Supplementary Material (ESI) for Organic & Biomolecular Chemistry

Electronic Supplementary Information

Brønsted Acid-catalyzed Efficient Strecker Reaction of Ketones, Amines and Trimethylsilyl Cyanide

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General details

Unless otherwise noted, all commercially available compounds and solvents were used as provided without further purification. ^{1}H, ^{13}C were recorded on Varian Mercury Plus 500 instruments at 500 MHz (^{1}H NMR), 125 MHz (^{13}C NMR). Chemical shifts were reported in ppm from the solvent resonance as the internal standard ($CDCl_3$: 7.26 ppm). MS were recorded on a VG-7070E or HP 5988A spectrometer using the ESI method. HPLC analyses were carried out on a Hewlett Packard Model HP 1200 instrument. All of the reactions were carried out under an argon atmosphere with the exclusion of moisture.

2a,[1] **2b**,[2] **2d**,[1] **2e**,[2] **2t**,[2] **2u**,[2] **2v**,[3] **2w**,[2] **2x**,[4] **2z**[5] were known compounds in the literatures.

1. H. K. Shukla, R. R. Astik, K. A. Thaker, *J. Indian. Chem. Soc.* **1981**, *58*, 1182.

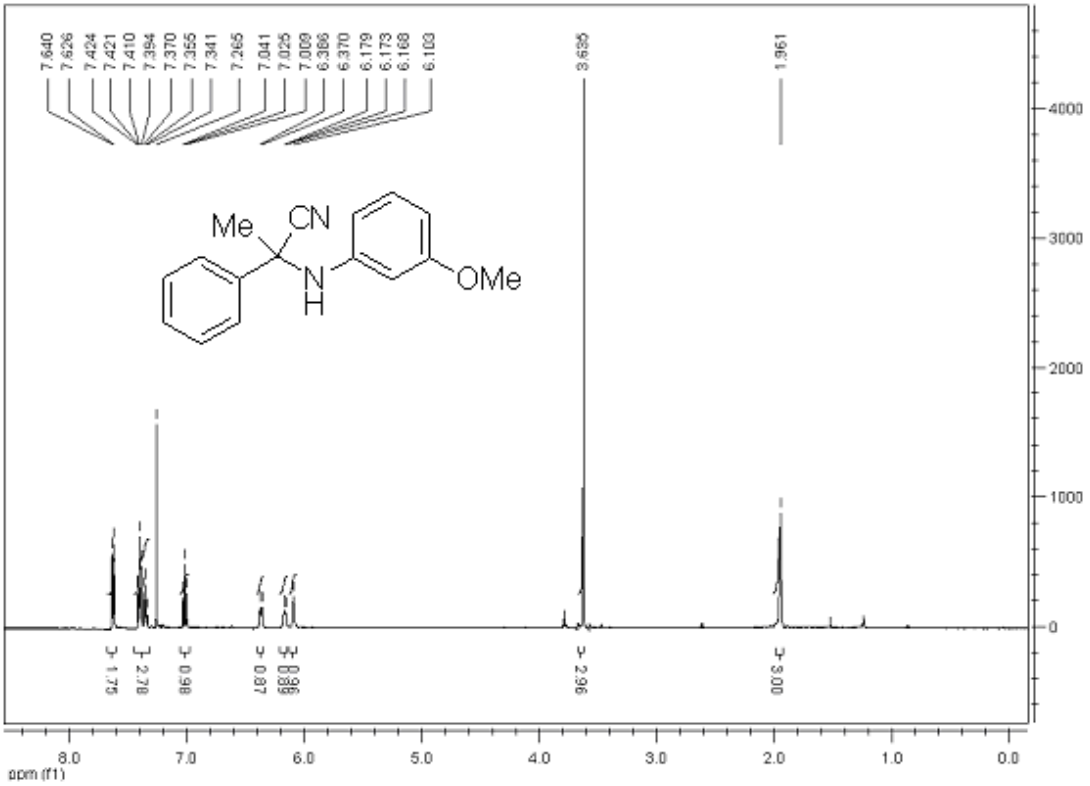
2. G. K. S. Prakash, T. Mathew, C. Panja, S. Alconcel, H. Vaghoo, C. Do, G. A. Olah, *Proc. Natl. Acad. Sci. U.S.A.* **2007**, *104*, 3703.

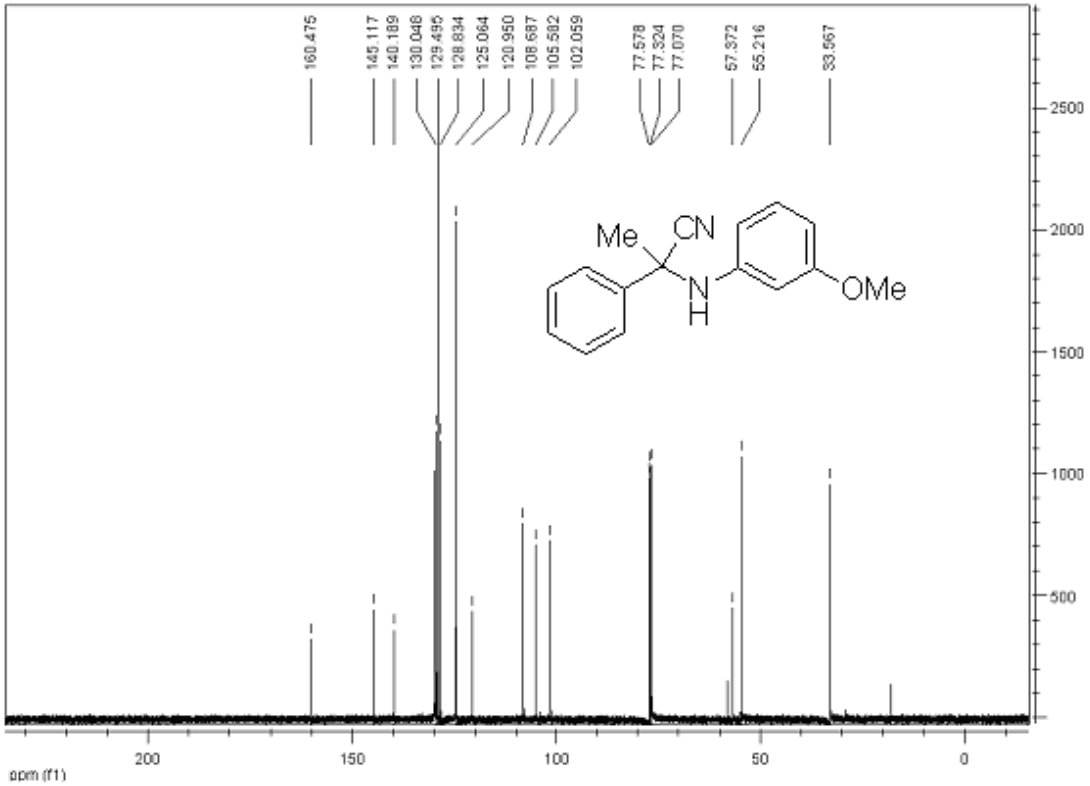
3. K. Matsumoto, J. C. Kim, H. Iida, H. Hamana, K. Kumamoto, H. Kotsuki, G. Jenner, *Helv. Chim. Acta* **2005**, *88*, 1734.

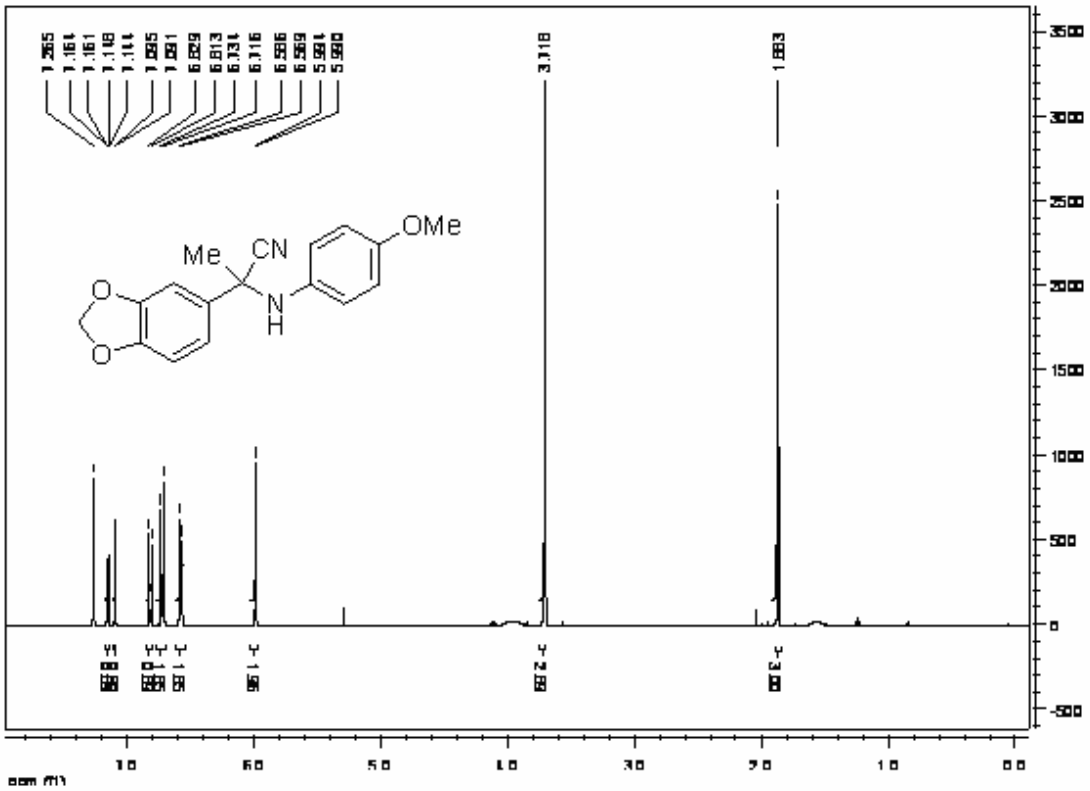
4. R. M. Alvarez, A. S. Vazquez, M. Hananck, L. R. Subramanian, *J. Phys. Org. Chem.* **1996**, *9*, 227.

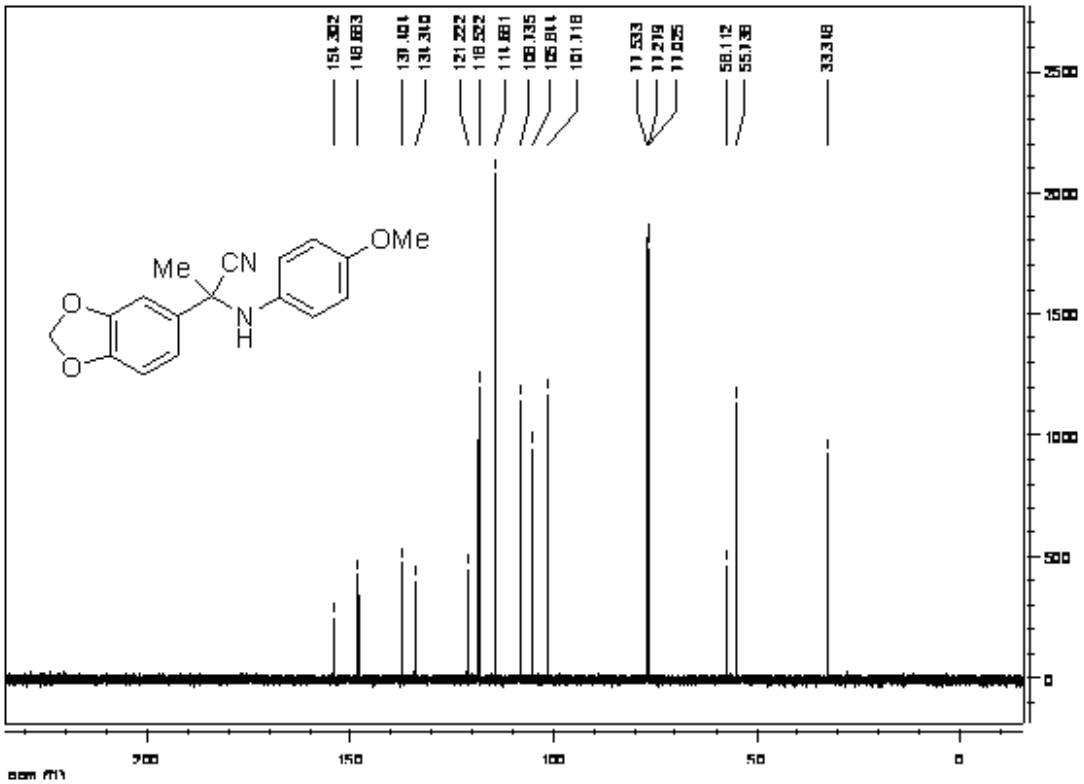
5. G. W. Hardy, P. M. Doyle, T. W. Smith, *Eur. J. Med. Chem.* **1987**, *22*, 331.

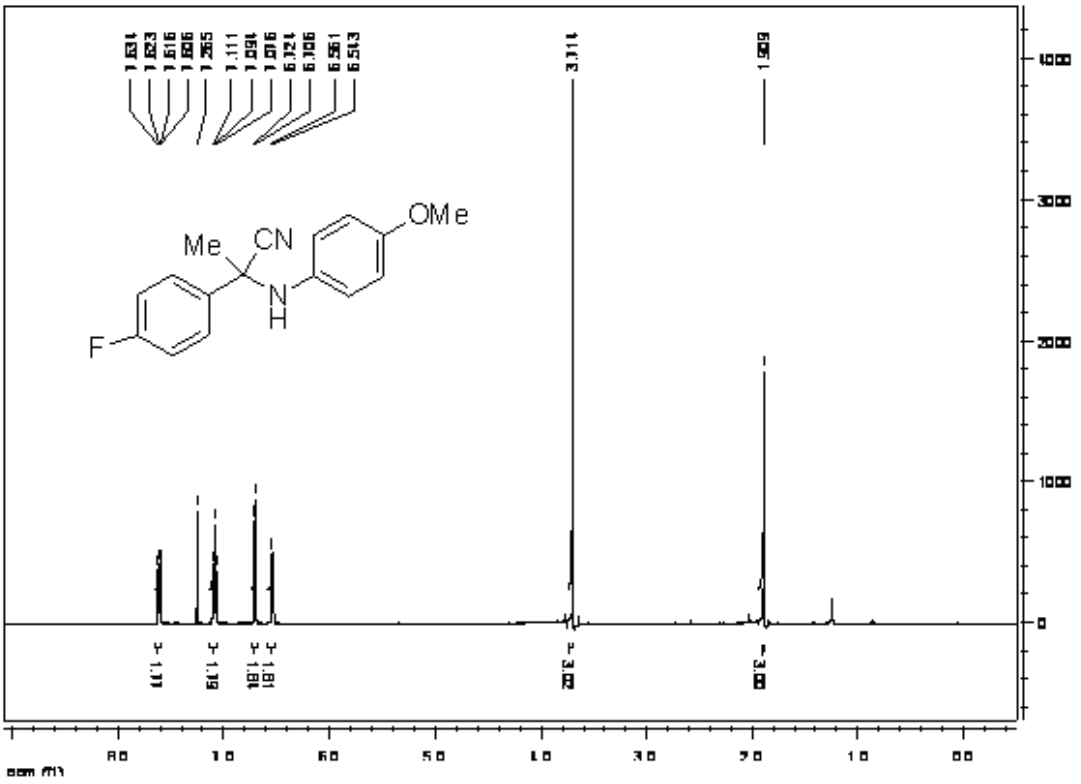
^{1}H and ^{13}C NMR Spectra for the new compounds:

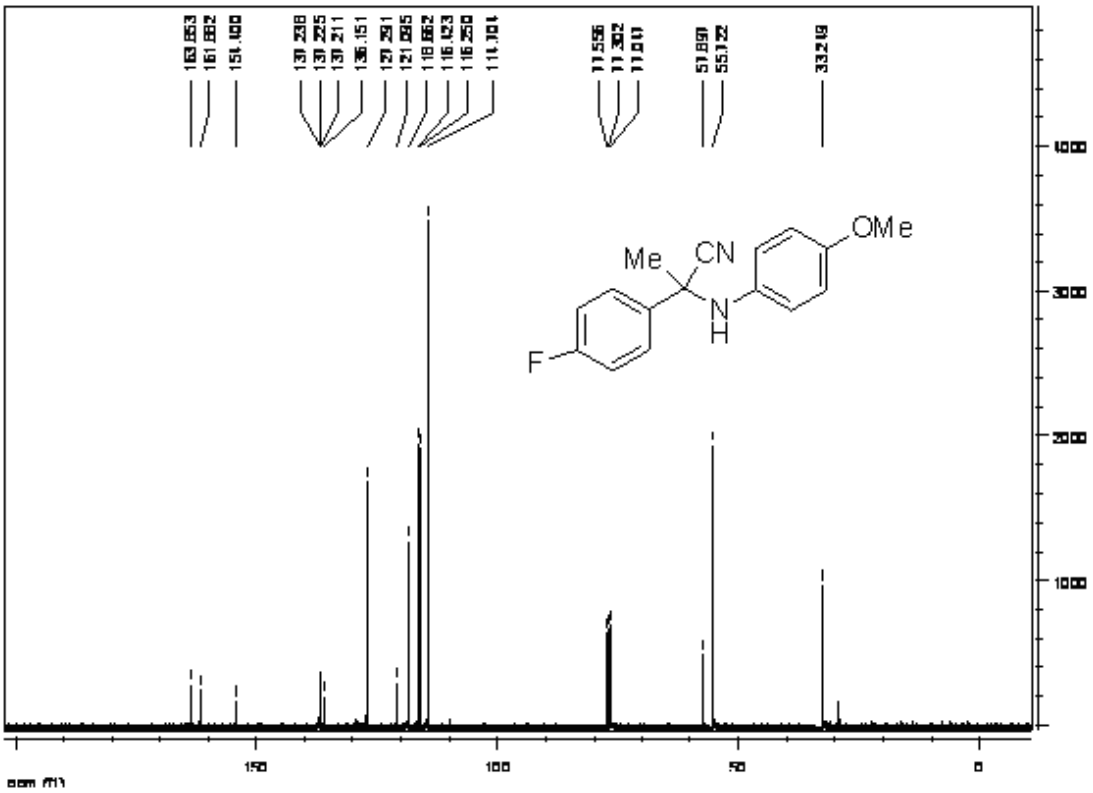


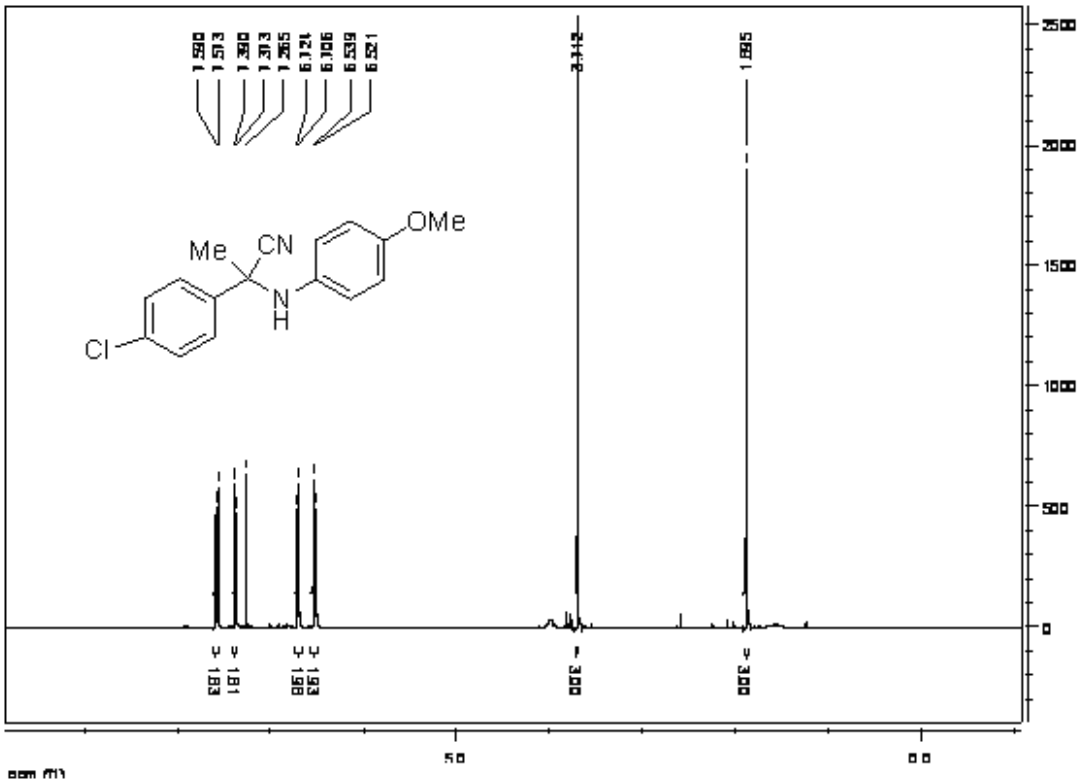


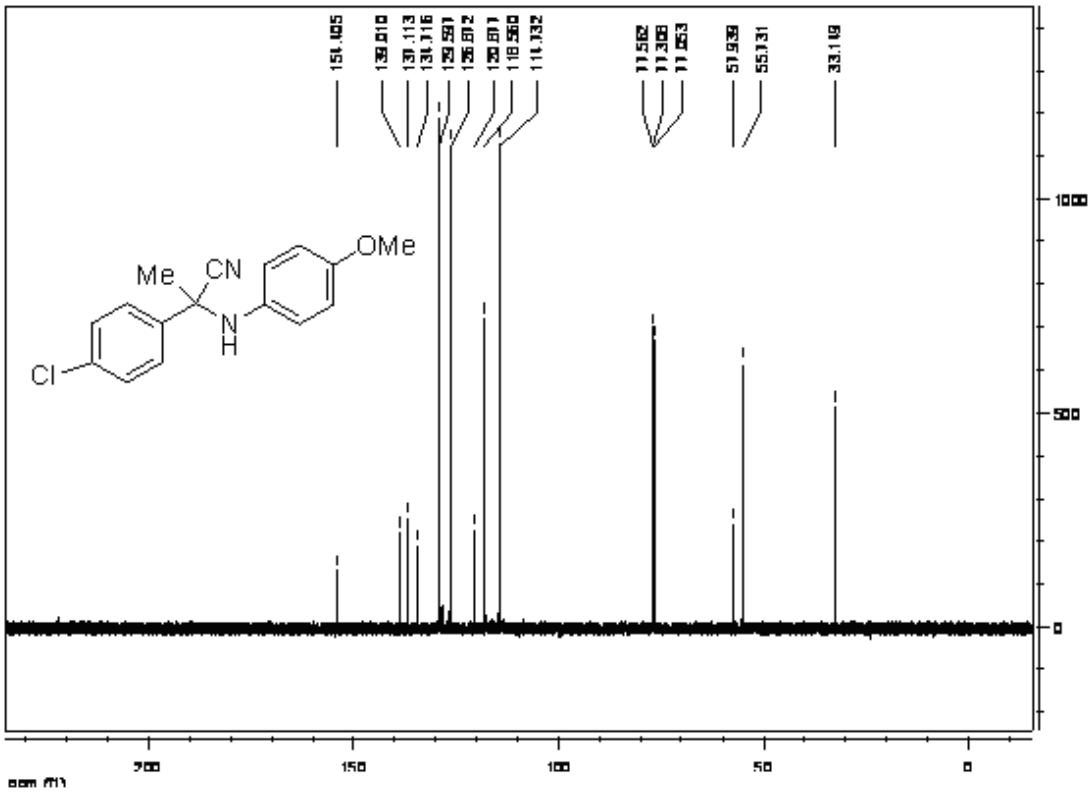


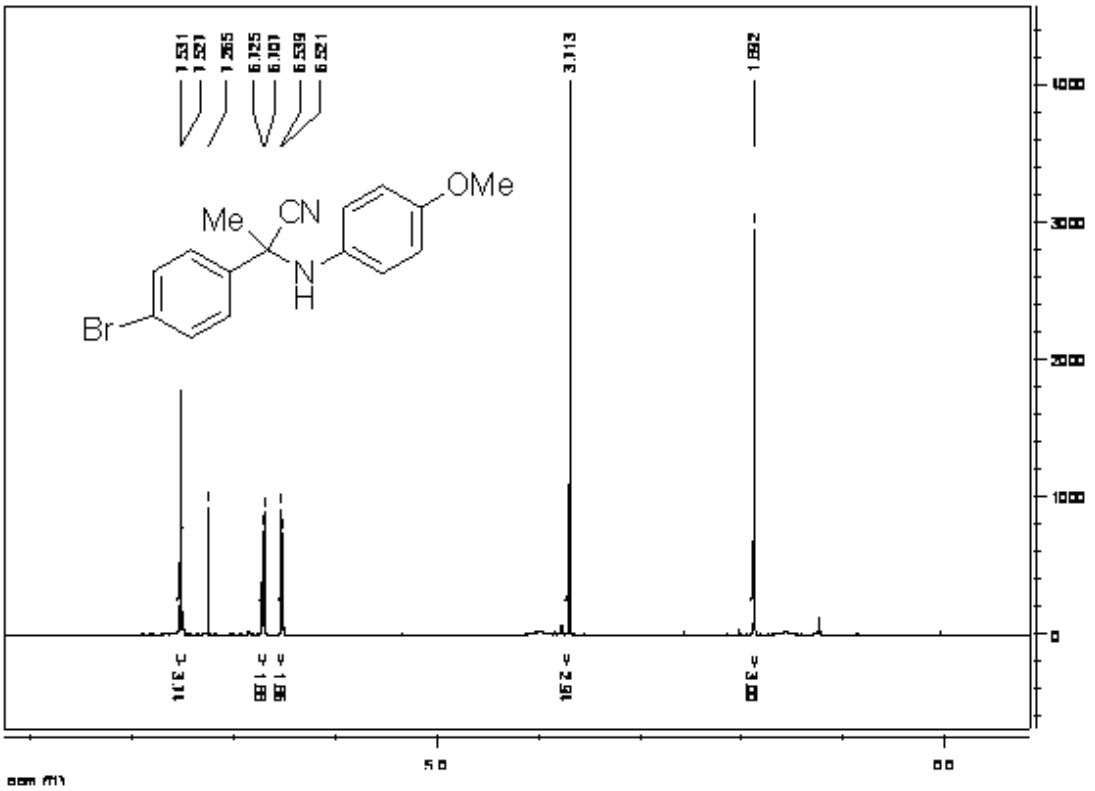


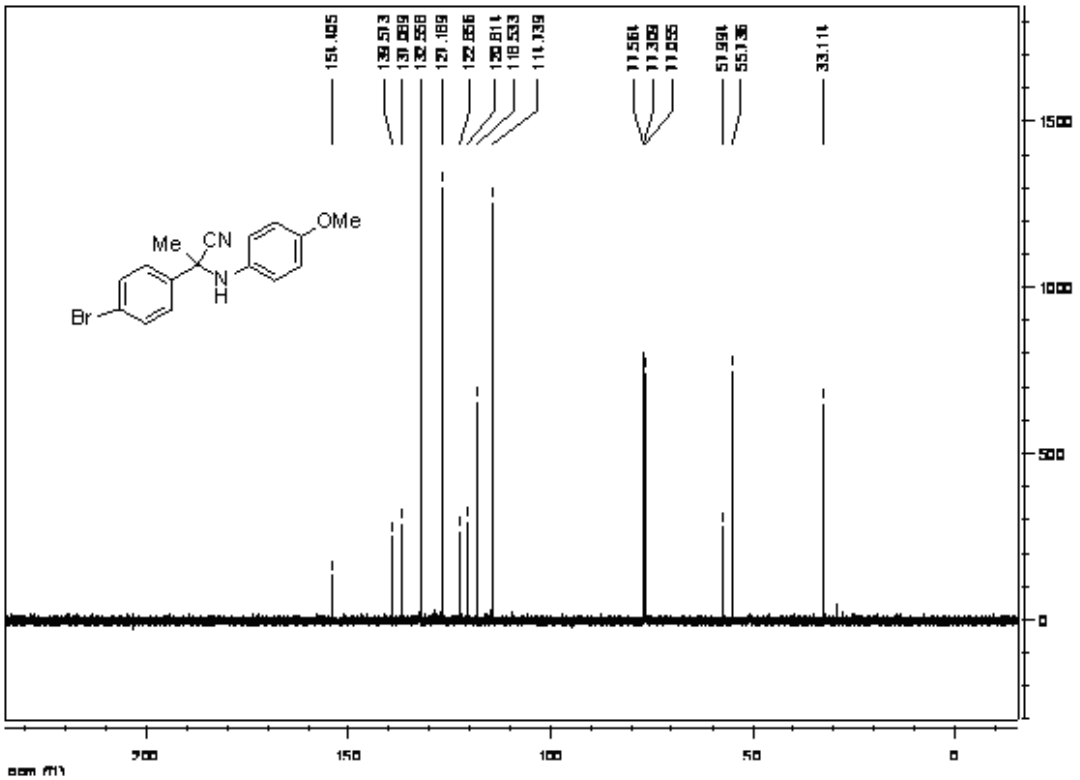


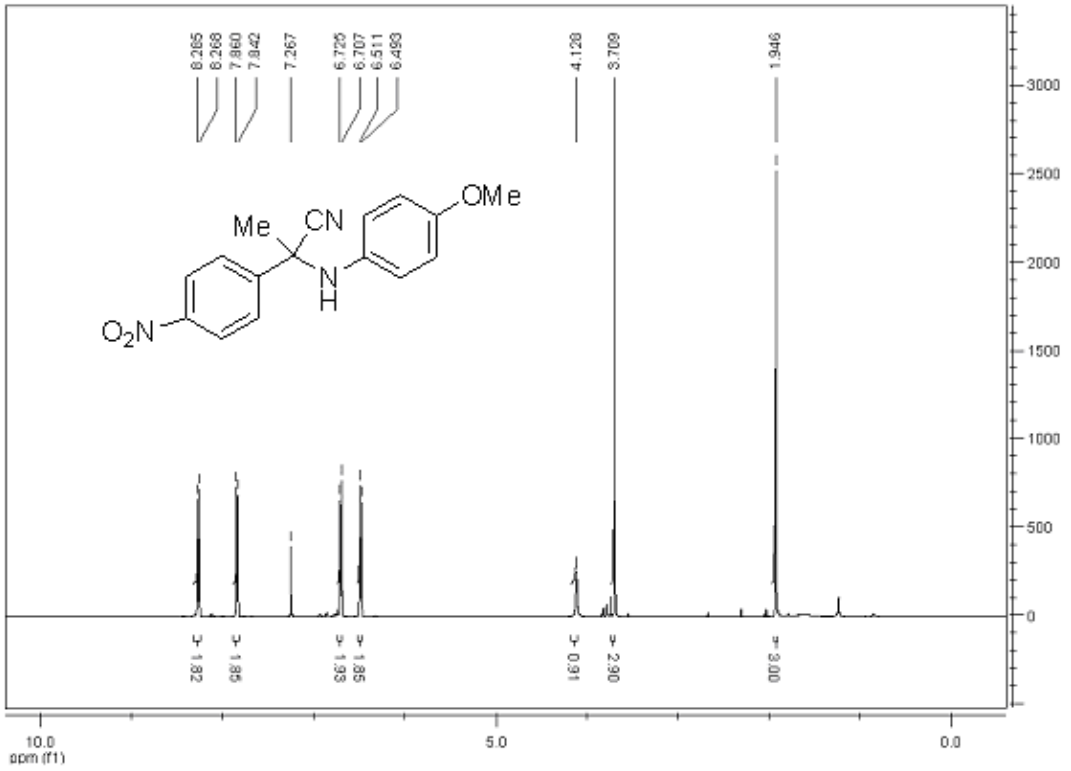


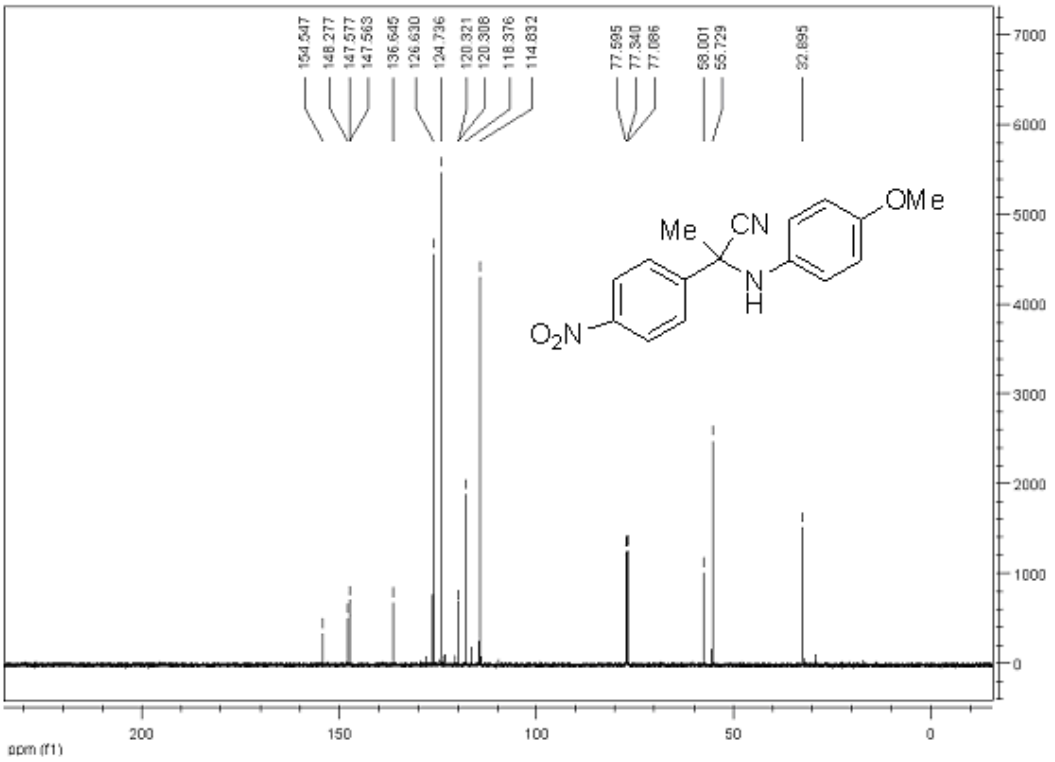


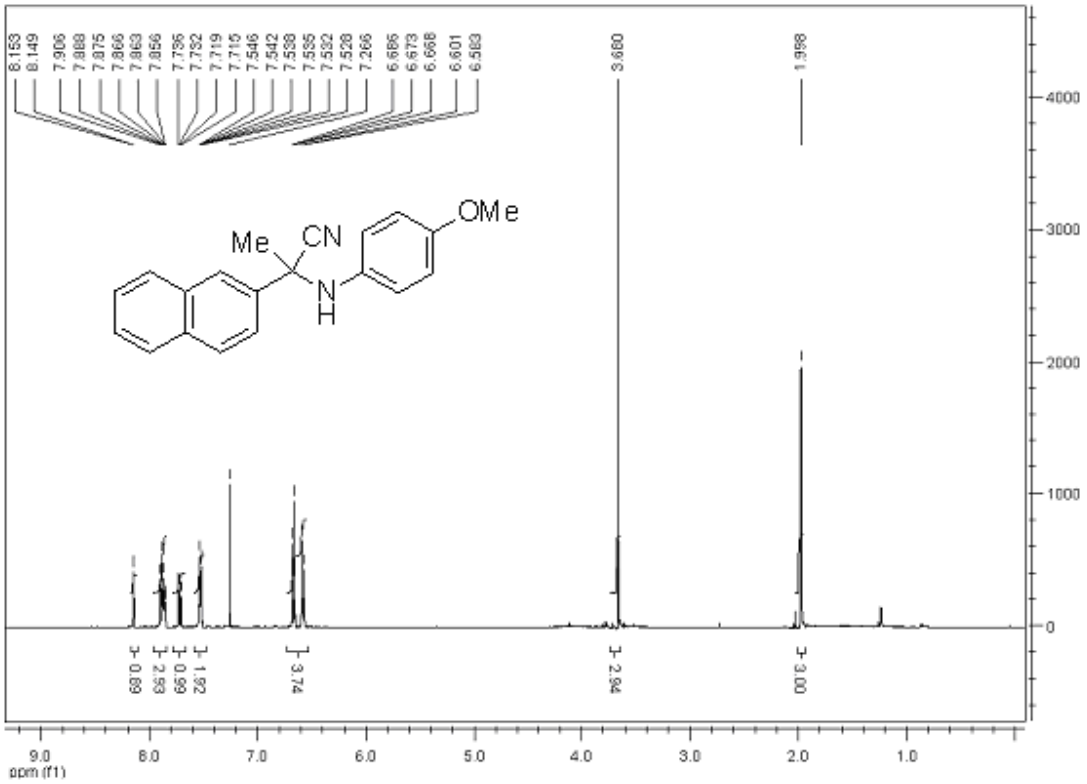


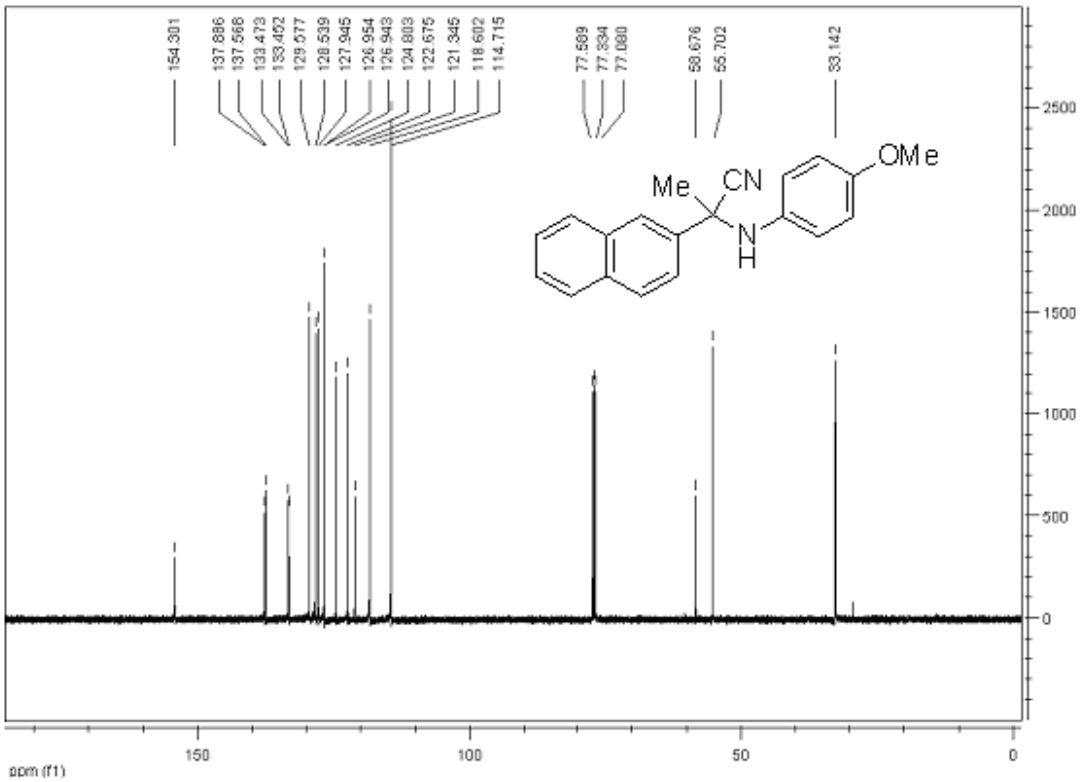


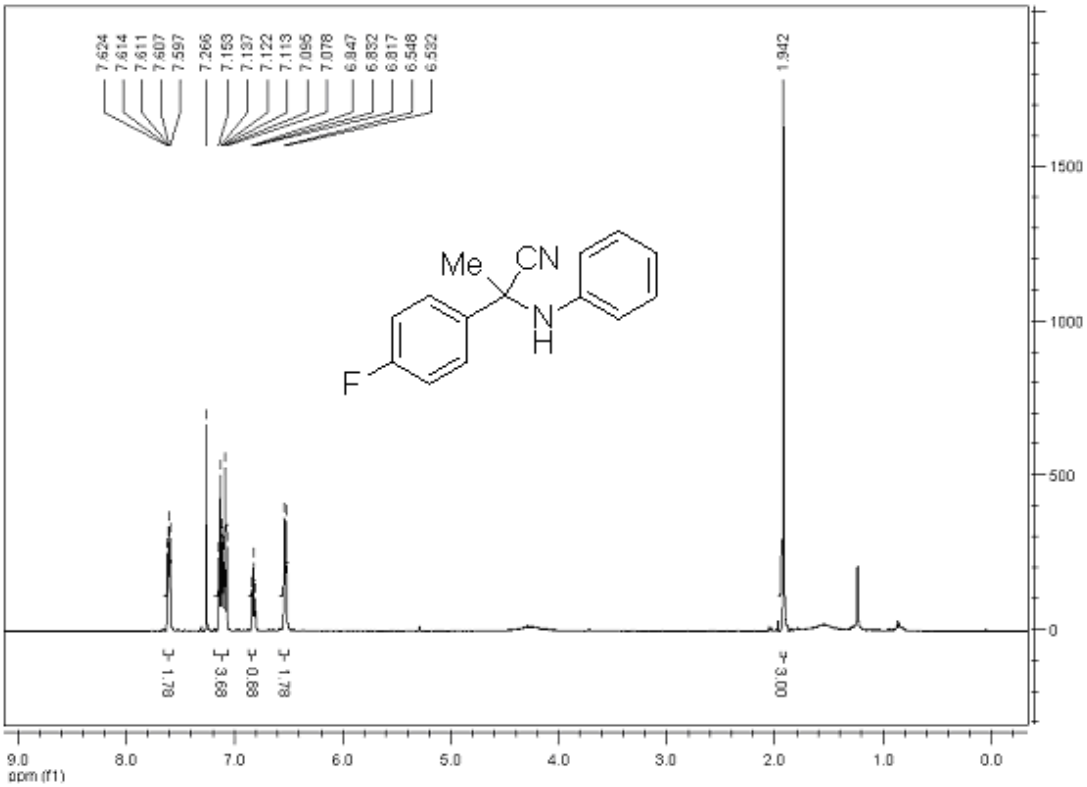


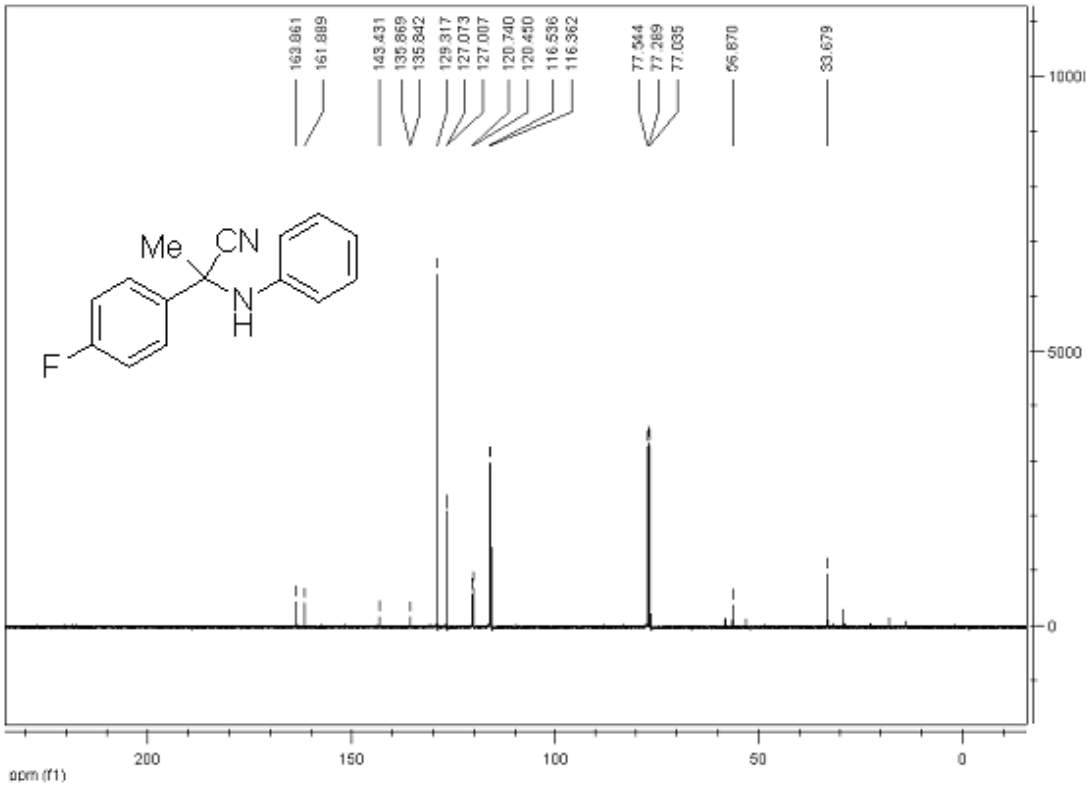


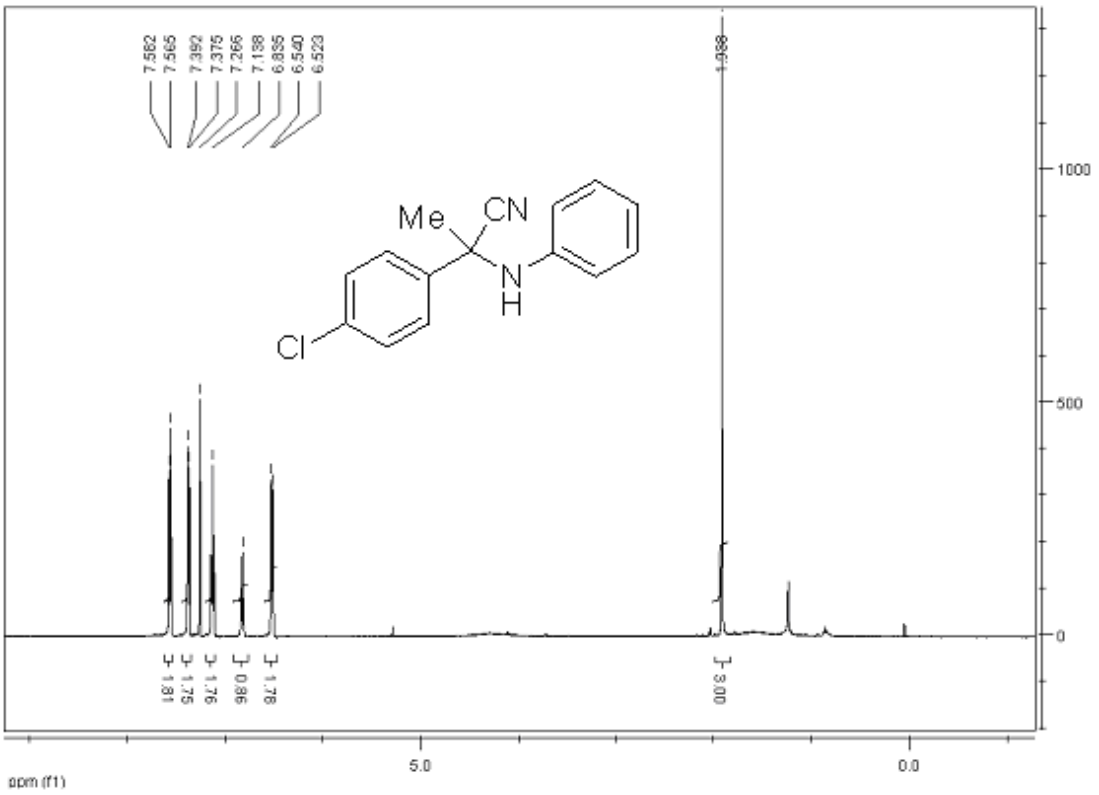


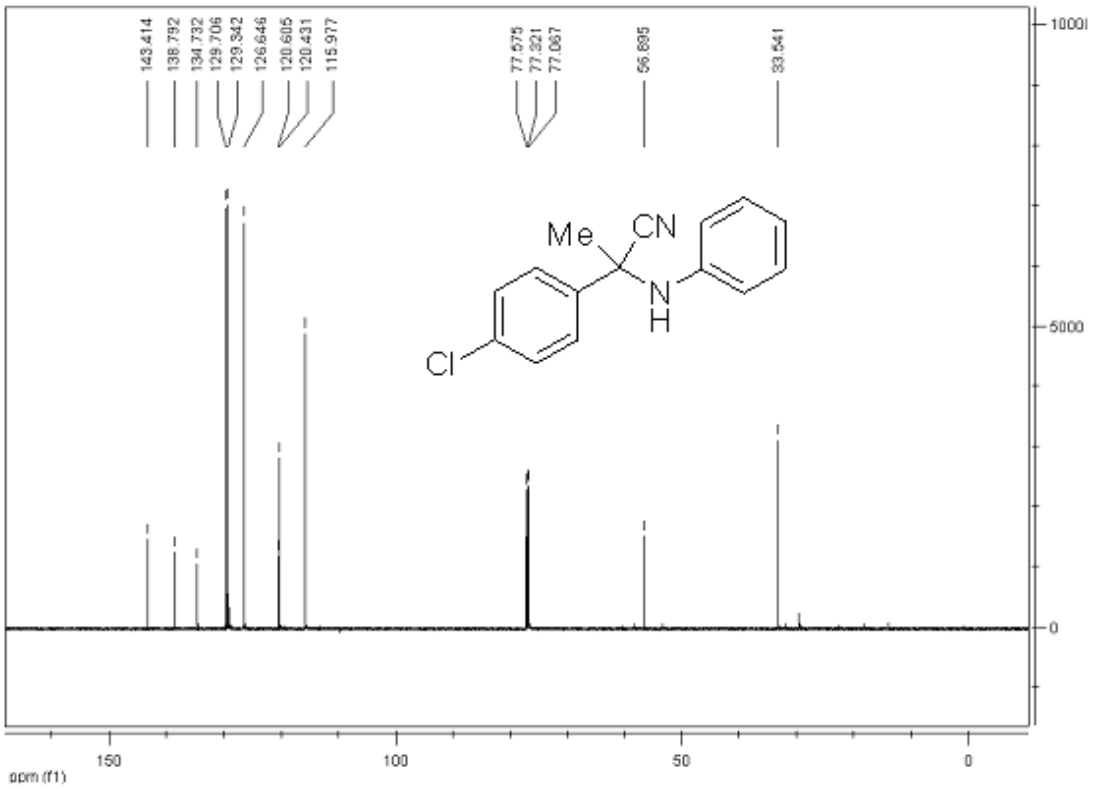


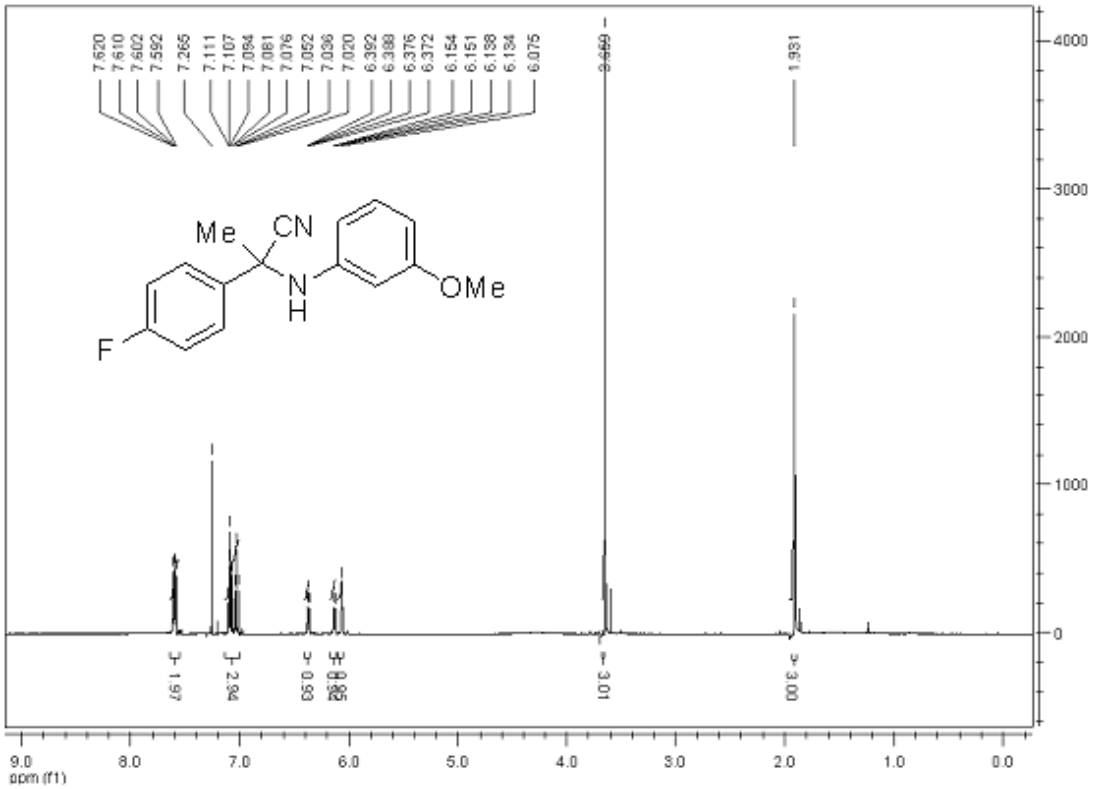


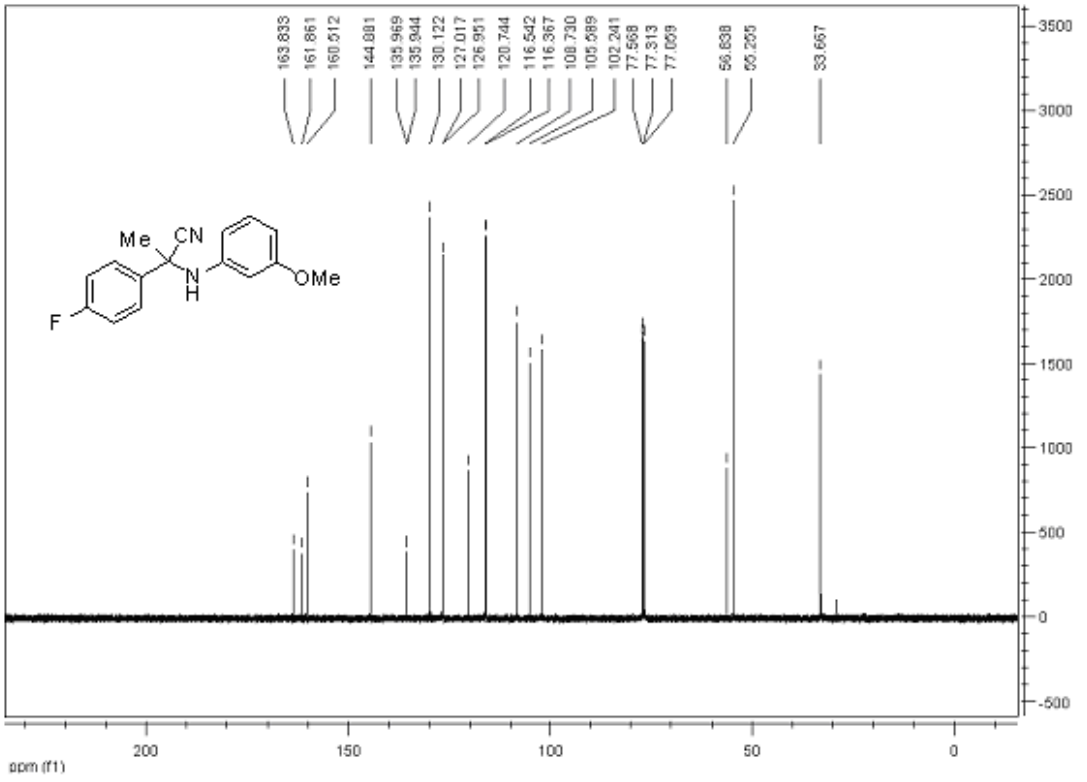


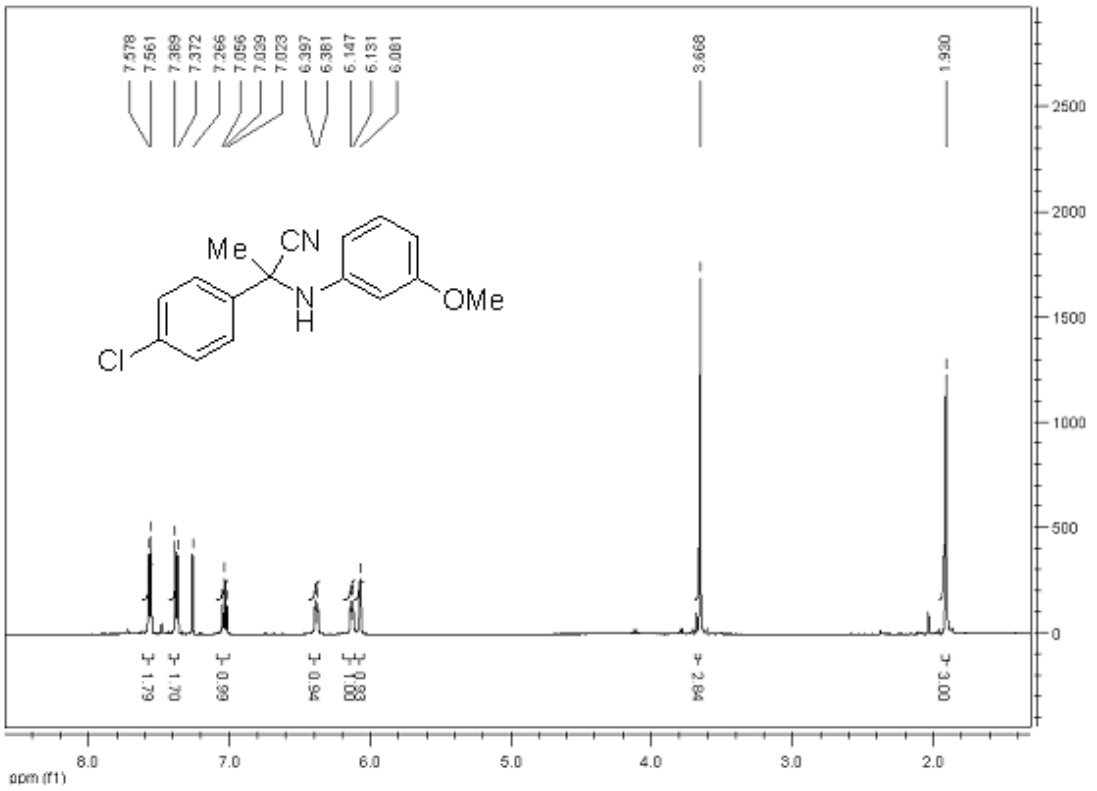


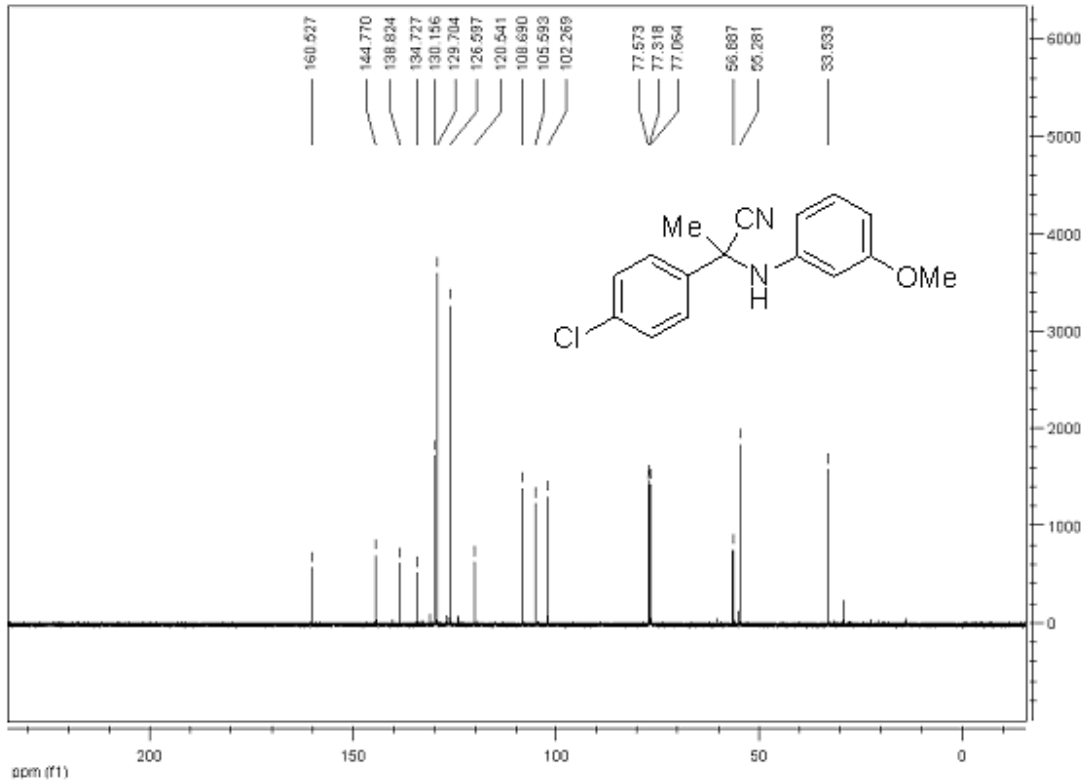


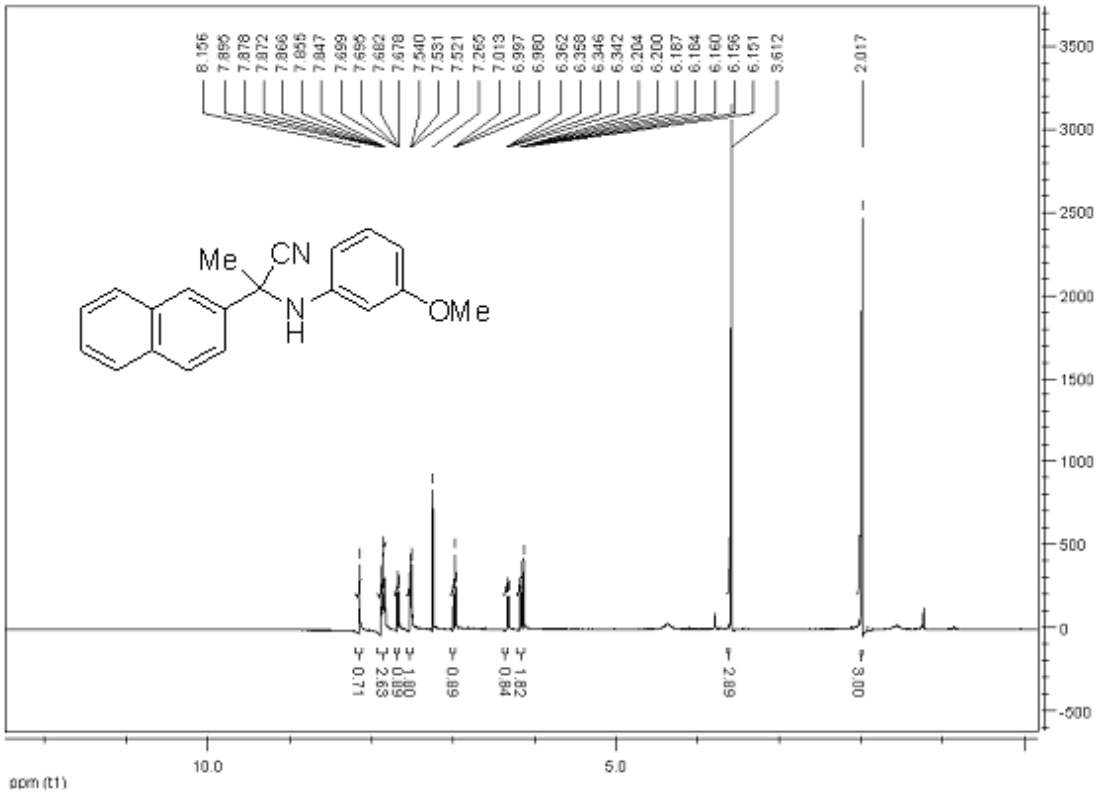


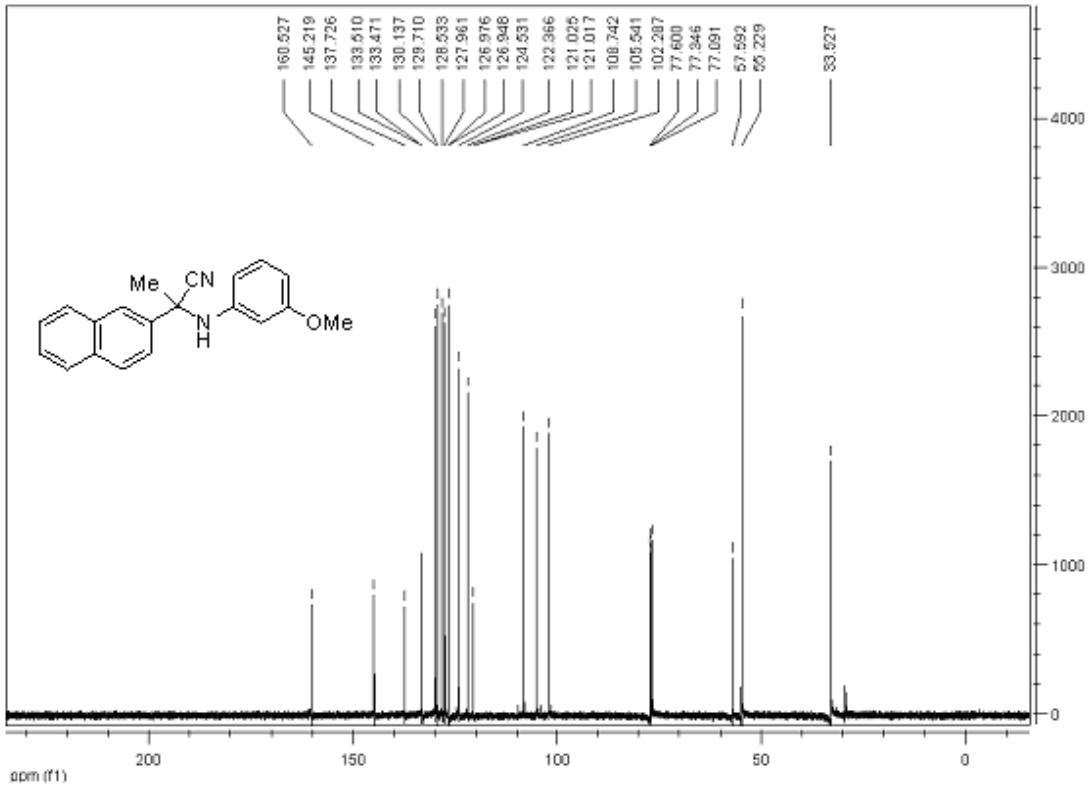


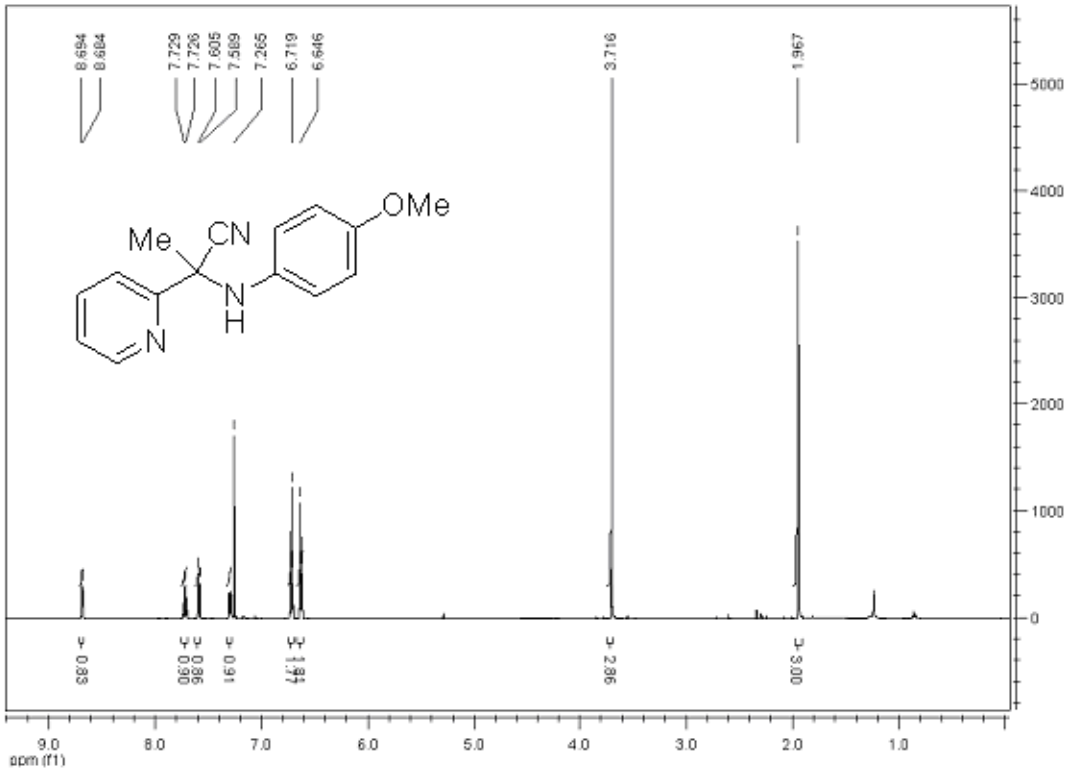


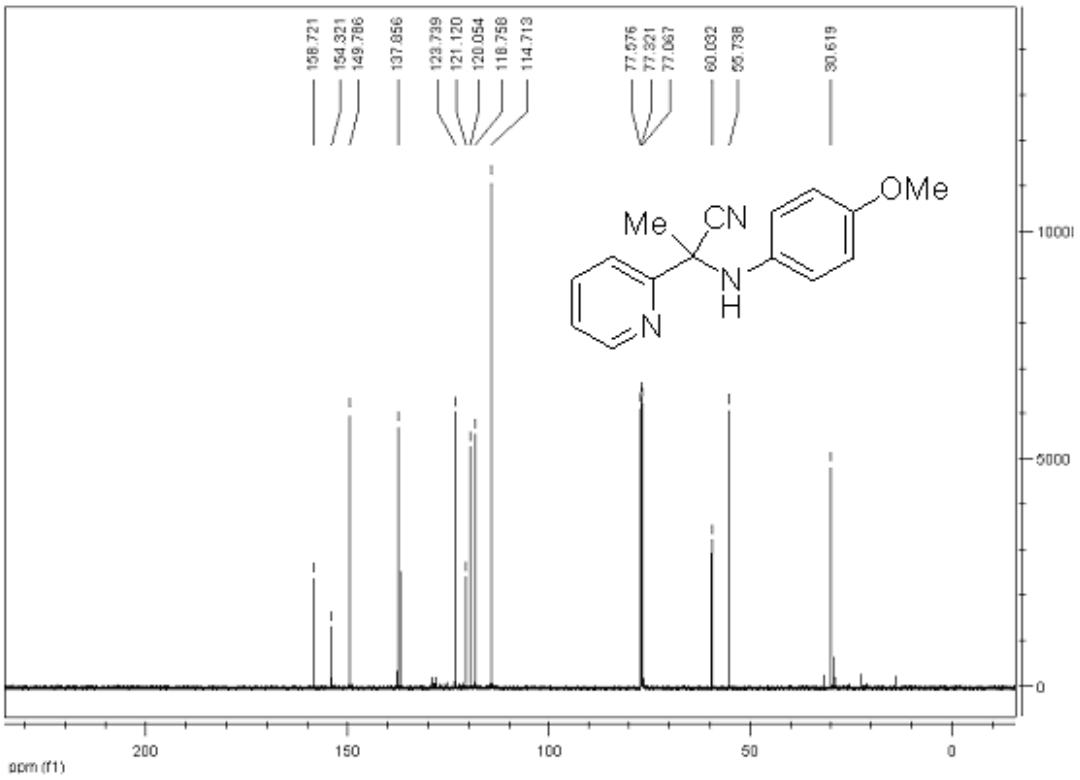


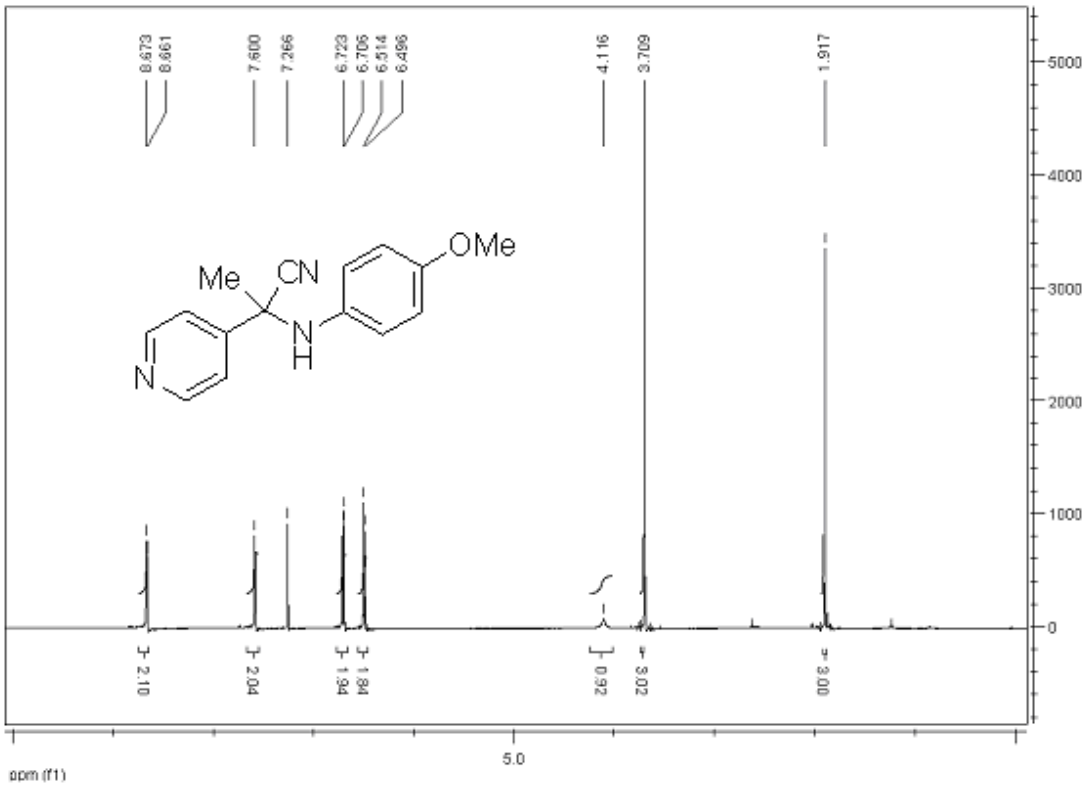


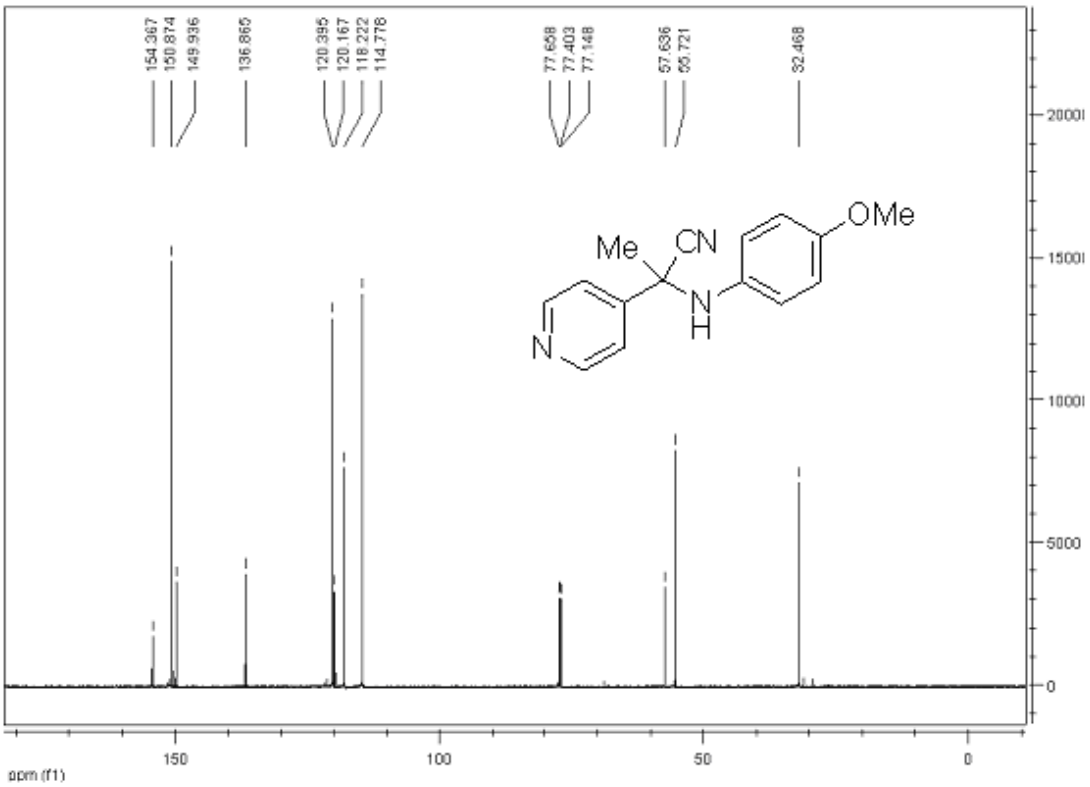


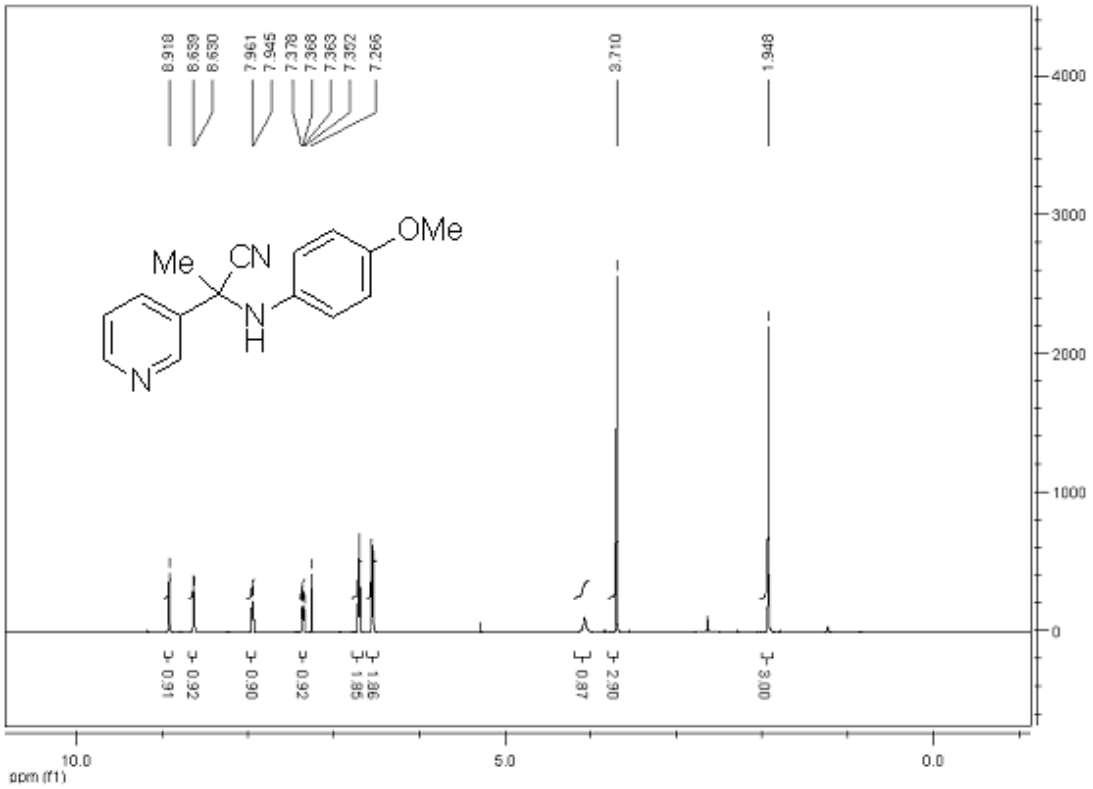


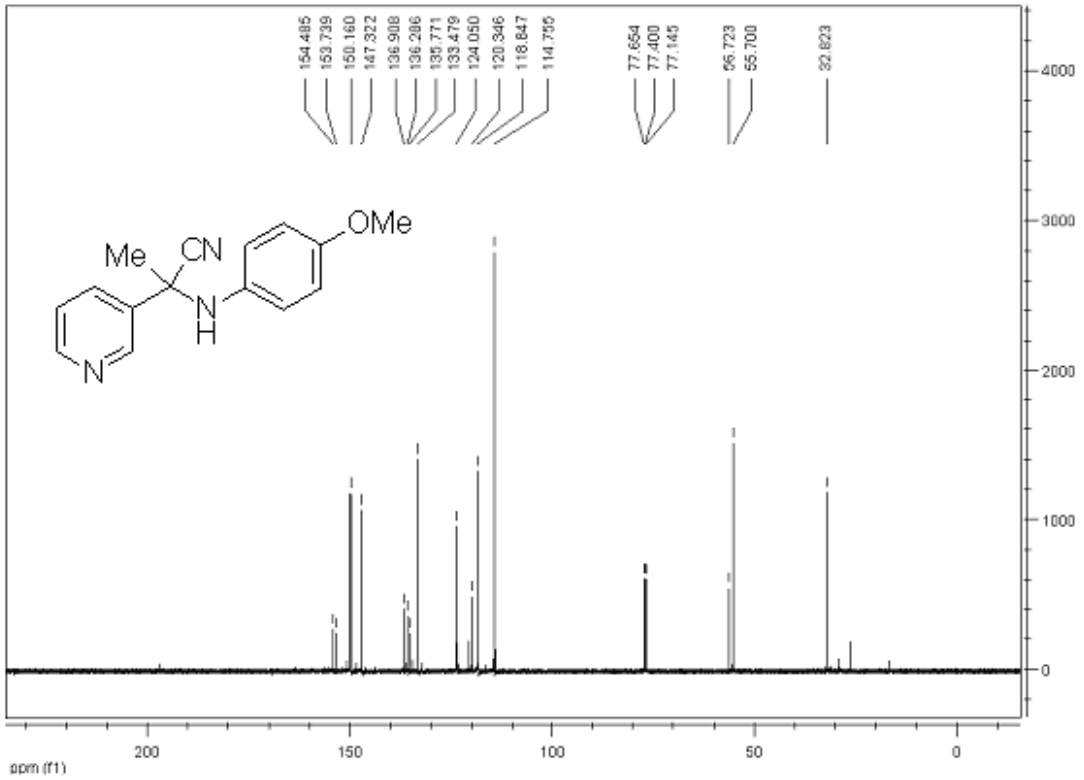


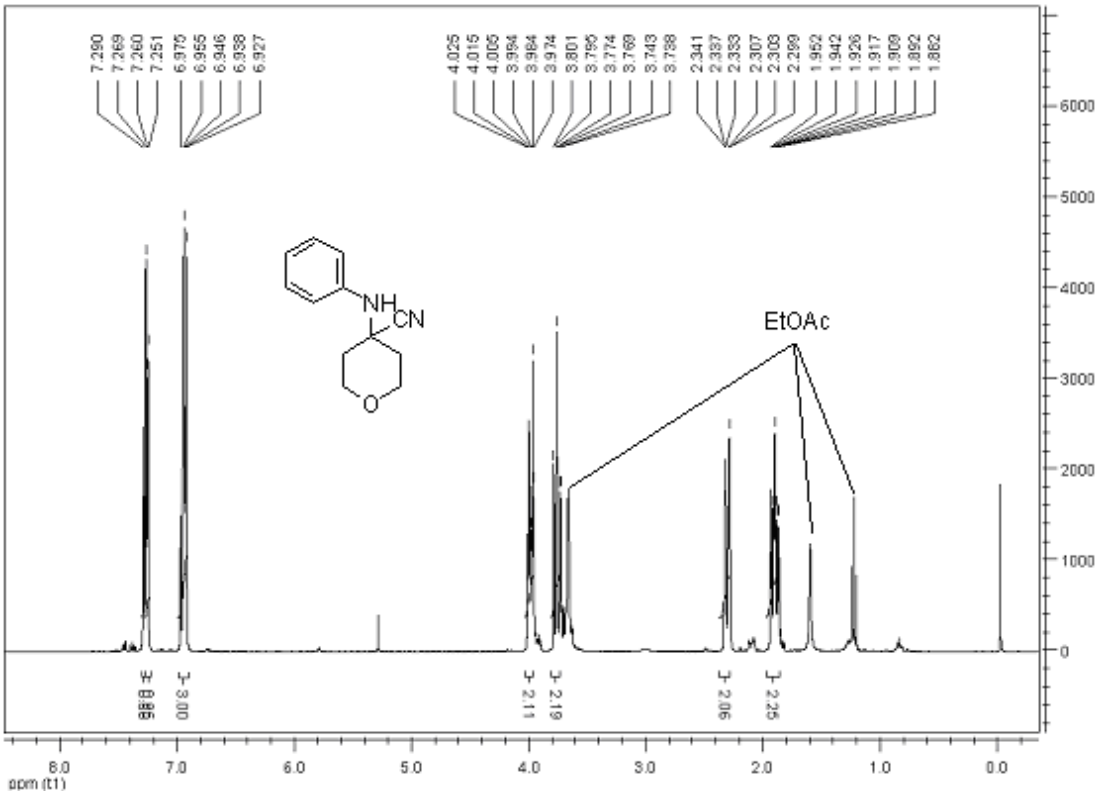


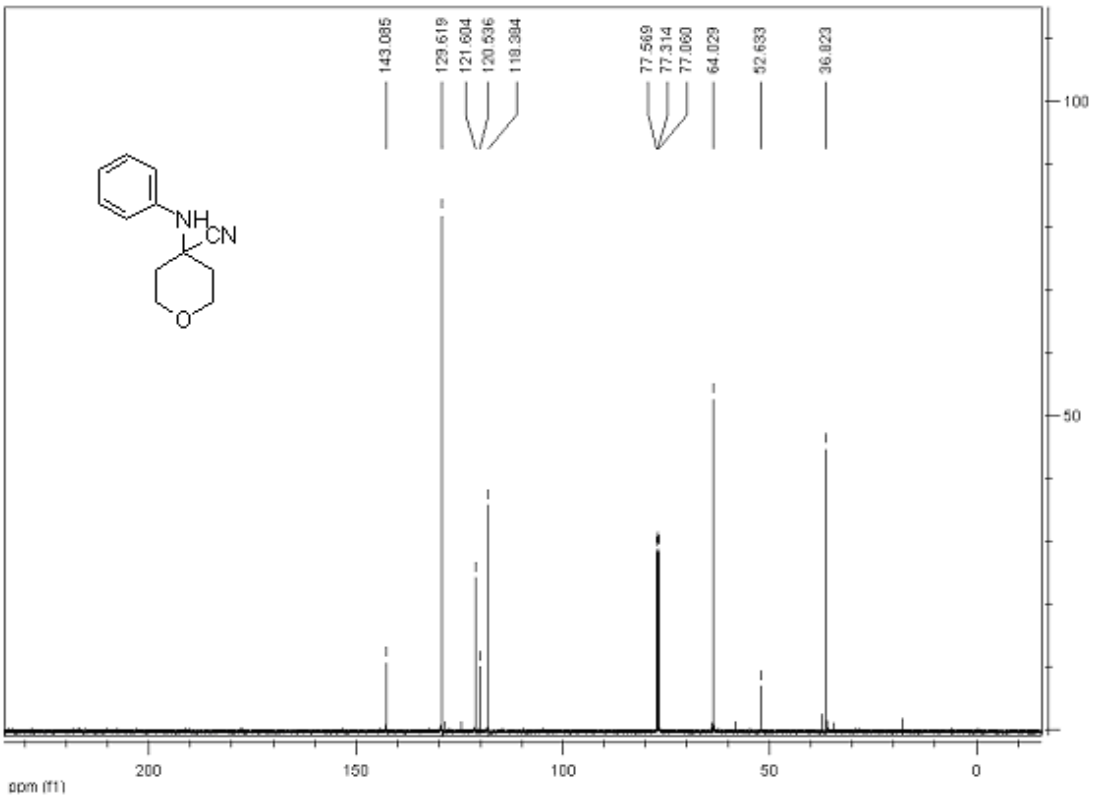




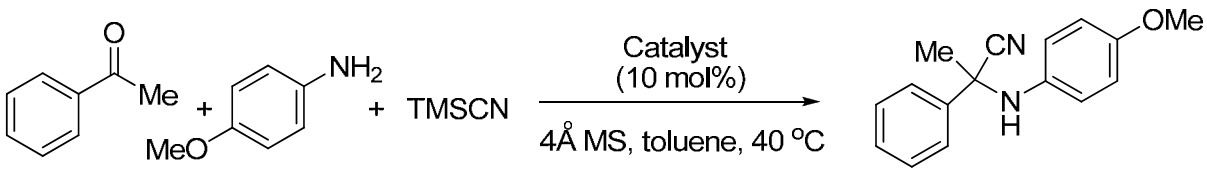


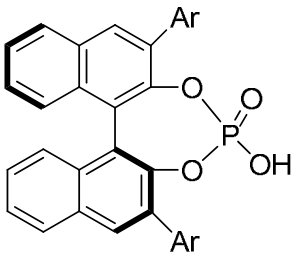






Screening of catalysts and reaction conditions for the three-component reaction



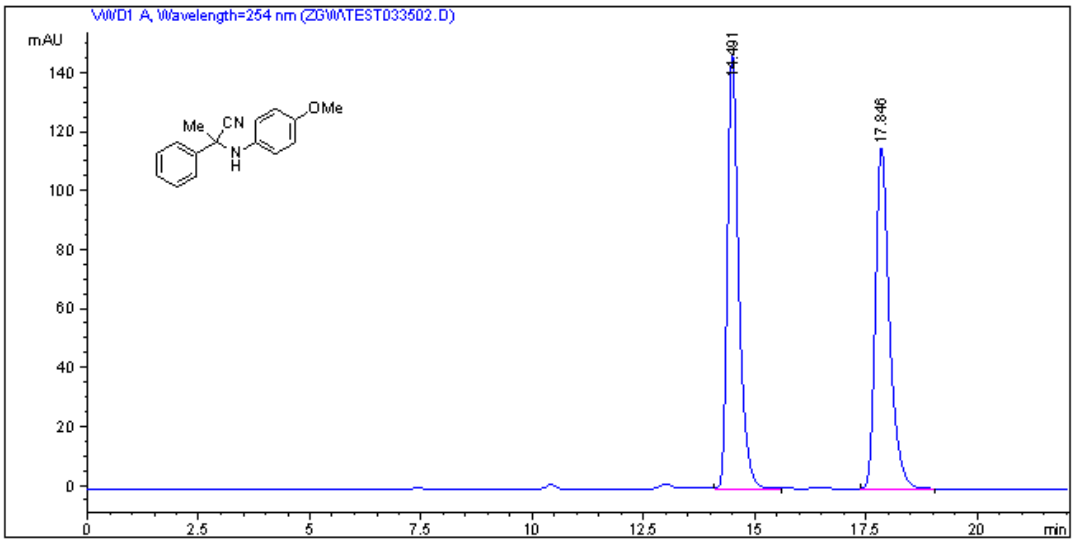


3: Ar = 9-Phenanthrenyl
4: Ar = H
5: Ar = Ph
6: Ar = 4-$NO_2C_6H_4$
7: Ar = 4-PhC_6H_4
8: Ar = 1-Np
9: Ar = 9-Anthy
10: Ar = $SiPh_3$
11: Ar = 2, 4, 6-(^{i}Pr)$_3C_6H_2$
12: Ar = 3, 5-$(CF_3)_2C_6H_3$

entry	Catalyst (10 mol%)	Yield (%) [b]	Ee (%) [c]
1	**3**	73	40
2	**4**	74	<3
3	**5**	77	8
4	**6**	71	<3
5	**7**	47	9
6	**8**	54	31
7	**9**	72	34
8	**10**	66	23
9	**11**	77	18
10	**12**	48	11

HPLC Charts for the compounds of **2a**, **2b** and **2g**.

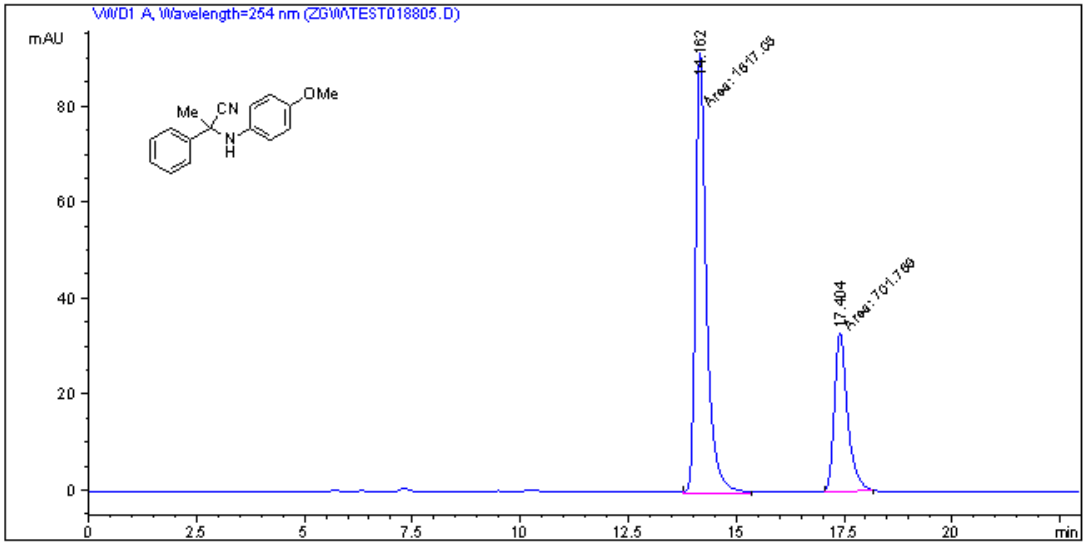
Sample Info : 254nm,i-PrOH:Hexane=20:80,AD-H,0.5mL/min



Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	14.491	BB	0.2644	2606.17896	147.49576	50.6747
2	17.846	BB	0.3318	2536.77563	115.55373	49.3253
Totals :				5142.95459	263.04949	

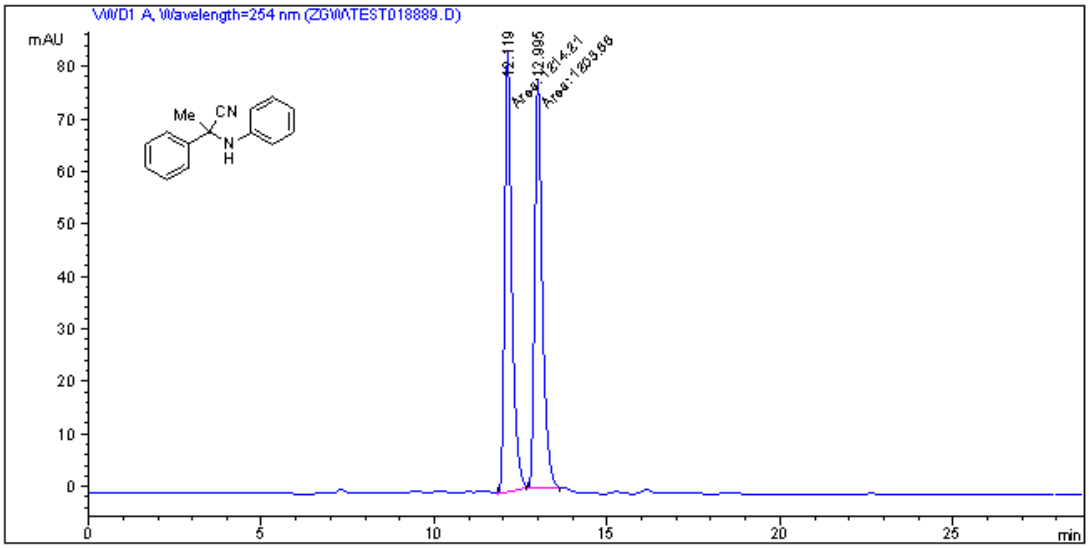
Sample Info : 254nm,i-PrOH:Hexane=20:80,AD-H,0.5mL/min



Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	14.162	MM	0.2936	1617.02759	91.78716	69.7350
2	17.404	MM	0.3531	701.78888	33.12692	30.2650
Totals :				2318.81647	124.91409	

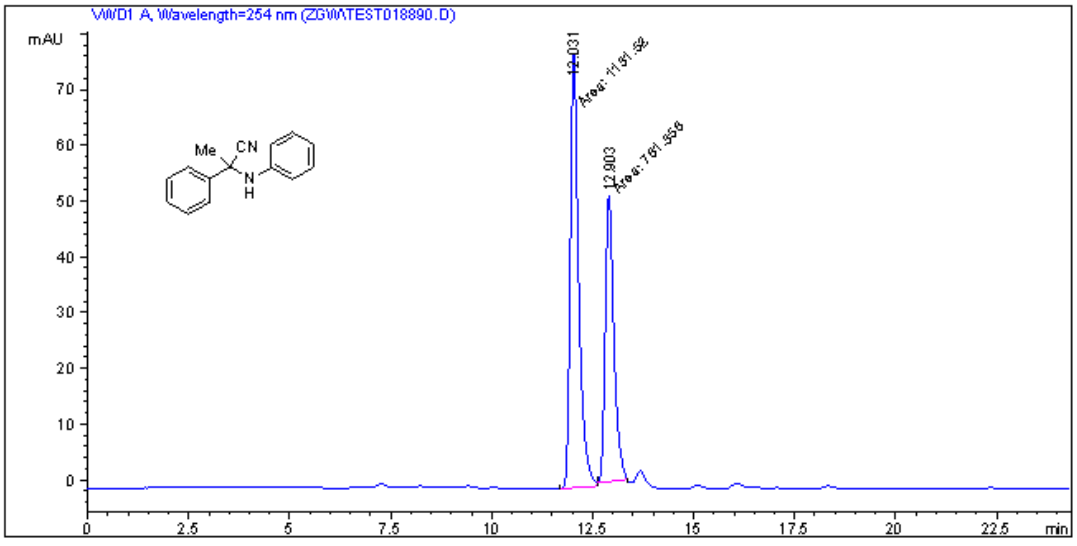
Sample Info : 254nm,AD-H,i-PrOH:Hexane=20:80,0.5mL/min



Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	12.119	MM	0.2417	1214.21057	83.72997	50.2182
2	12.995	MM	0.2579	1203.65918	77.77955	49.7818
Totals :				2417.86975	161.50951	

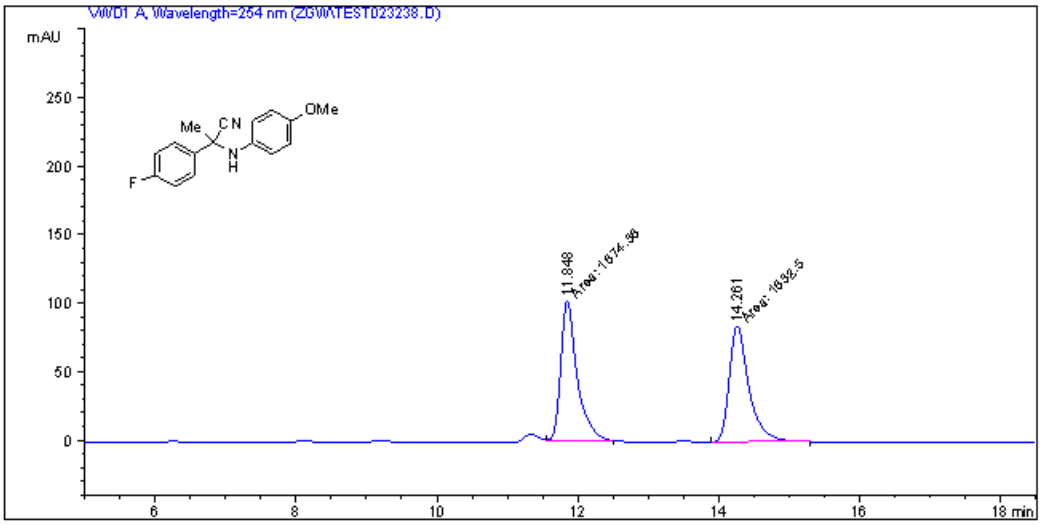
Sample Info : 254nm,AD-H,i-PrOH:Hexane=20:80,0.5mL/min



Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	12.031	MM	0.2417	1131.51538	78.03770	59.7777
2	12.903	MM	0.2476	761.35754	51.25764	40.2223
Totals :				1892.87292	129.29534	

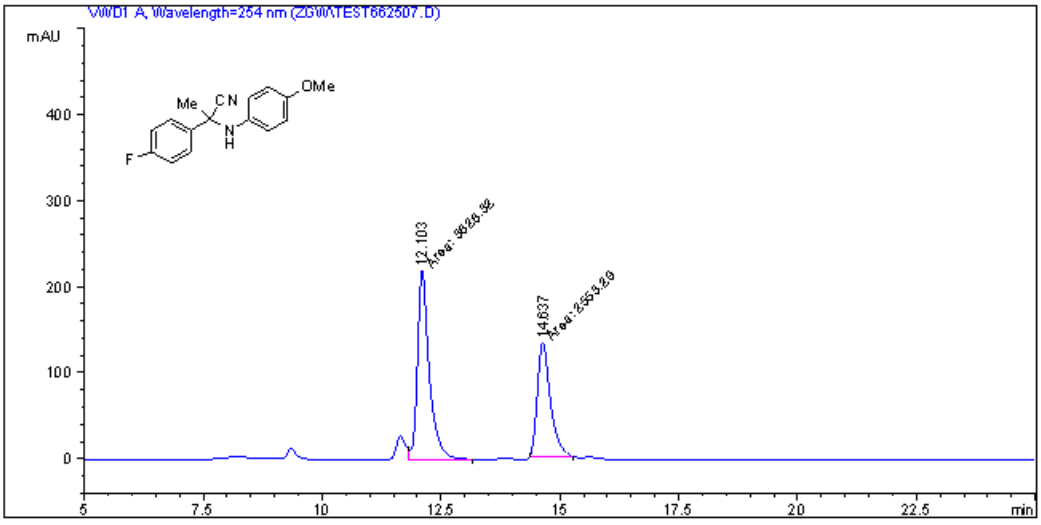
Sample Info : 254nm,AD-H,i-PrOH:Hexane=20:80,0.5mL/min



Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	11.848	MM	0.2712	1674.37903	102.88712	50.6332
2	14.261	MM	0.3217	1632.50000	84.56818	49.3668
Totals :				3306.87903	187.45530	

Sample Info : 254nm,AD-H,i-PrOH:Hexane=20:80,0.5mL/min



Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	12.103	MM	0.2888	3828.31714	220.89569	59.9899
2	14.637	MM	0.3210	2553.28662	132.58116	40.0101
Totals :				6381.60376	353.47685	