Supporting Information

Graphitic Carbon Nitride Nanosheet/$FeWO_4$ Nanoparticle Composite for Tandem Photooxidation/Knoevenagel Condensation

Afsaneh Rashidizadeh, Hamid Reza Esmaili Zand, Hossein Ghafuri, and Zeynab Rezazadeh*

Catalysts and Organic Synthesis Research Laboratory, Department of Chemistry, Iran University of Science and Technology, Tehran16846-13114, Iran

*Corresponding author E-mail: ghafuri@iust.ac.ir; Fax: +98-21-73021584; Tel: +98-21-73228312

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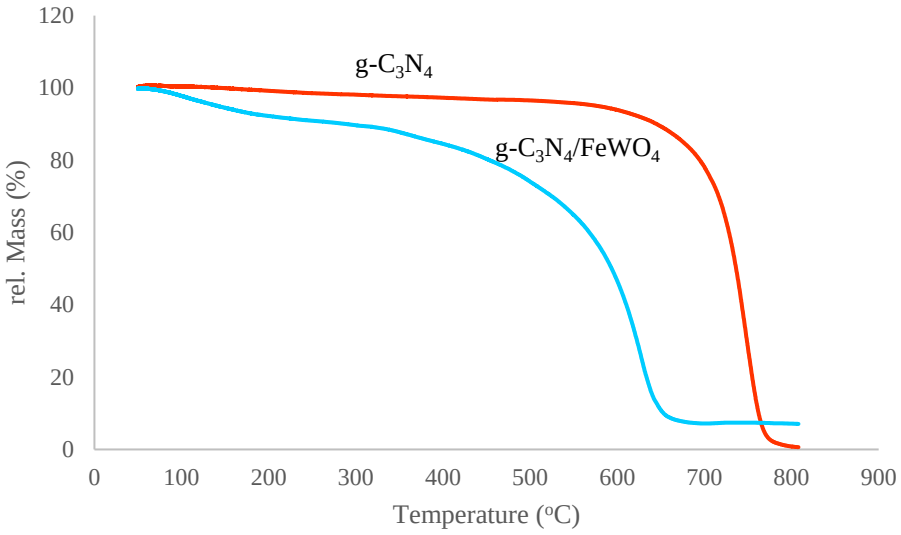


Figure S1. Thermogravimetric analysis of g-C_3N_4 and g-C_3N_4/$FeWO_4$.

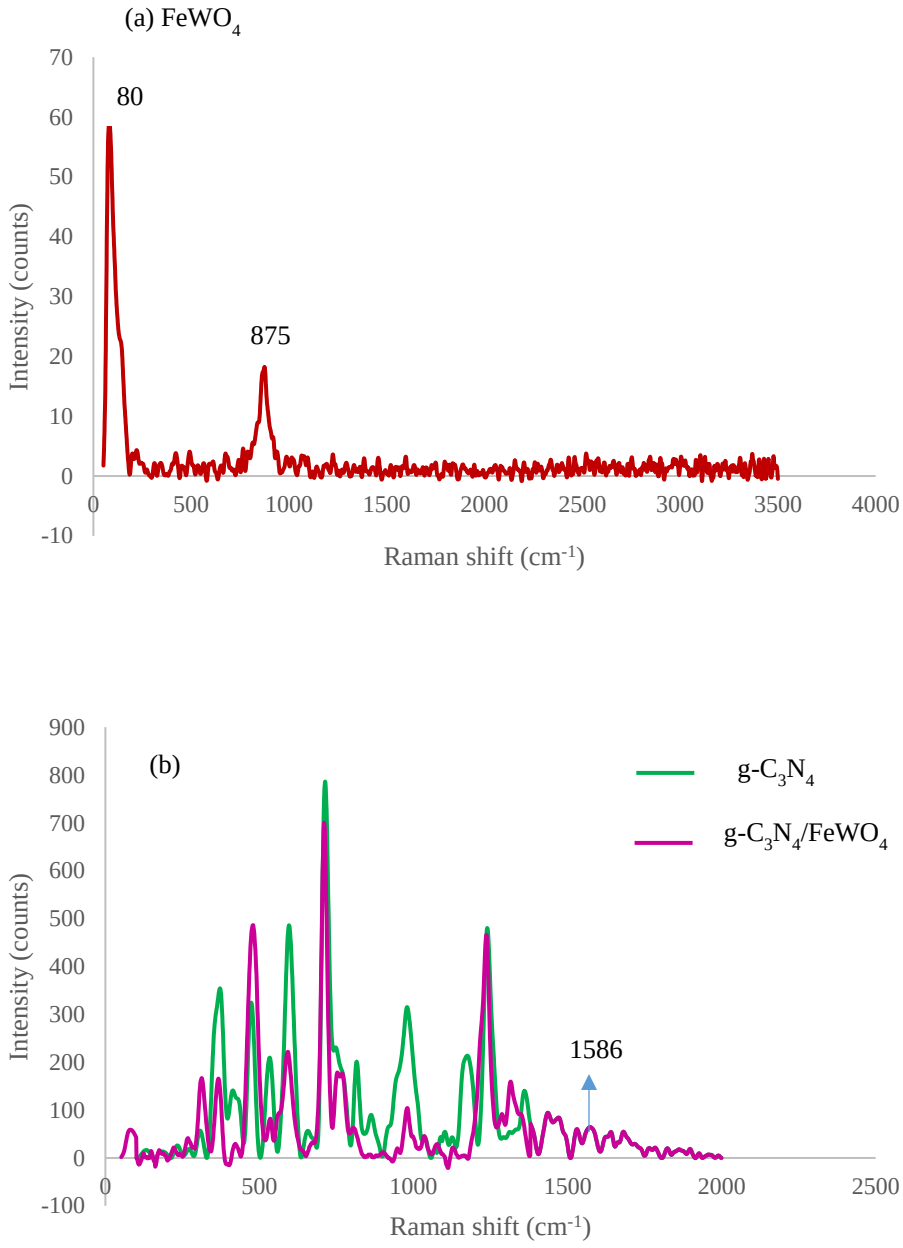


Figure S2. Raman spectrum of $FeWO_4$ (a), g-C_3N_4 and g-C_3N_4/$FeWO_4$ (b).

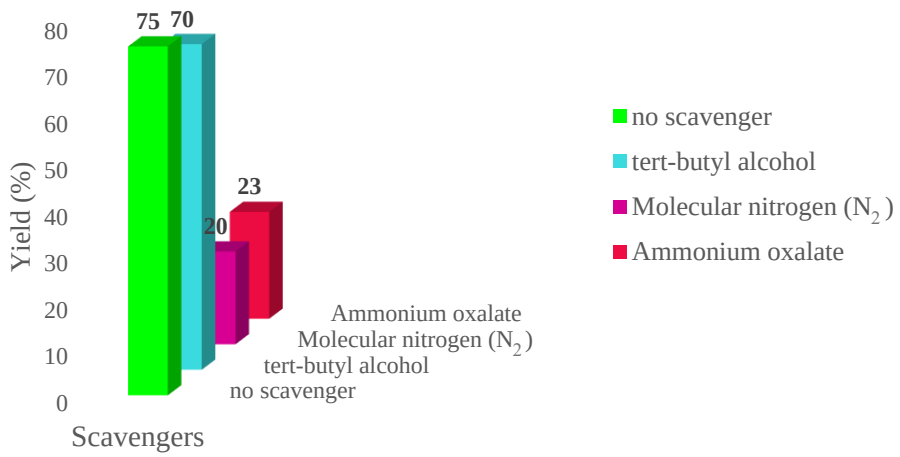


Figure S3. Trapping experiment of active types of oxidants during the photo-oxidation/Knoevenagel condensation.

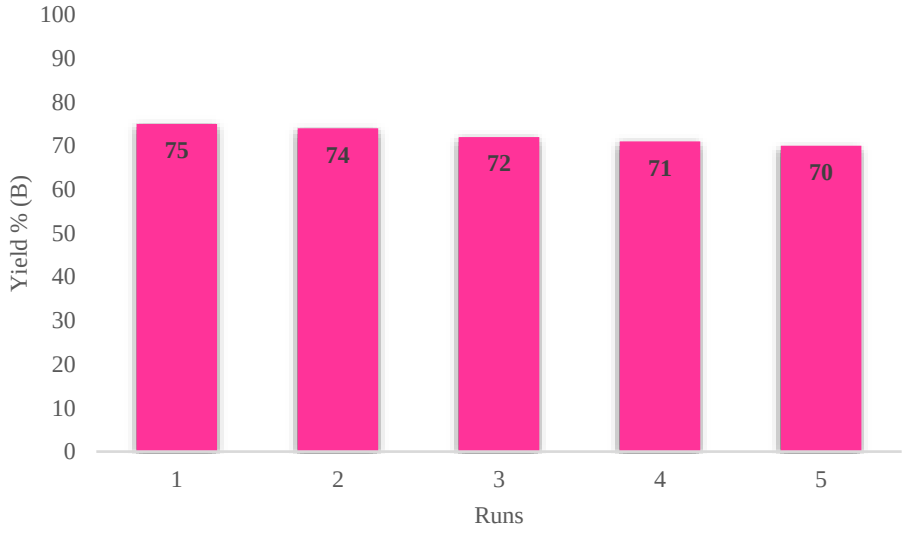


Figure S4. Recyclability of the g-C_3N_4/$FeWO_4$ in tandem one-pot photo-oxidation/ Knoevenagel condensation of alcohols.

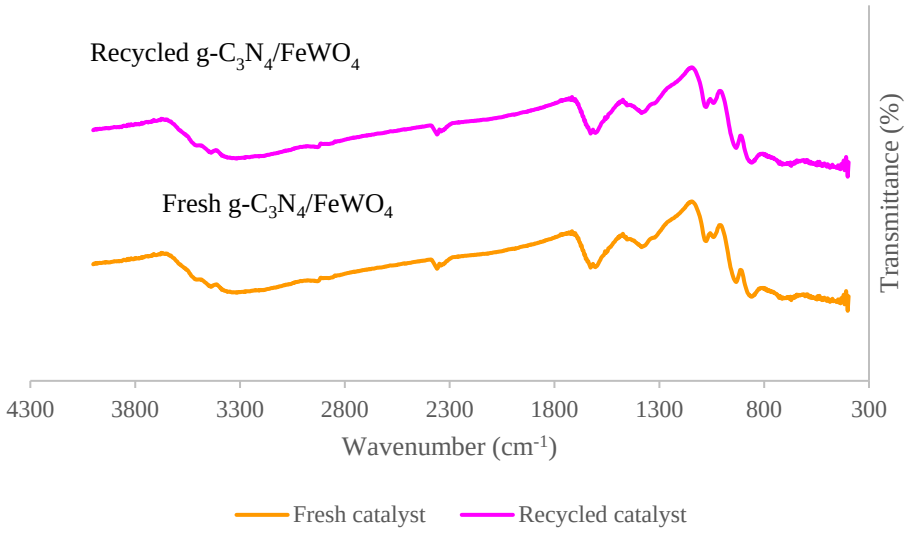
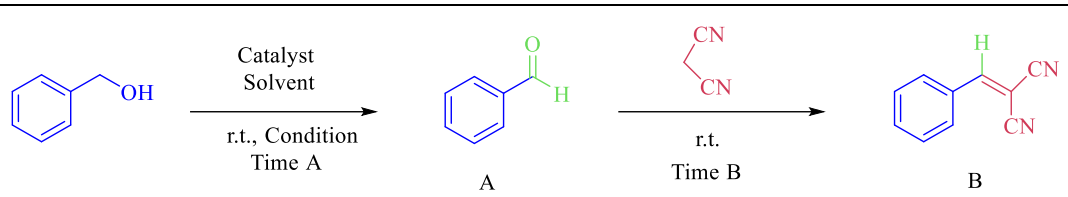


Figure S5. FT-IR spectrum of fresh and recycled g-C_3N_4/$FeWO_4$.

Table S1. Optimization of the reaction conditions for the one-pot photo-oxidation/ Knoevenagel condensation catalyzed by g-C_3N_4/$FeWO_4$.[a]



Entry	Catalyst	Amount of catalyst (mg)	Temp. (°C)	Solvent	hν	Condition	Conversion of benzyl alcohol (%)	Yield[b] (B) %
1	-	-	r.t.	CH_3CN	-	Air	-	-
2	-	-	r.t.	CH_3CN	+	Air	5	-
3	g-C_3N_4	40	r.t.	CH_3CN	-	Air	-	-
4	g-C_3N_4	40	r.t.	CH_3CN	+	Air	35	20
5	g-C_3N_4	40	r.t.	CH_3CN	+	O_2	45	30
6	g-C_3N_4	40	80	CH_3CN	+	O_2	30	23
7	$FeWO_4$	40	r.t.	CH_3CN	+	O_2	10	-
8	g-C_3N_4/$FeWO_4$	40	r.t.	CH_3CN	-	Air	-	-
9	g-C_3N_4/$FeWO_4$	40	r.t.	CH_3CN	+	Air	65	50
10	g-C_3N_4/$FeWO_4$	40	r.t.	CH_3CN	+	O_2	84	75
11	g-C_3N_4/$FeWO_4$	40	r.t.	CH_3CN	+	N_2	30	20
12	g-C_3N_4/$FeWO_4$	40	80	CH_3CN	+	O_2	69	60
13	g-C_3N_4/$FeWO_4$	40	r.t.	CH_3CN	+	O_2, H_2O_2	35	20
14	g-C_3N_4/$FeWO_4$	40	r.t.	CH_3CN	-	O_2, H_2O_2	10	-
15	g-C_3N_4/$FeWO_4$	40	r.t.	CH_3CN	-	O_2, TBHP	12	-
16	g-C_3N_4/$FeWO_4$	40	r.t.	CH_3CN	+	O_2, TBHP	15	-
17	g-C_3N_4/$FeWO_4$	40	r.t.	H_2O	+	O_2	40	35
18	g-C_3N_4/$FeWO_4$	40	r.t.	Toluene	+	O_2	15	Trace
19	g-C_3N_4/$FeWO_4$	30	r.t.	CH_3CN	+	O_2	75	63
20	g-C_3N_4/$FeWO_4$	50	r.t.	CH_3CN	+	O_2	80	70

[a] Reaction condition: Benzyl alcohol (1.0 mmol), malononitrile (1.2 mmol), solvent (6.0 mL), Time A (10.0 h), Time B (4.0 h). [b] Isolated yield of B

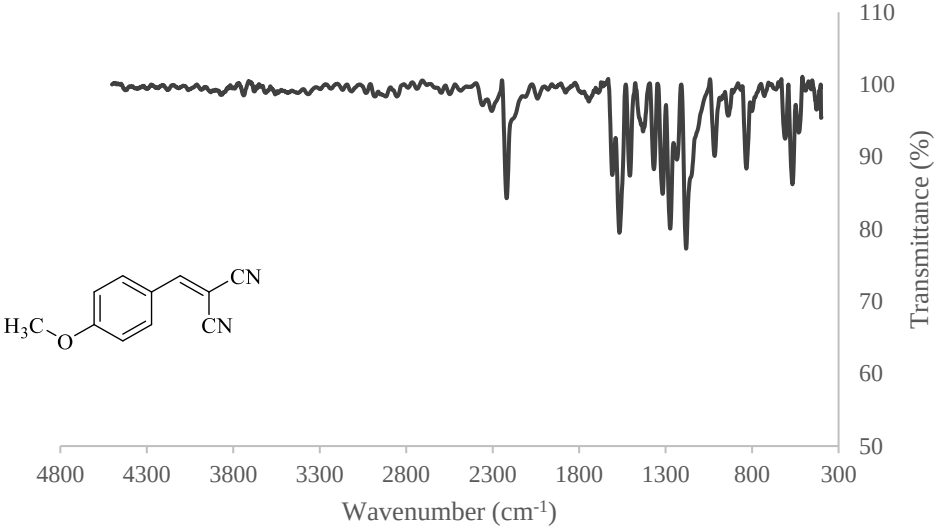


Figure S6: FT-IR spectrum of 2-(4-methoxyphenylmethylene)malononitrile

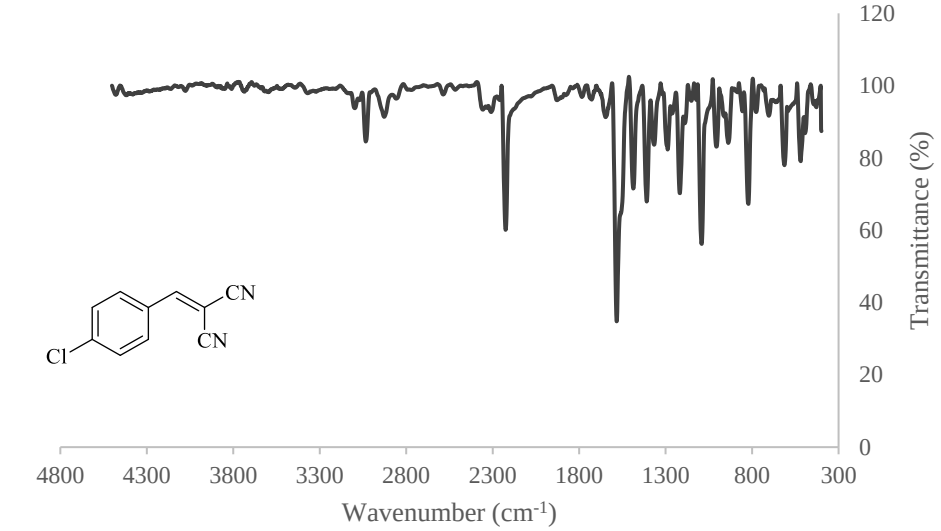


Figure S7: FT-IR spectrum of 4-chlorobenzylidenemalononitrile

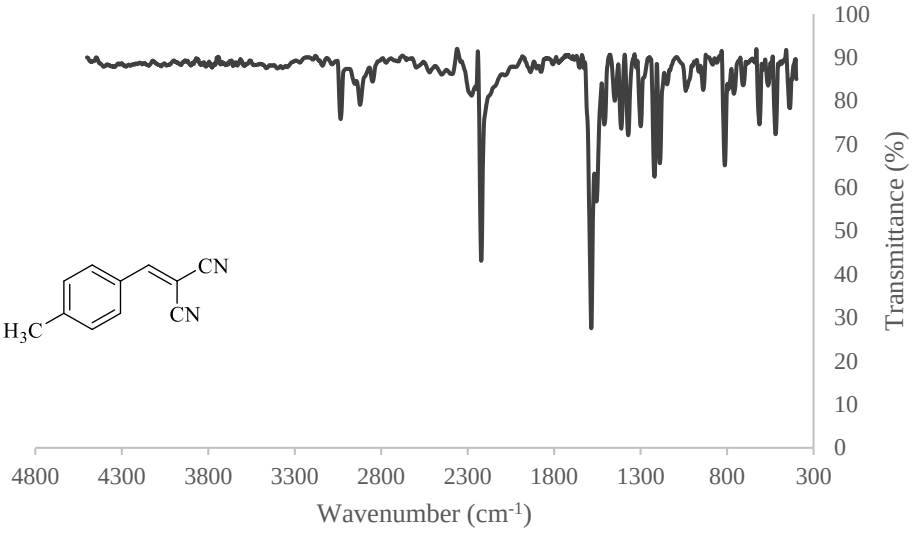


Figure S8: FT-IR spectrum of 2-(4-methylbenzylidene)malononitrile

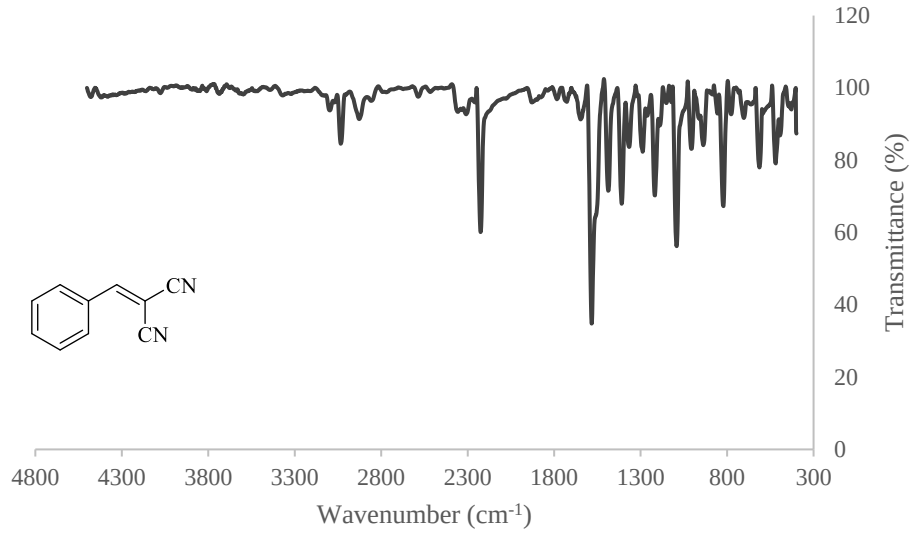


Figure S9: FT-IR spectrum of benzylidenemalononitrile

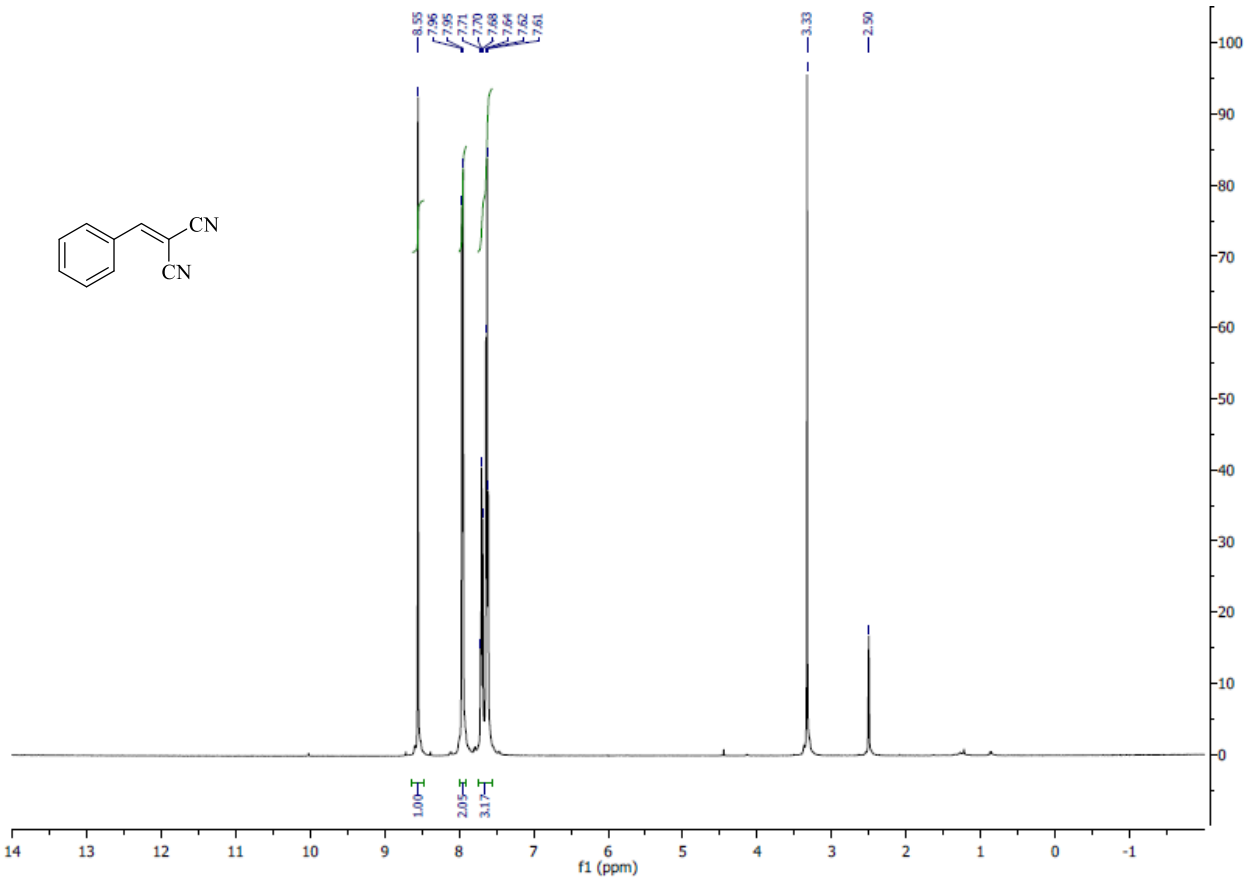


Figure S10: ^{1}H-NMR spectrum of 2-benzylidenemalononitrile

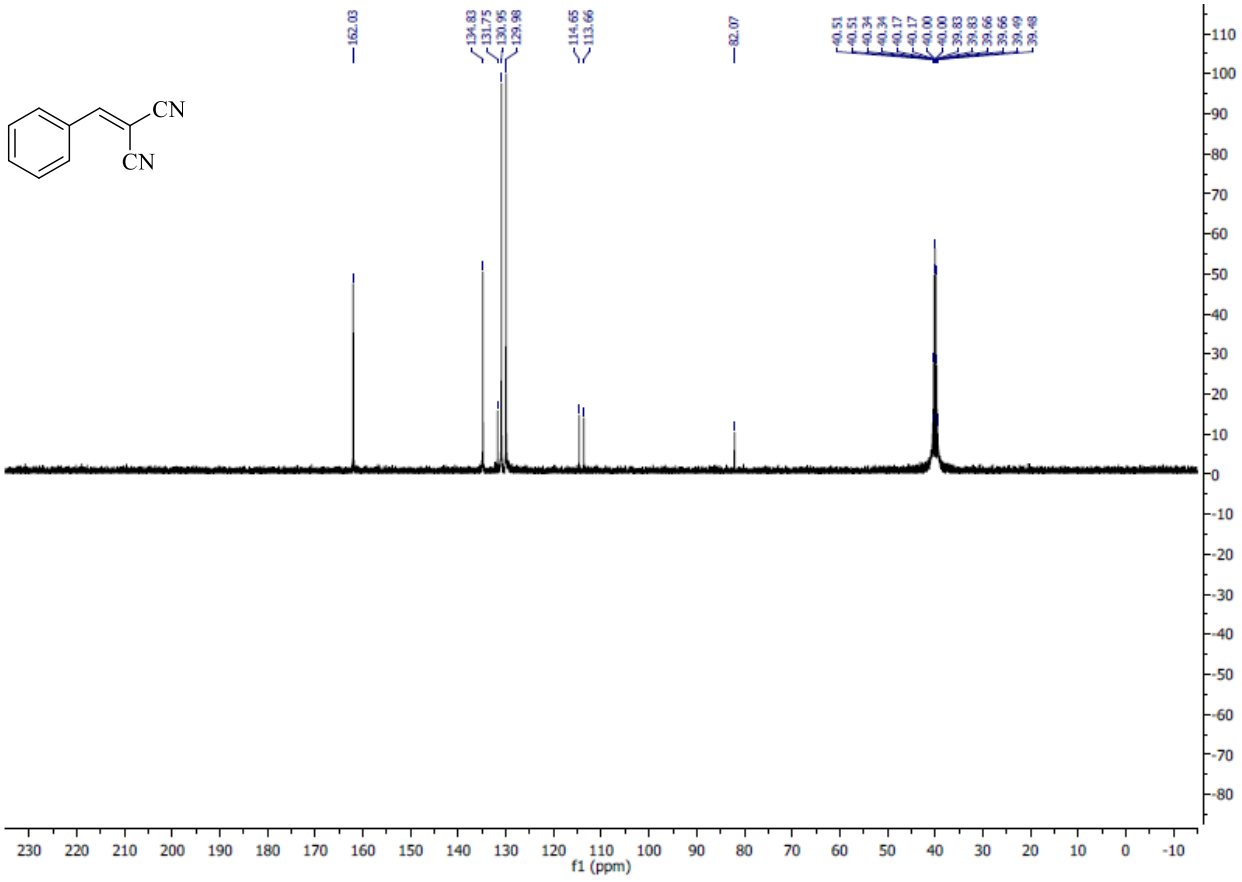


Figure S11: ^{13}C-NMR spectrum of 2-benzylidenemalononitrile

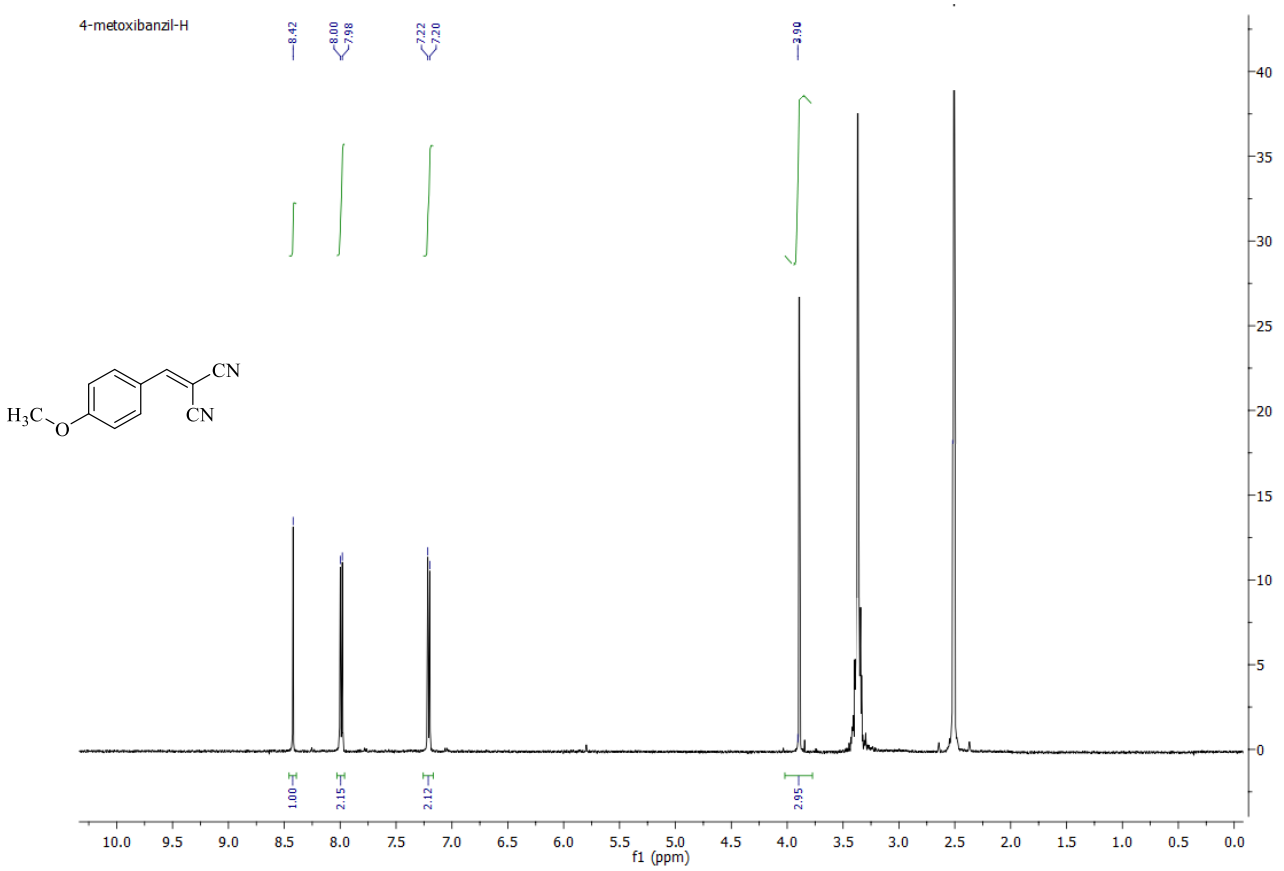


Figure S12: ^{1}H-NMR spectrum of 2-(4-methoxybenzylidene)malononitrile

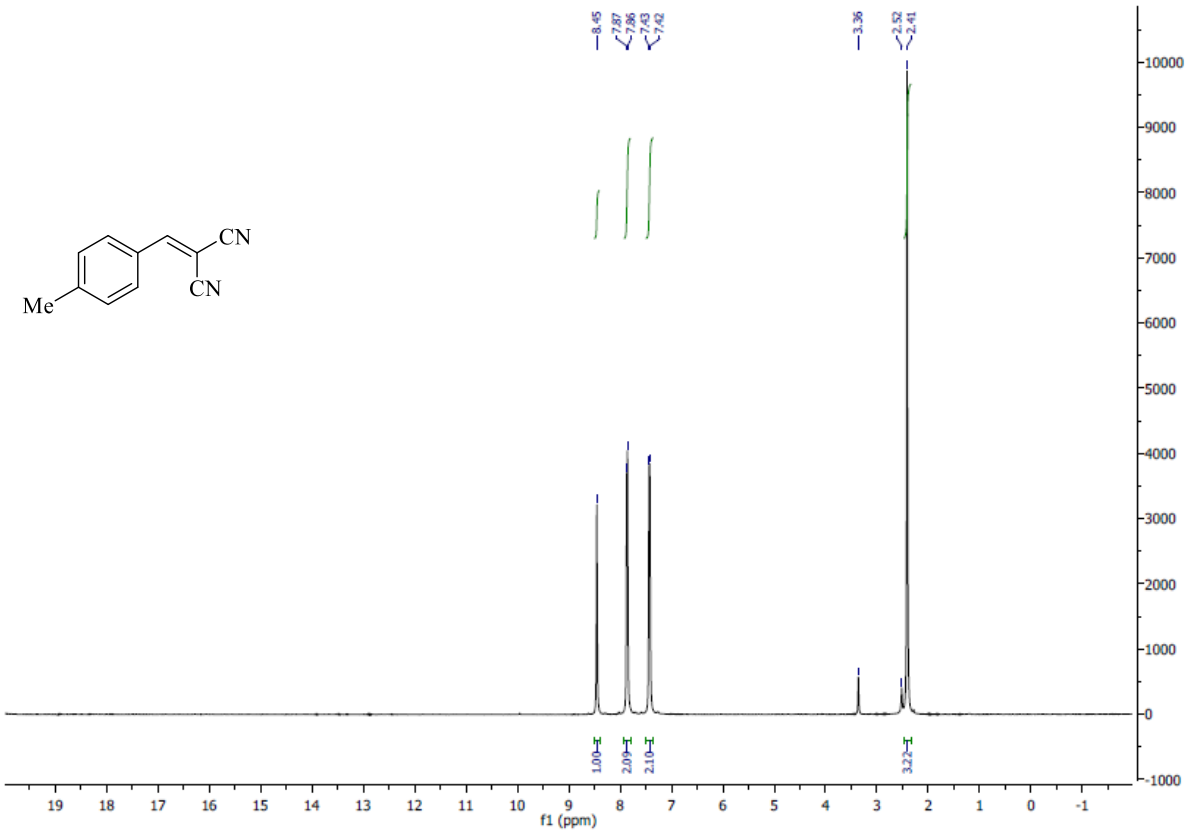


Figure S13: ^{1}H-NMR spectrum of 2-(4-methylbenzylidene)malononitrile

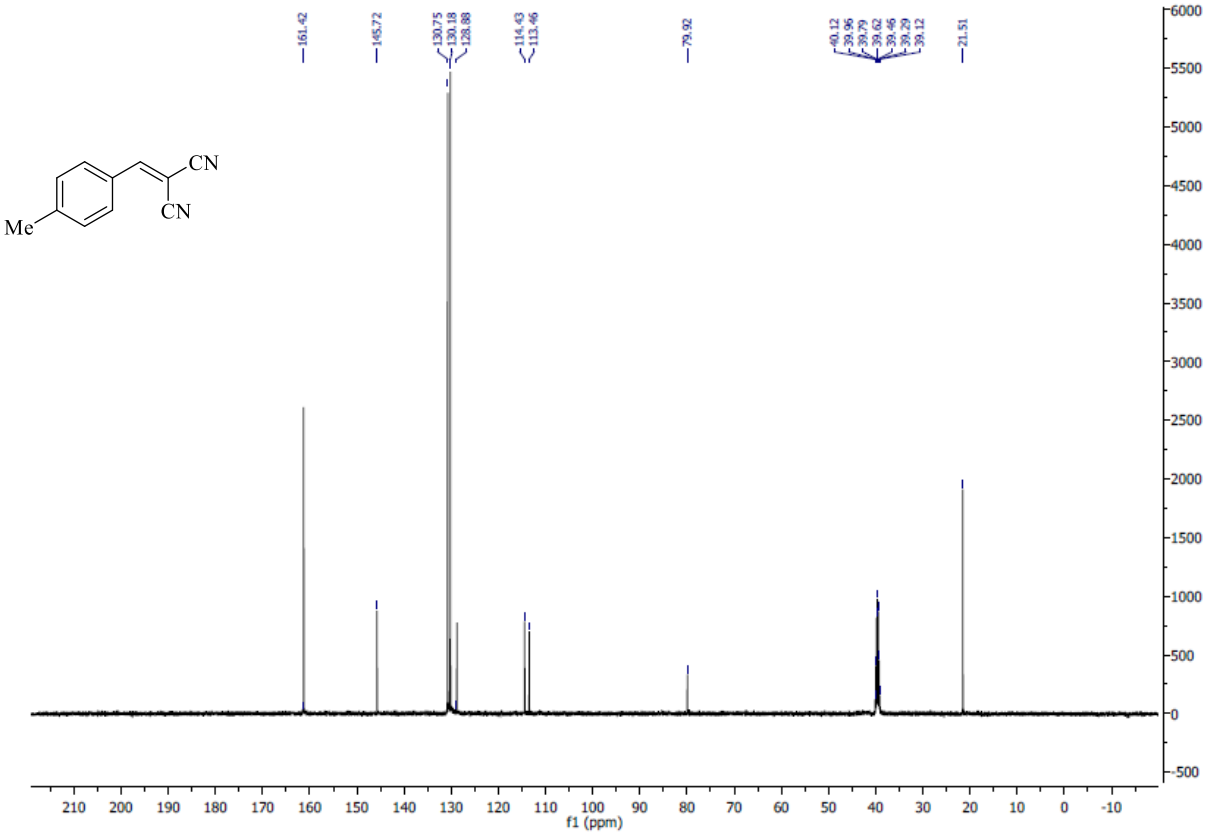


Figure S14: ^{13}C-NMR spectrum of 2-(4-methylbenzylidene)malononitrile

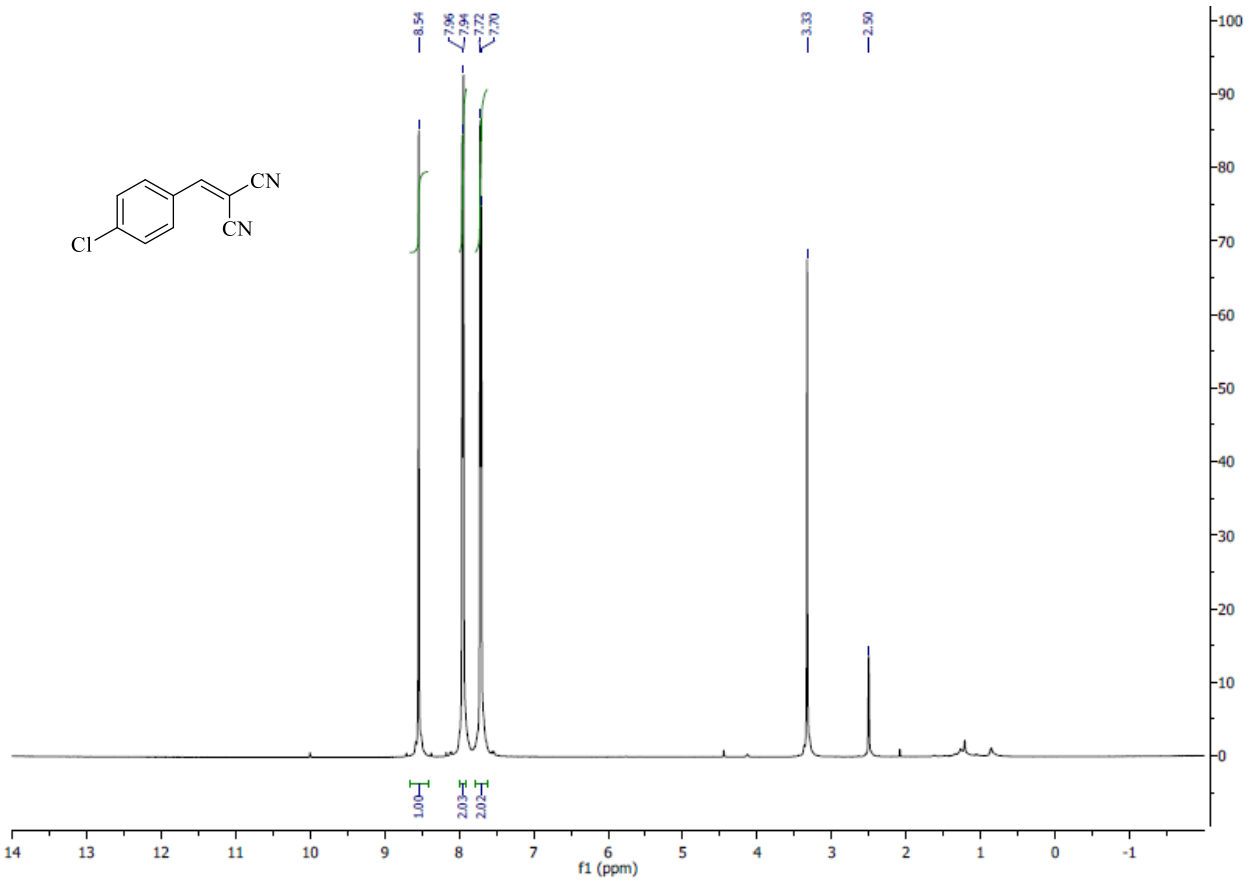


Figure S15: ^{1}H-NMR spectrum of 2-(4-chlorobenzylidene)malononitrile

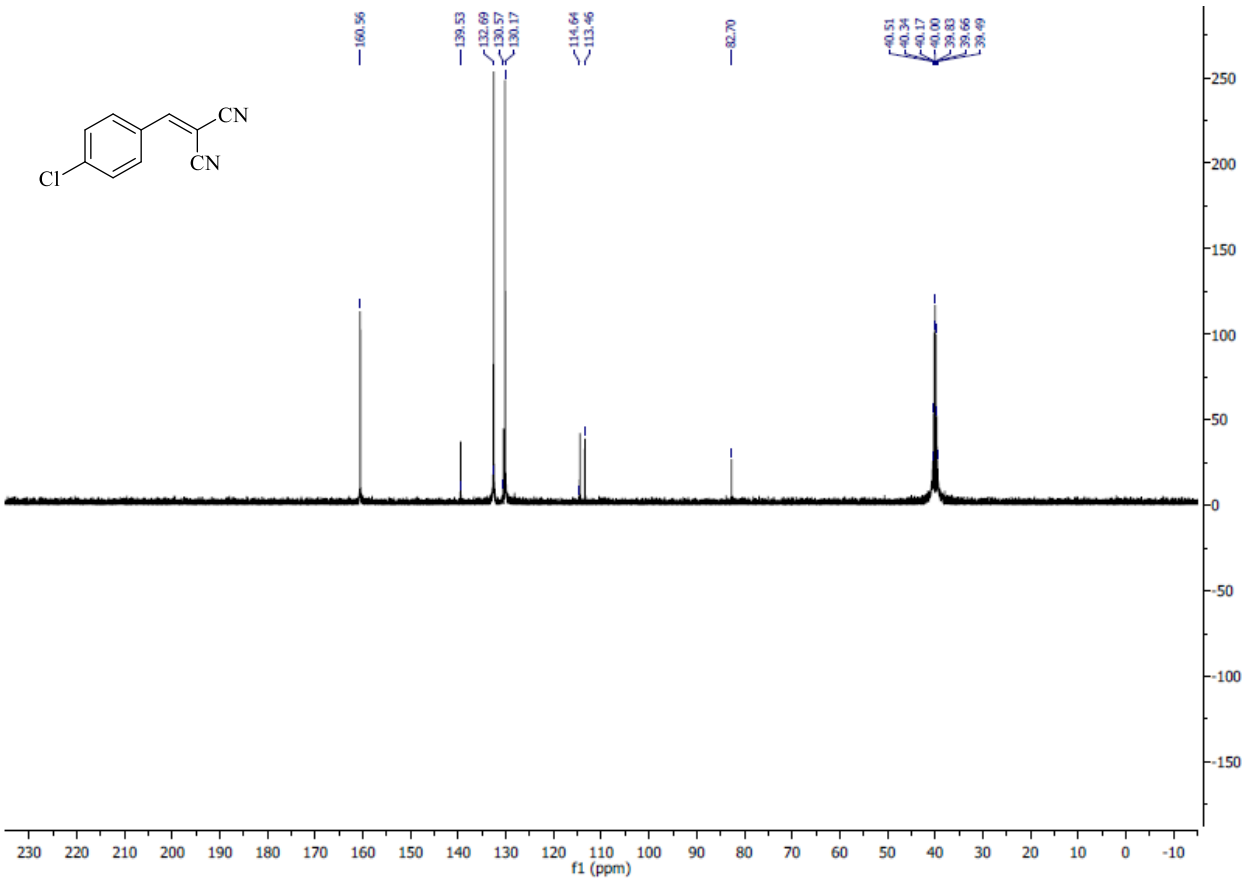


Figure S16: ^{13}C-NMR spectrum of 2-(4-chlorobenzylidene)malononitrile

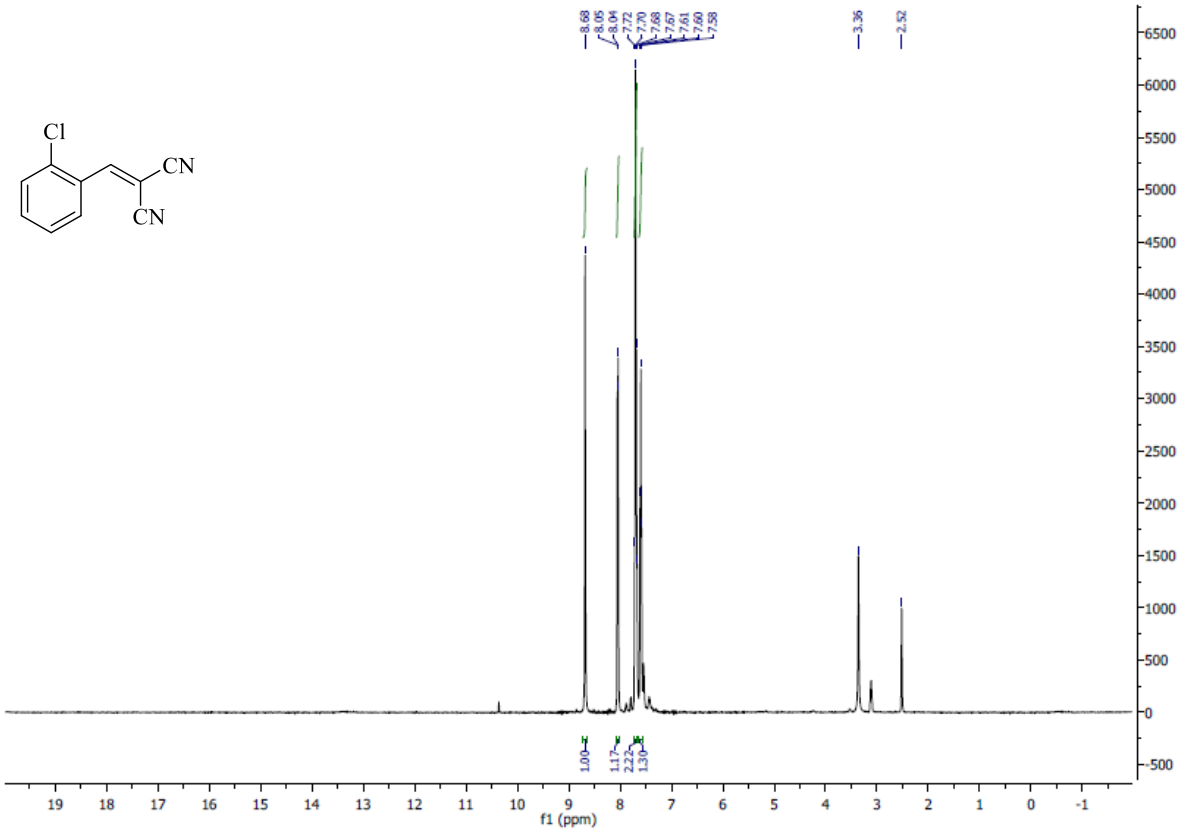


Figure S17: ^{1}H-NMR spectrum of 2-(2-chlorobenzylidene)malononitrile

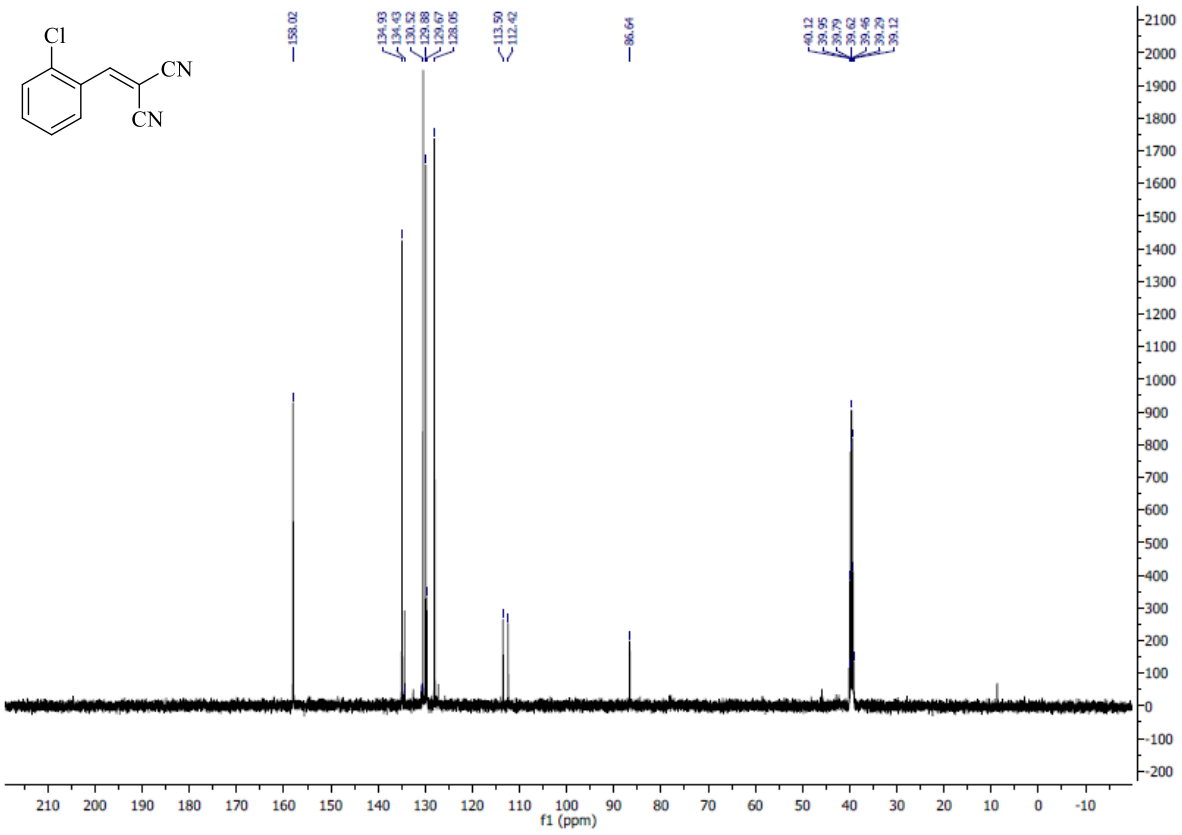


Figure S18: ^{13}C-NMR spectrum of 2-(2-chlorobenzylidene)malononitrile

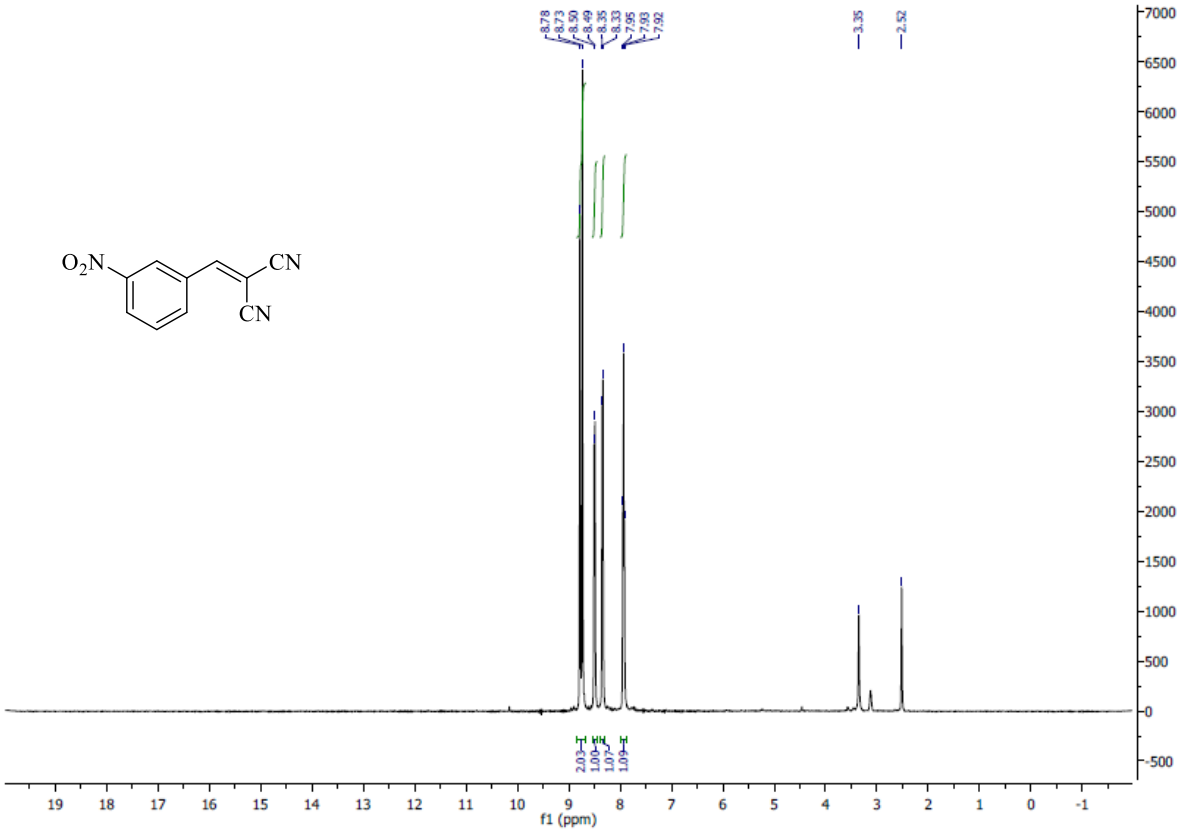


Figure S19: ^{1}H-NMR spectrum of 2-(3-nitrobenzylidene)malononitrile

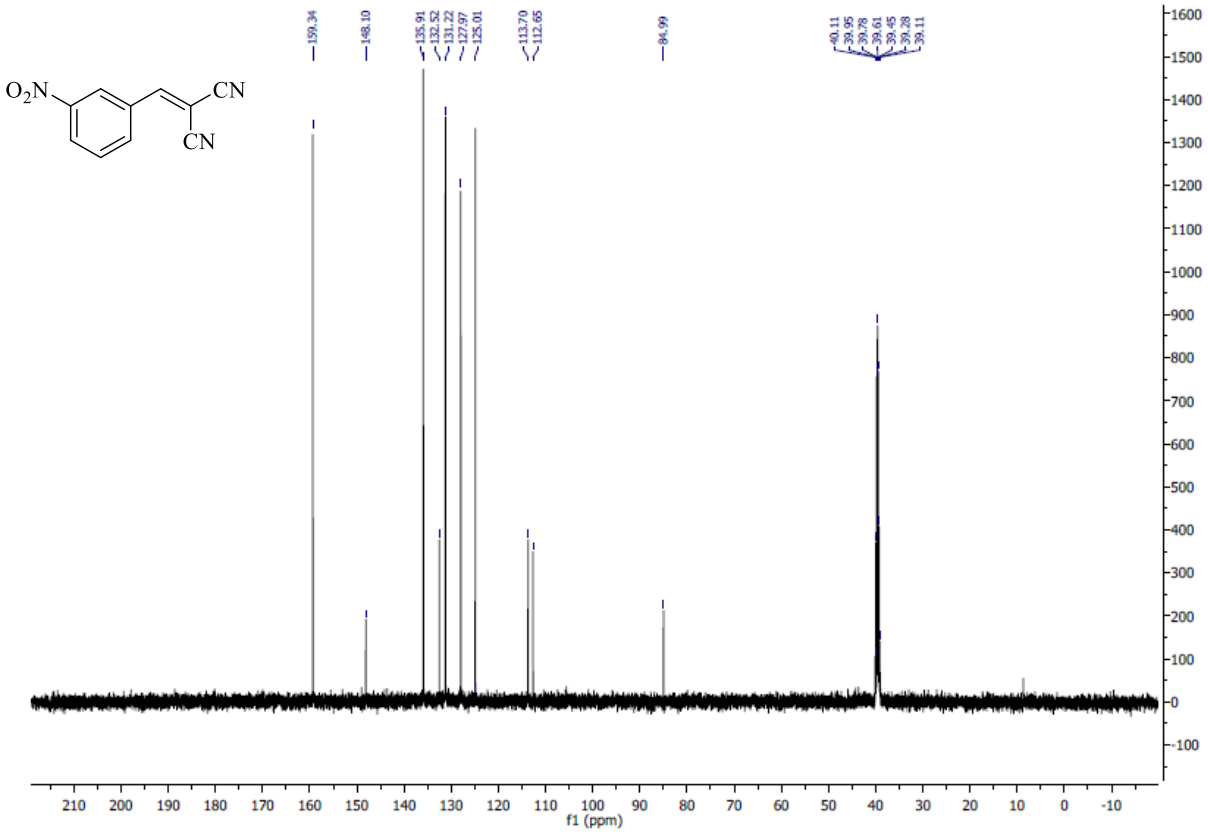


Figure S20: ^{13}C-NMR spectrum of 2-(3-nitrobenzylidene)malononitrile

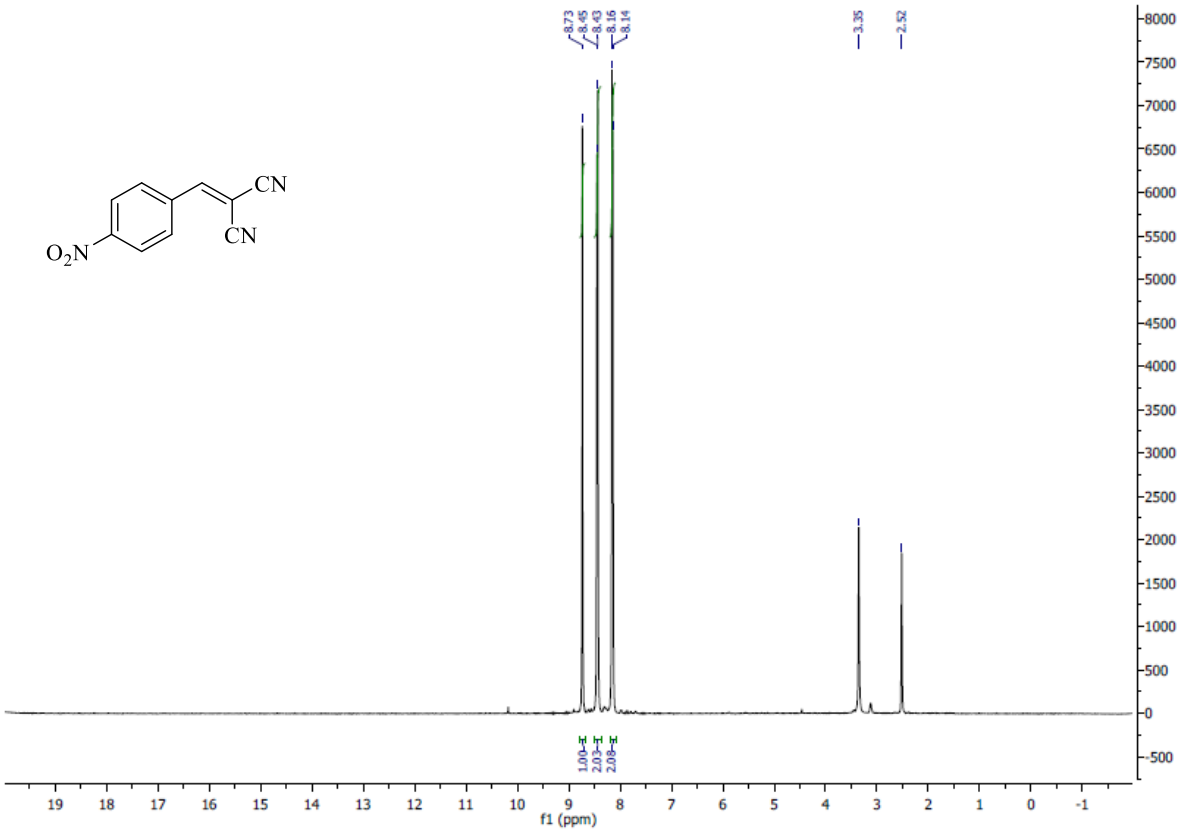


Figure S21: ^{1}H-NMR spectrum of 2-(4-nitrobenzylidene)malononitrile

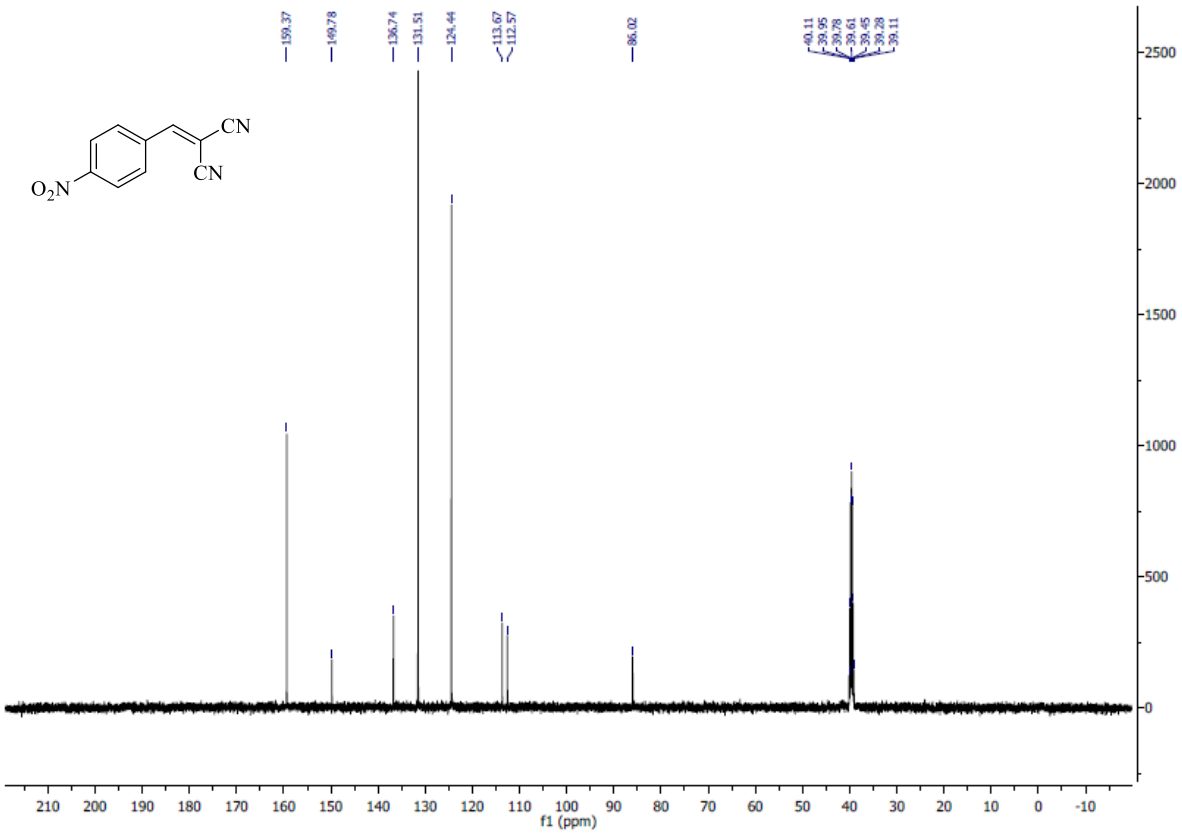


Figure S22: ^{13}C-NMR spectrum of 2-(4-nitrobenzylidene)malononitrile

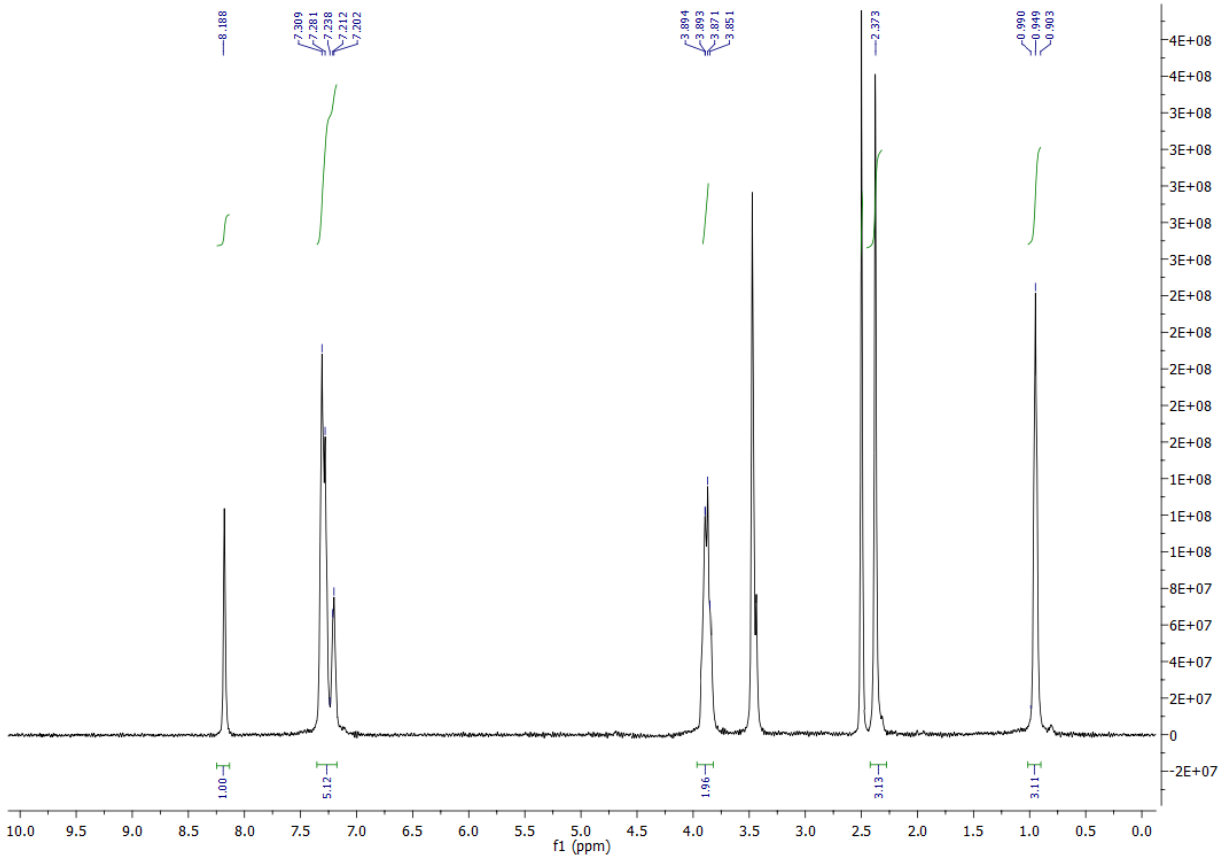


Figure S23: ^{1}H-NMR spectrum of ethyl 2-benzylidene-3-oxobutanoate

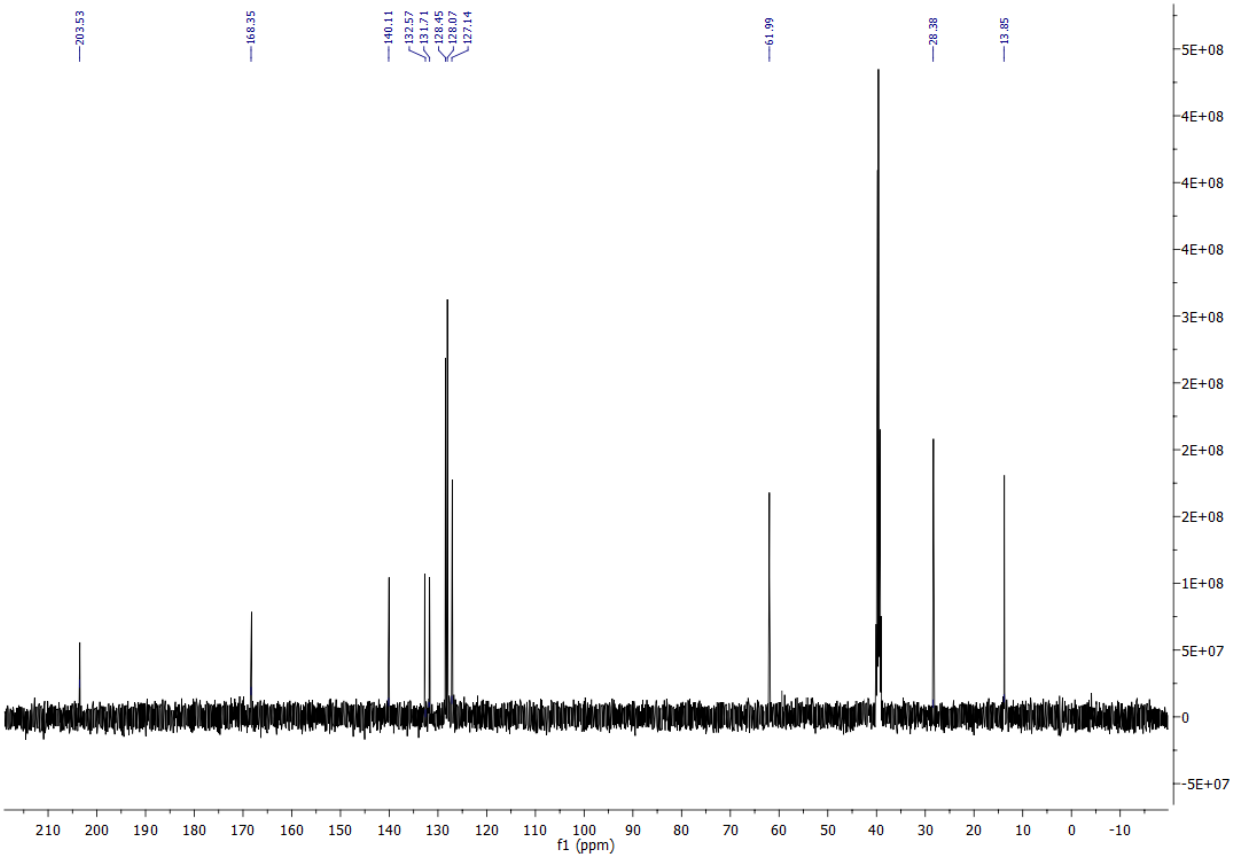


Figure S24: ^{13}C-NMR spectrum of ethyl 2-benzylidene-3-oxobutanoate