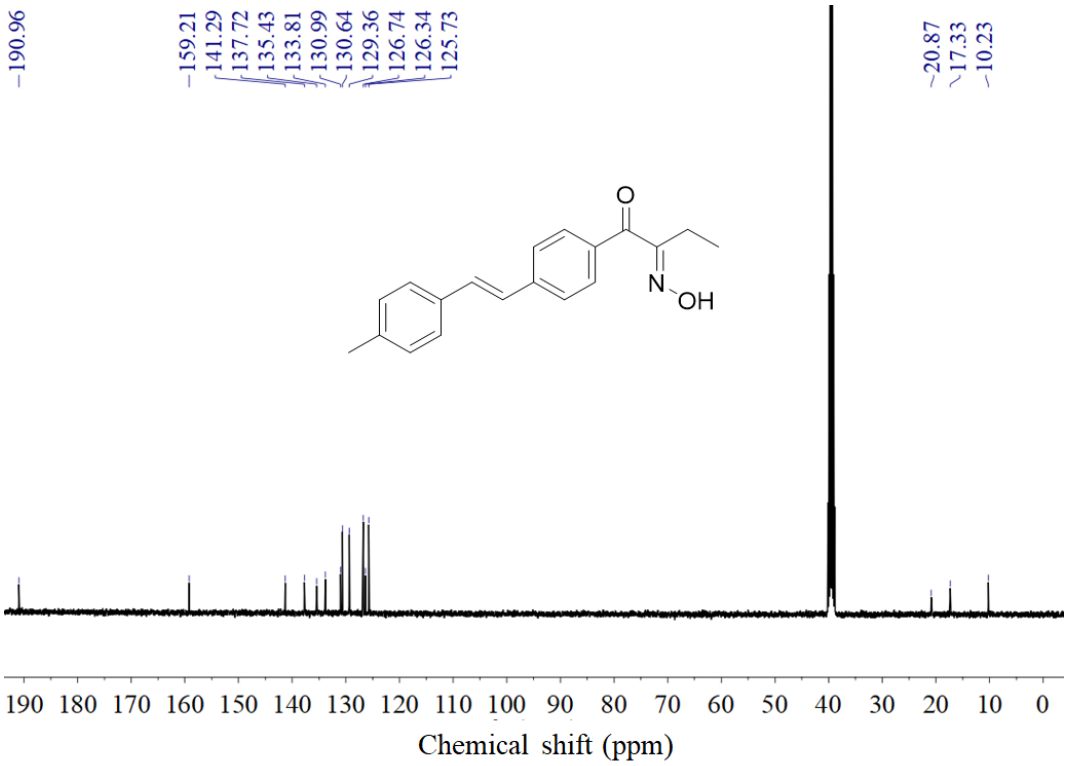

Fig. S18 [13]C-NMR spectrum of **2b** in DMSO-d_6

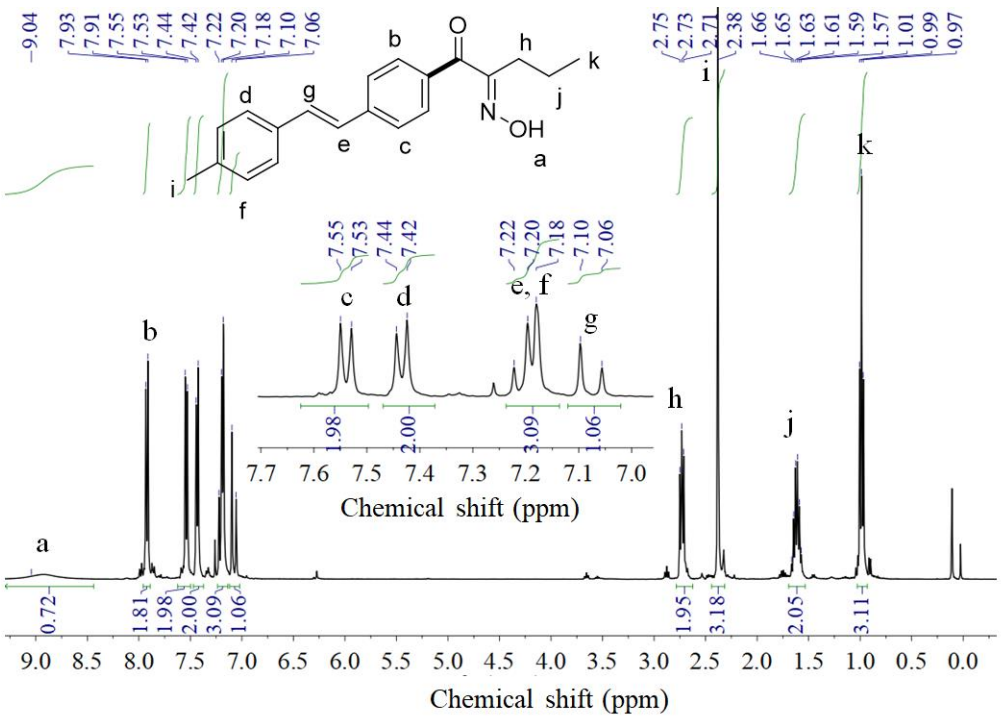

Fig. S19 ^{1}H-NMR spectrum of **2c** in $CDCl_3$

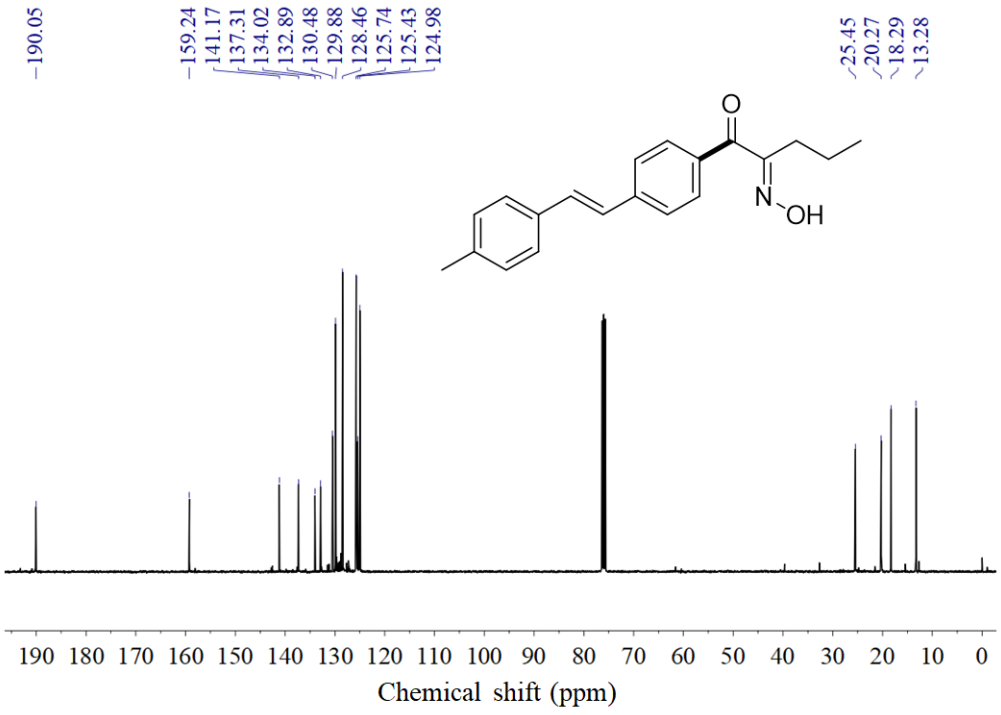

Fig. S20 ^{13}C-NMR spectrum of **2c** in $CDCl_3$

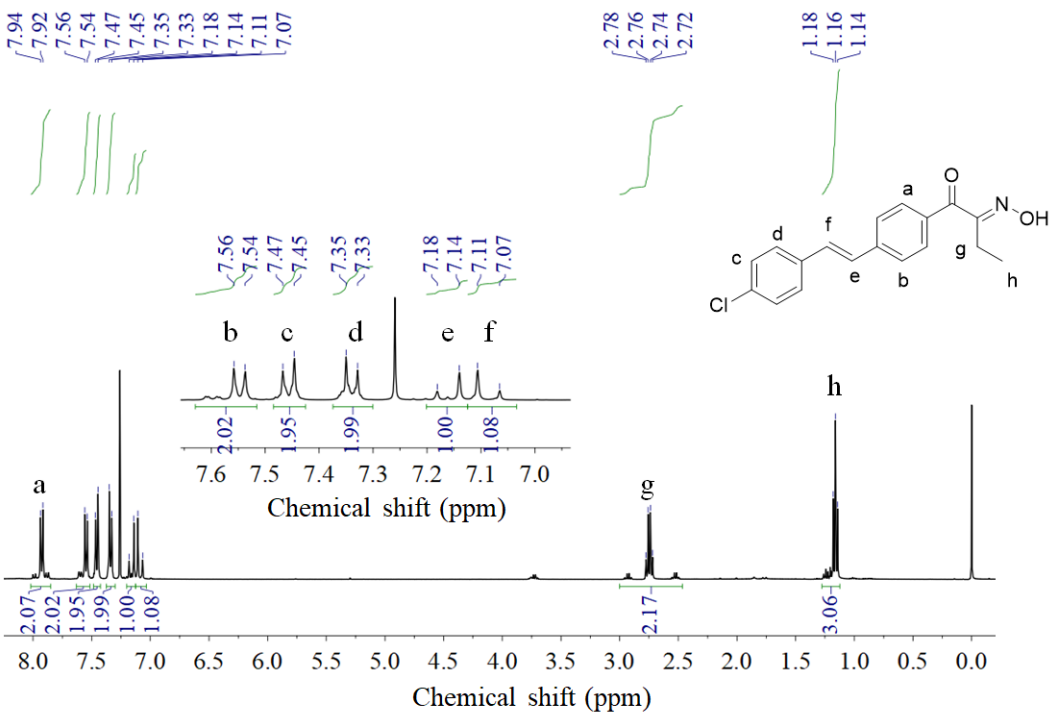

Fig. S21 ^{1}H-NMR spectrum of **2d** in $CDCl_3$

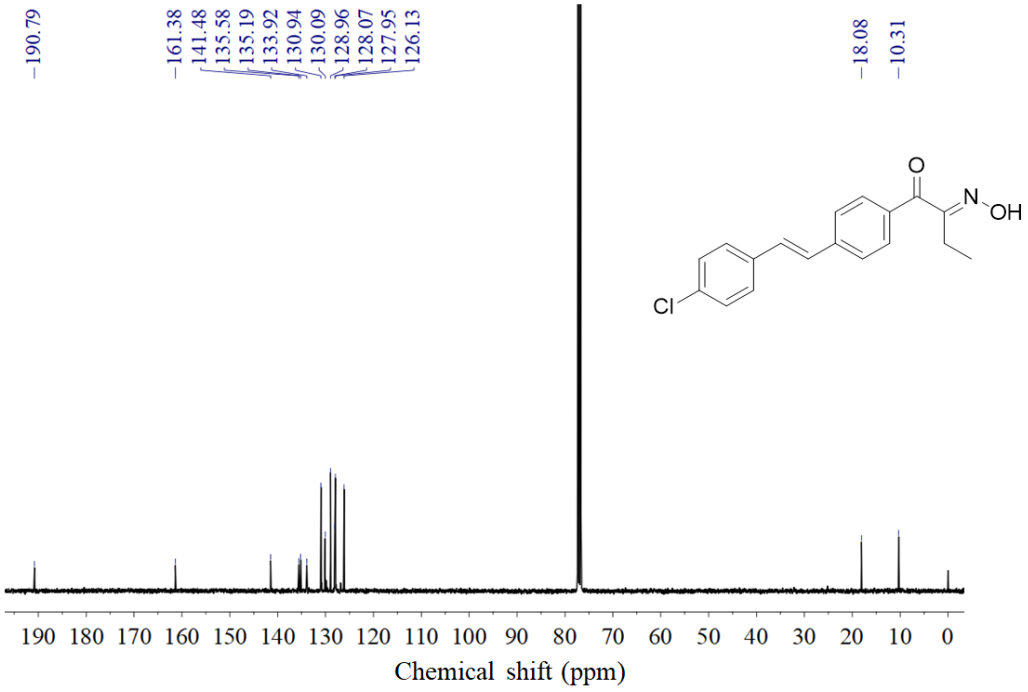

Fig. S22 ^{13}C-NMR spectrum of **2d** in $CDCl_3$

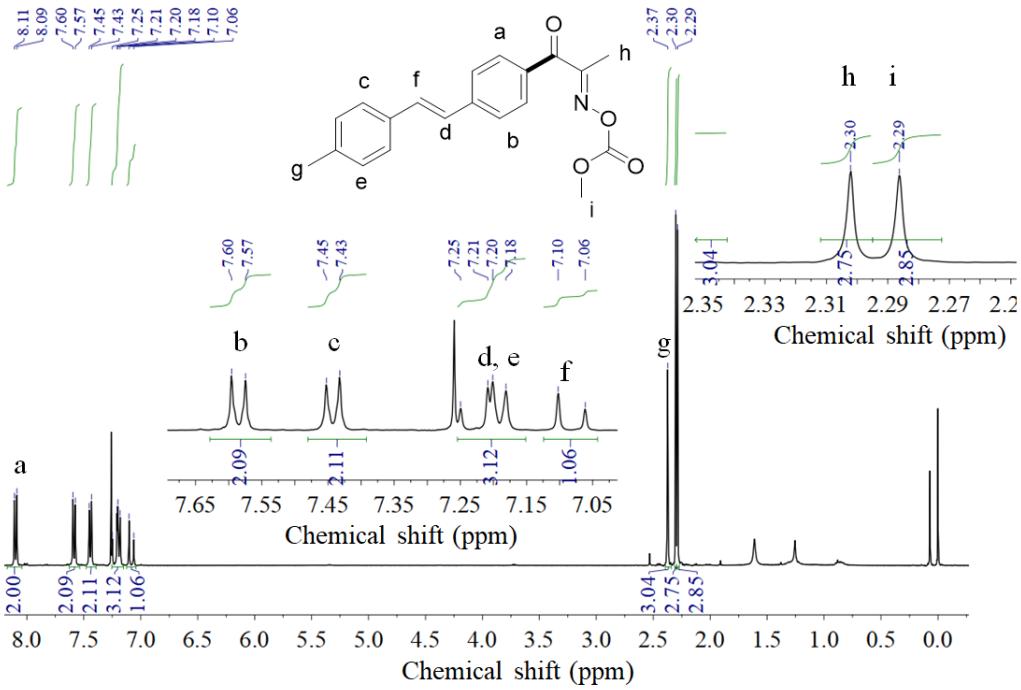

Fig. S23 ^{1}H-NMR spectrum of **MMM** in $CDCl_3$

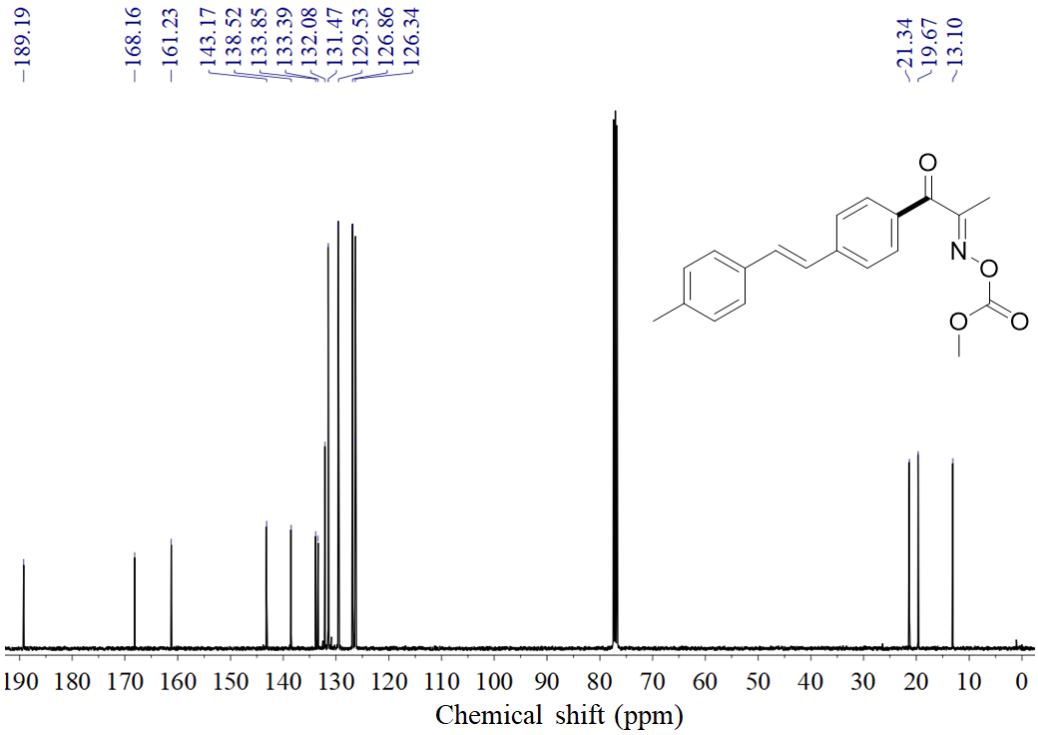

Fig. S24 ^{13}C-NMR spectrum of **MMM** in $CDCl_3$

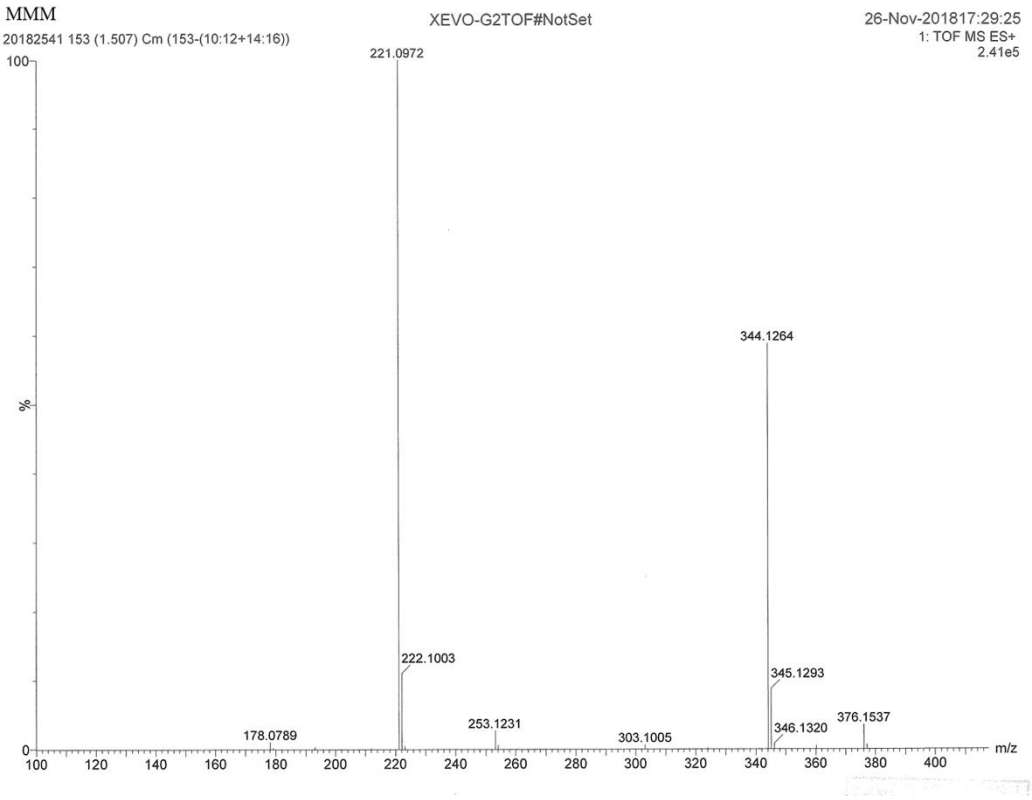

Fig. S25 MS of **MMM**

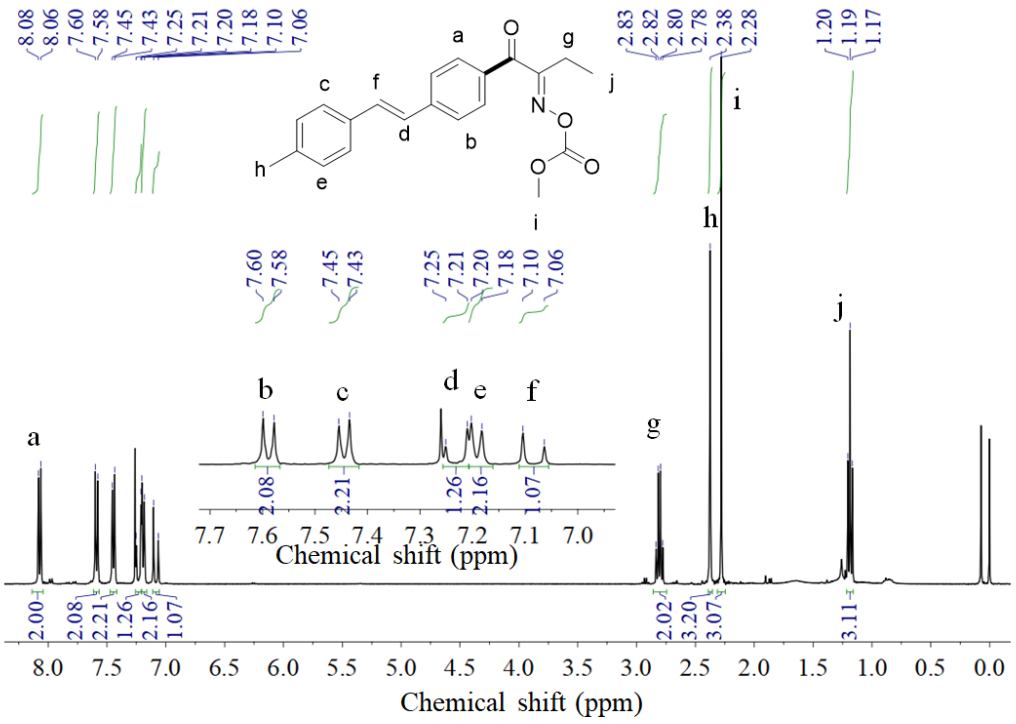

Fig. S26 ^{1}H-NMR spectrum of **MME** in $CDCl_3$

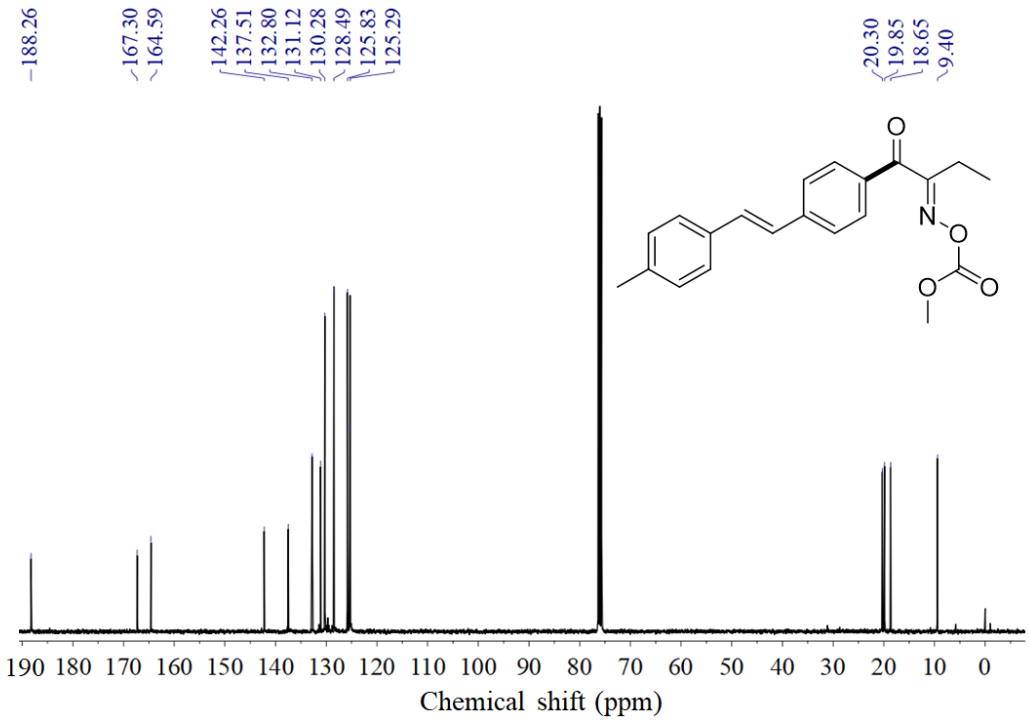

Fig. S27 ^{13}C-NMR spectrum of **MME** in $CDCl_3$

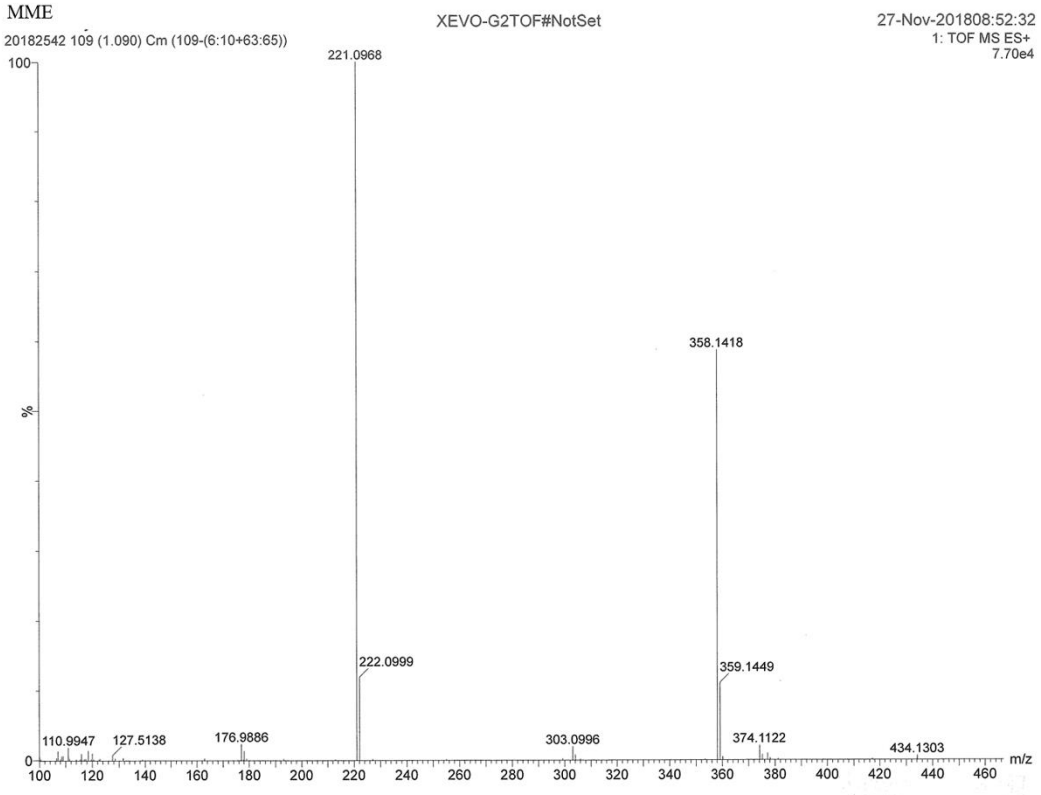

Fig. S28 MS of **MME**

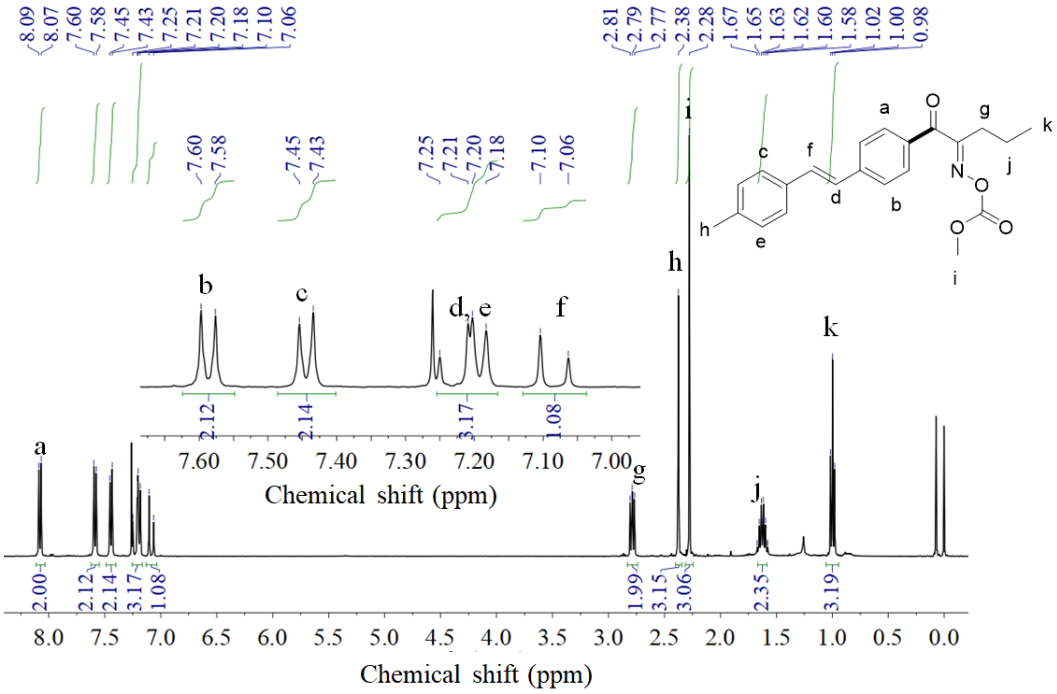

Fig. S29 ^{1}H-NMR spectrum of **MMP** in $CDCl_3$

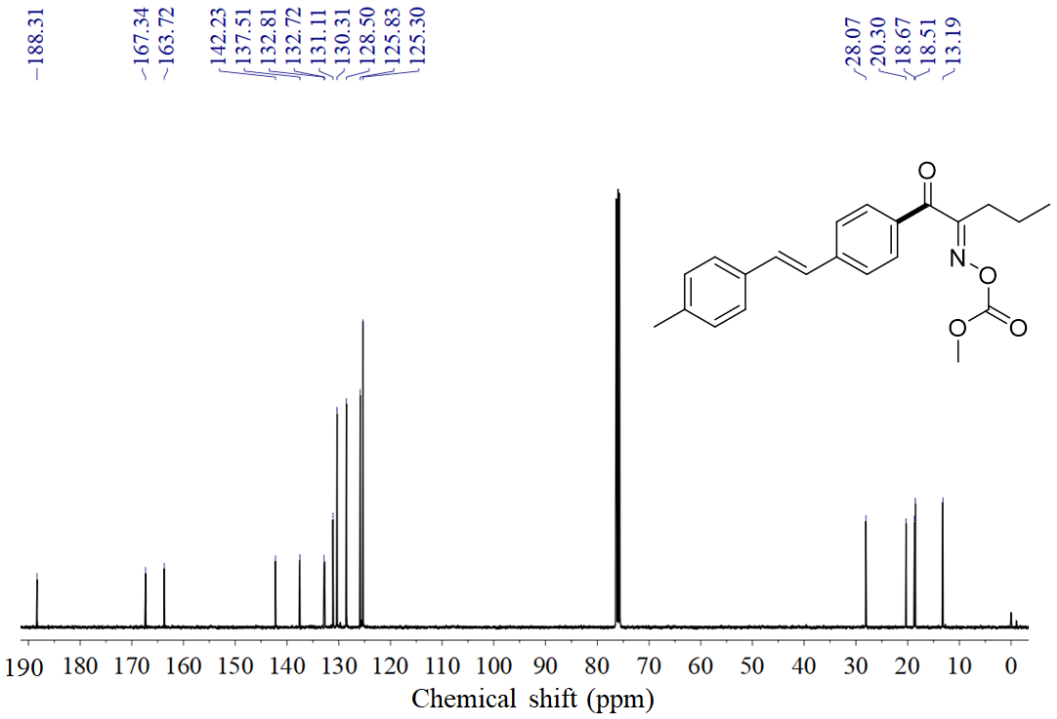

Fig. S30 ^{13}C-NMR spectrum of **MMP** in $CDCl_3$

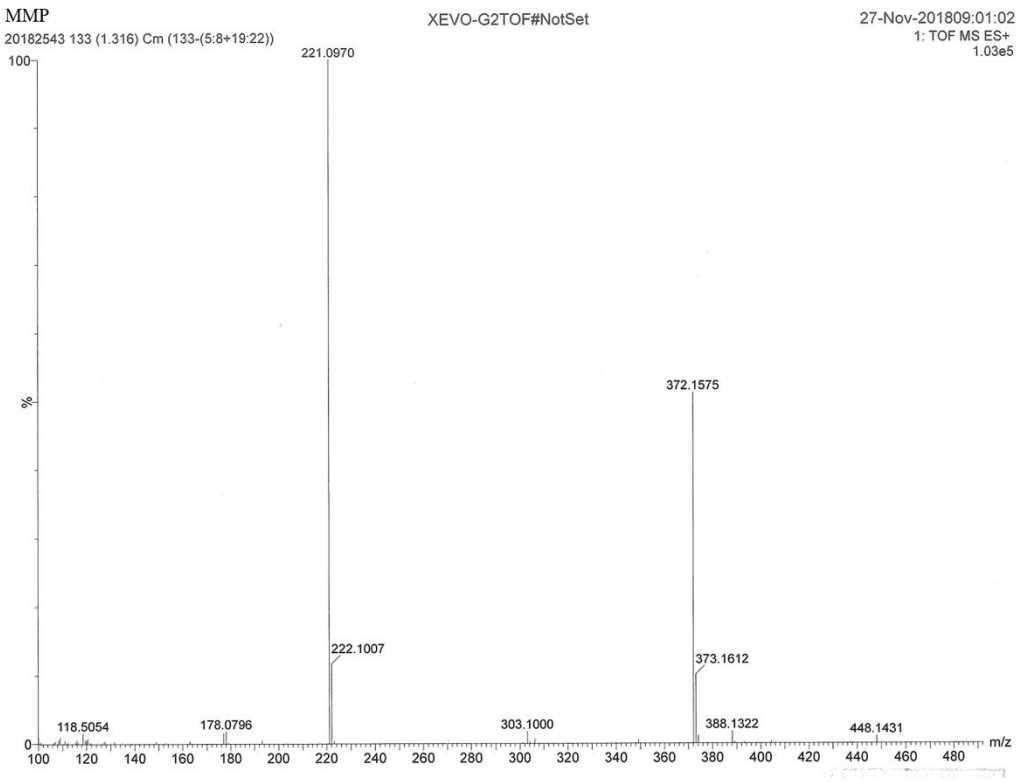

Fig. S31 MS of **MMP**

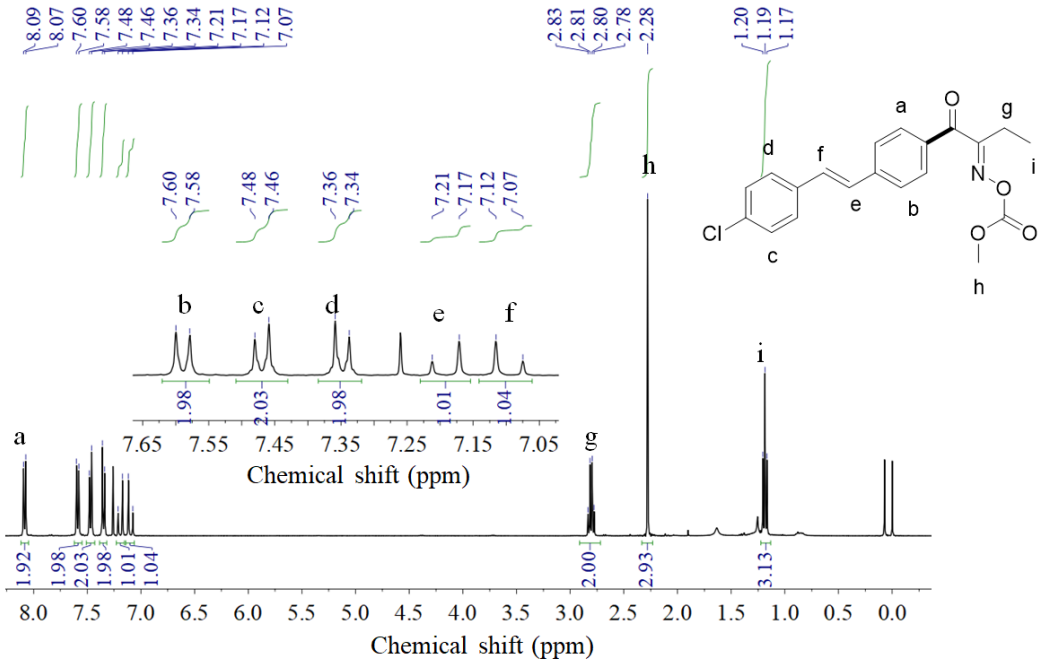

Fig. S32 ^{1}H-NMR spectrum of **CME** in $CDCl_3$

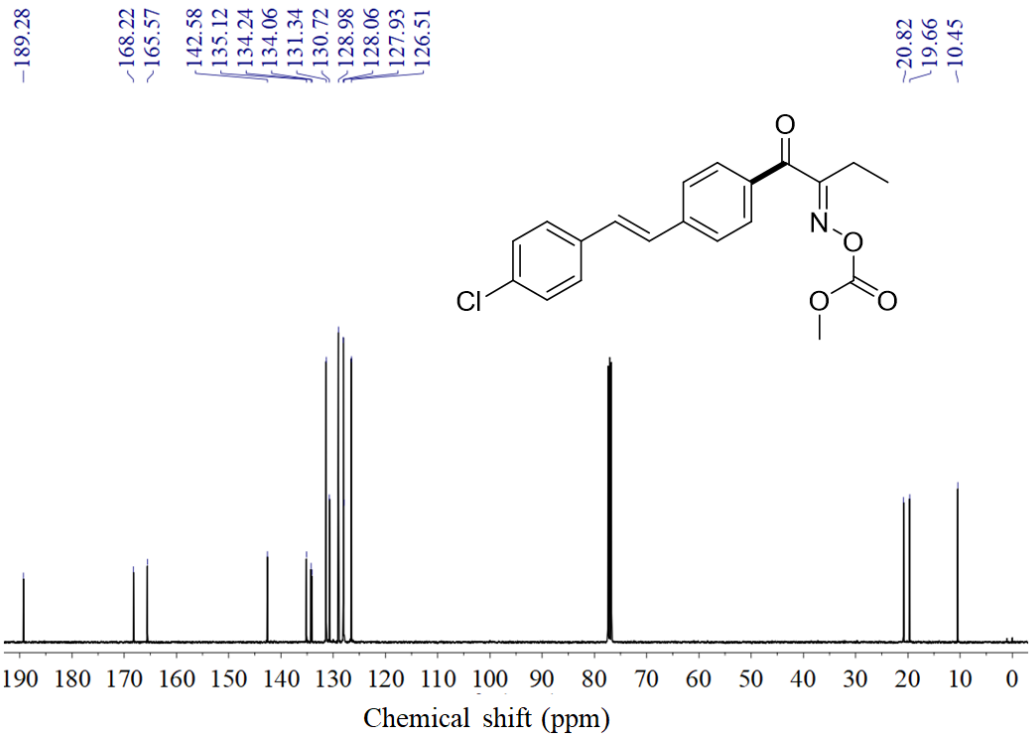

Fig. S33 ^{13}C-NMR spectrum of **CME** in $CDCl_3$

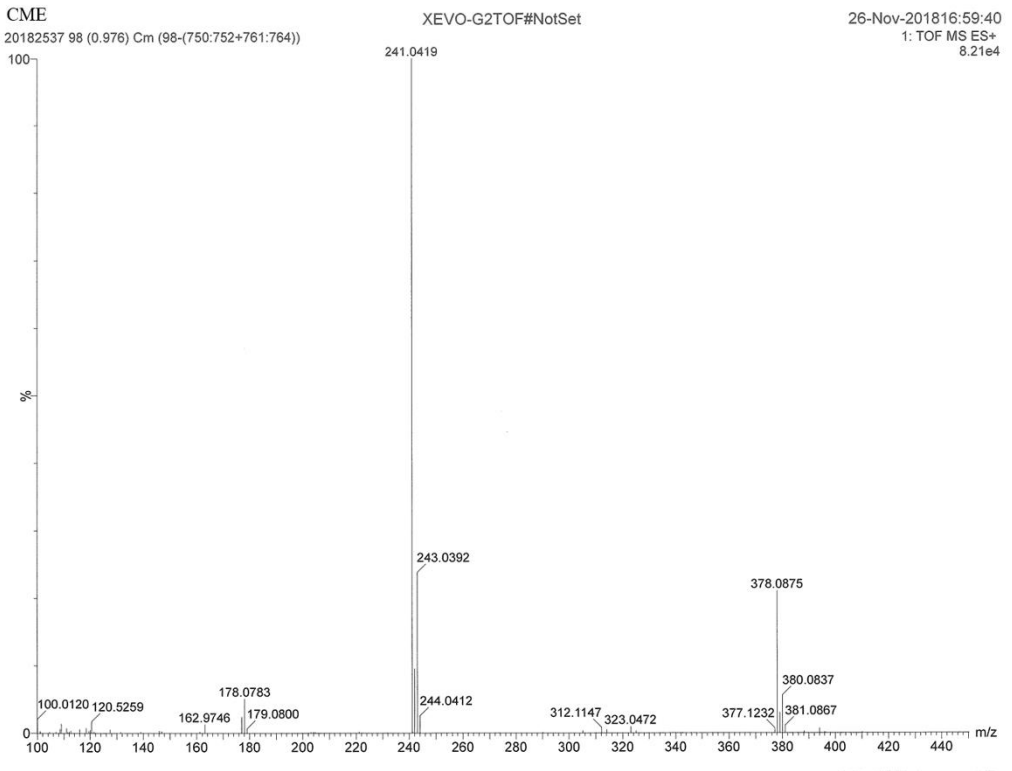

Fig. S34 MS of **CME**

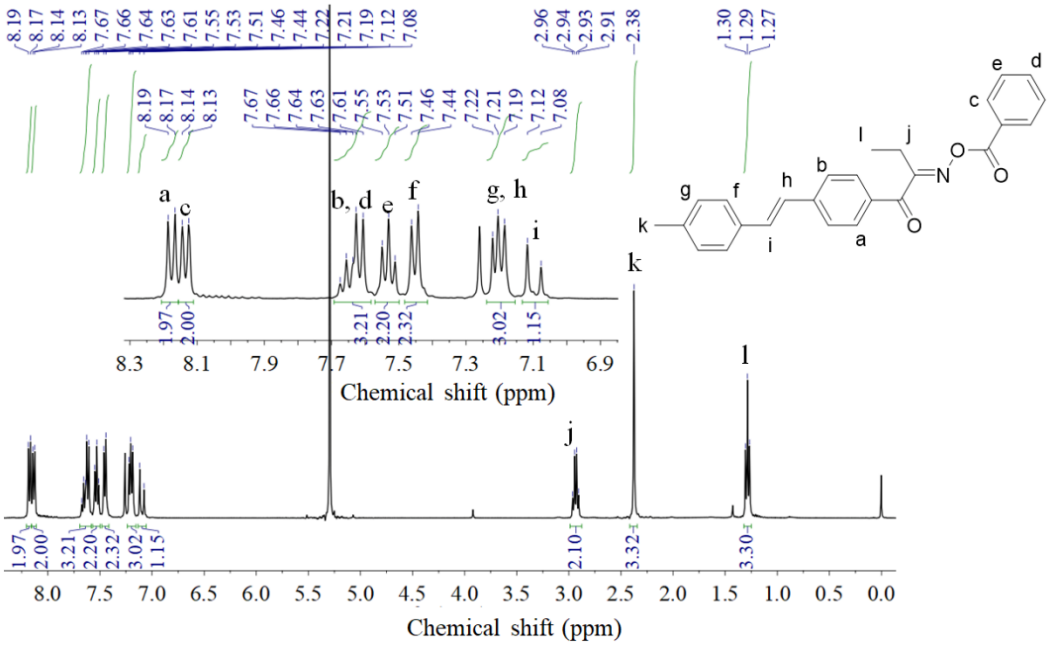

Fig. S35 ^{1}H-NMR spectrum of **MPE** in $CDCl_3$

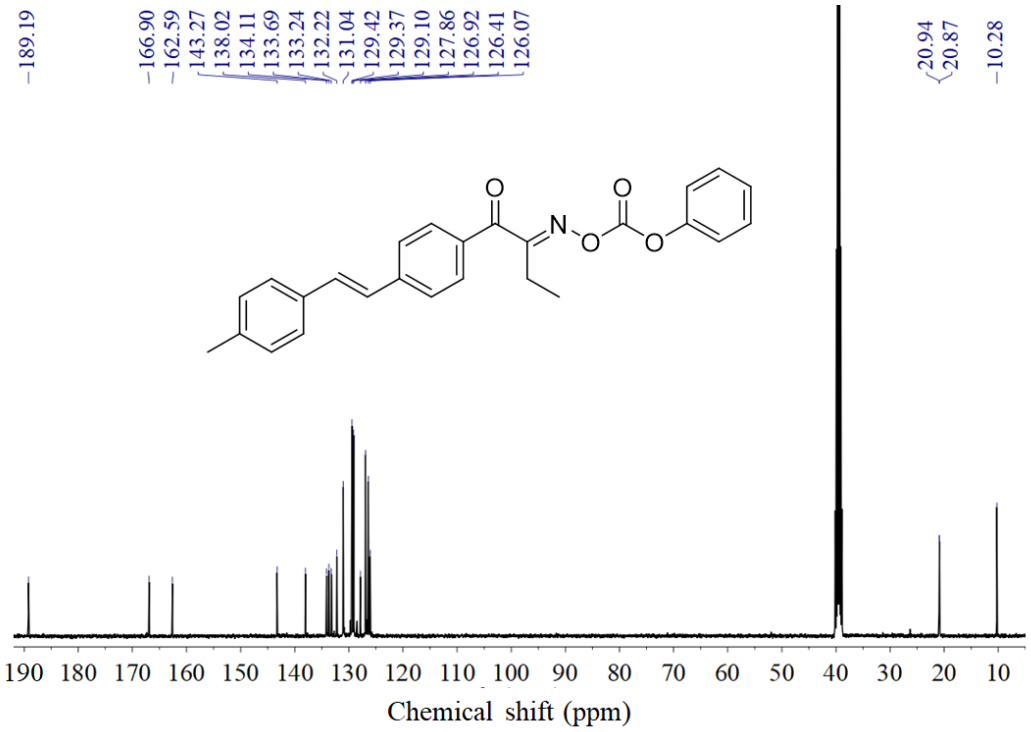

Fig. S36 ^{13}C-NMR spectrum of **MPE** in $CDCl_3$

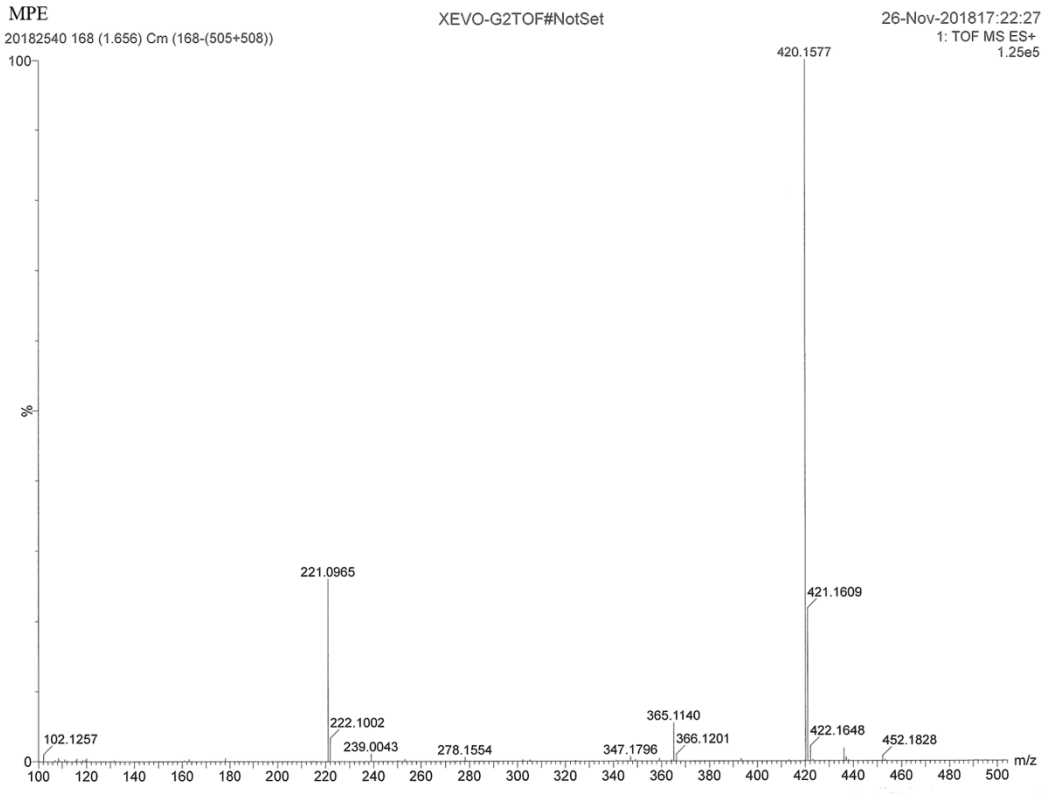

Fig. S37 MS of **MPE**

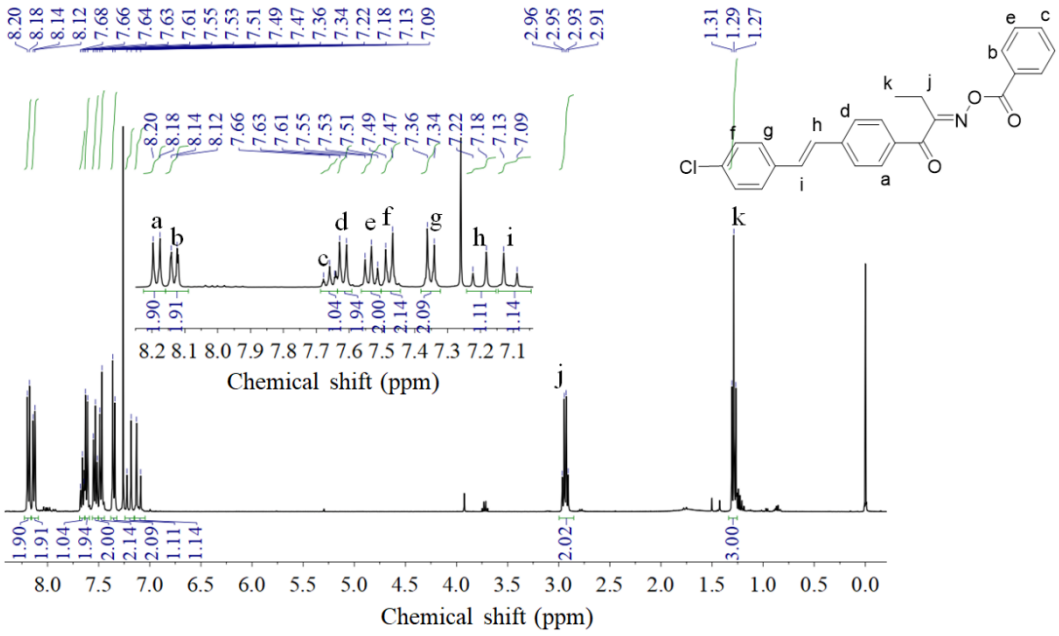

Fig. S38 ^{1}H-NMR spectrum of **CPE** in $CDCl_3$

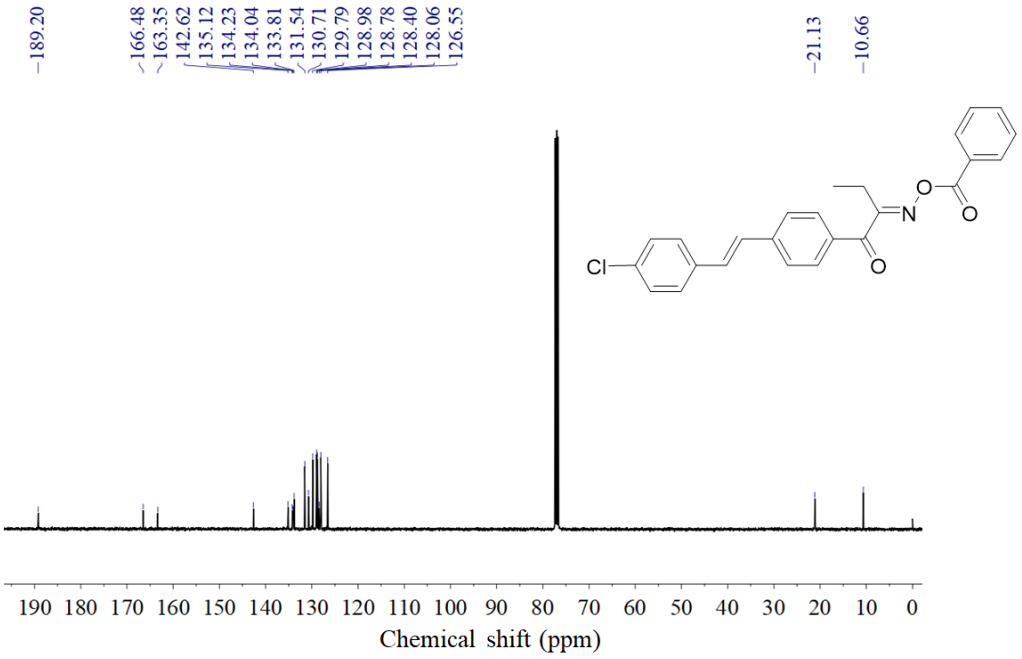

Fig. S39 ^{13}C-NMR spectrum of **CPE** in $CDCl_3$

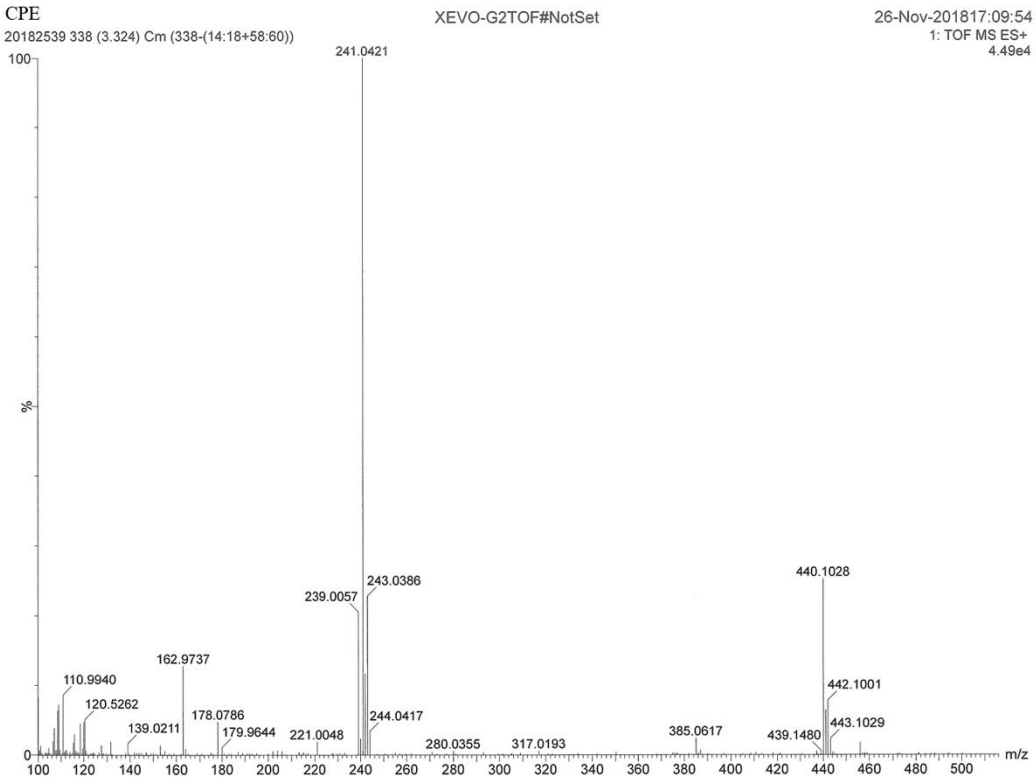

Fig. S40 MS of **CPE**