

Electronic Supplementary Information

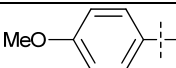
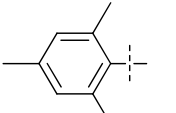
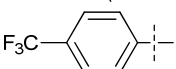
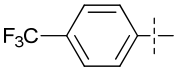
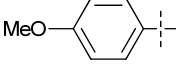
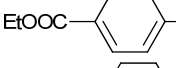
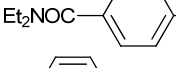
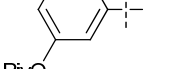
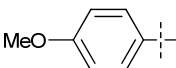
Highly efficient pincer-nickel-catalyzed cross-coupling of aryltrimethylammonium triflates with arylzinc reagents

Dan Wu, Jian-Long Tao and Zhong-Xia Wang

Department of Chemistry, University of Science and Technology of China, Hefei, Anhui 230026, China, and Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Tianjin 300072, China

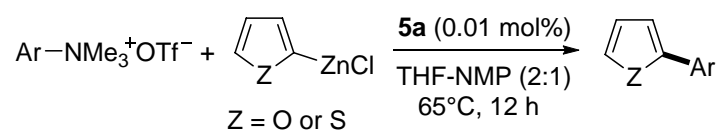
Table S1. Cross-coupling of arylzinc chlorides with aryltrimethyl ammonium triflates catalyzed using **5a** (0.01 mol %) as catalyst^a

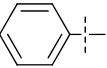
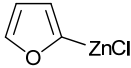
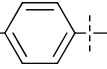
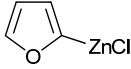
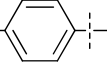
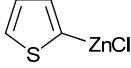
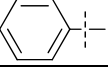
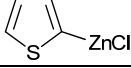
$$\text{ArNMe}_3^+\text{OTf}^- + \text{Ar}^1\text{ZnCl} \xrightarrow[\text{65}^\circ\text{C, 12 h}]{\text{5a (0.01 mol\%)} \text{ THF-NMP (2:1)}} \text{Ar-Ar}^1$$

Entry	Ar	Ar ¹ ZnCl	Yield (%) ^b
1		<i>p</i> -MeC ₆ H ₄ ZnCl	14
2		<i>p</i> -Me ₂ NC ₆ H ₄ ZnCl	13
3		<i>p</i> -MeC ₆ H ₄ ZnCl	84
4		<i>p</i> -MeOC ₆ H ₄ ZnCl	84
5		<i>o</i> -MeC ₆ H ₄ ZnCl	40
6		<i>p</i> -CF ₃ C ₆ H ₄ ZnCl	69
7		<i>p</i> -CF ₃ C ₆ H ₄ ZnCl	65
8		<i>p</i> -CF ₃ C ₆ H ₄ ZnCl	25
9		<i>p</i> -CF ₃ C ₆ H ₄ ZnCl	Trace

^aUnless otherwise specified, the reactions were carried out on a 0.5 mmol scale according to the conditions indicated by the above equation, 1.5 equiv. of ArZnCl were employed. The zinc reagents were prepared from ZnCl₂ and an equiv. of Grignard reagents in the presence of two equiv. of LiCl. ^b Isolated yield.

Table S2. Cross-coupling of 2-furyl- or 2-thienylzinc chloride with aryltrimethylammonium triflates using **5a** (0.01 mol %) as catalyst^a

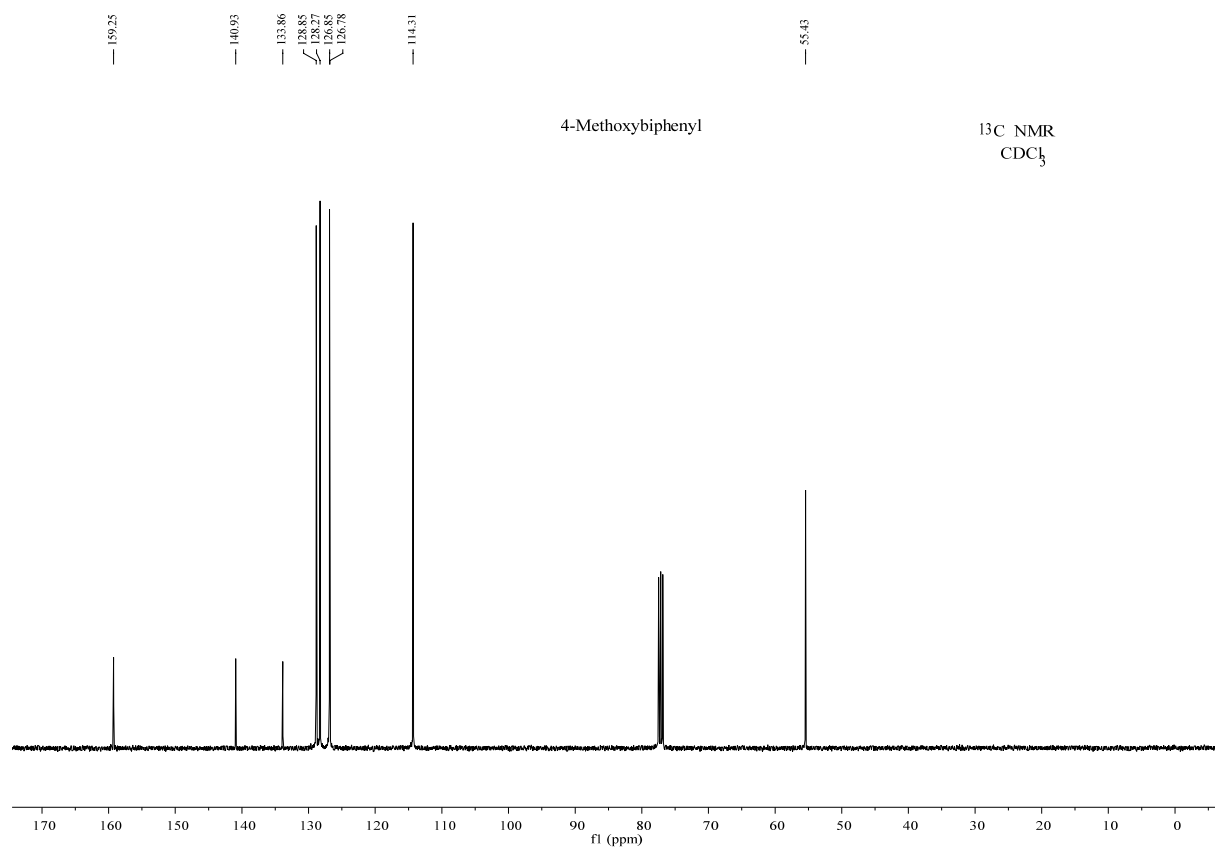
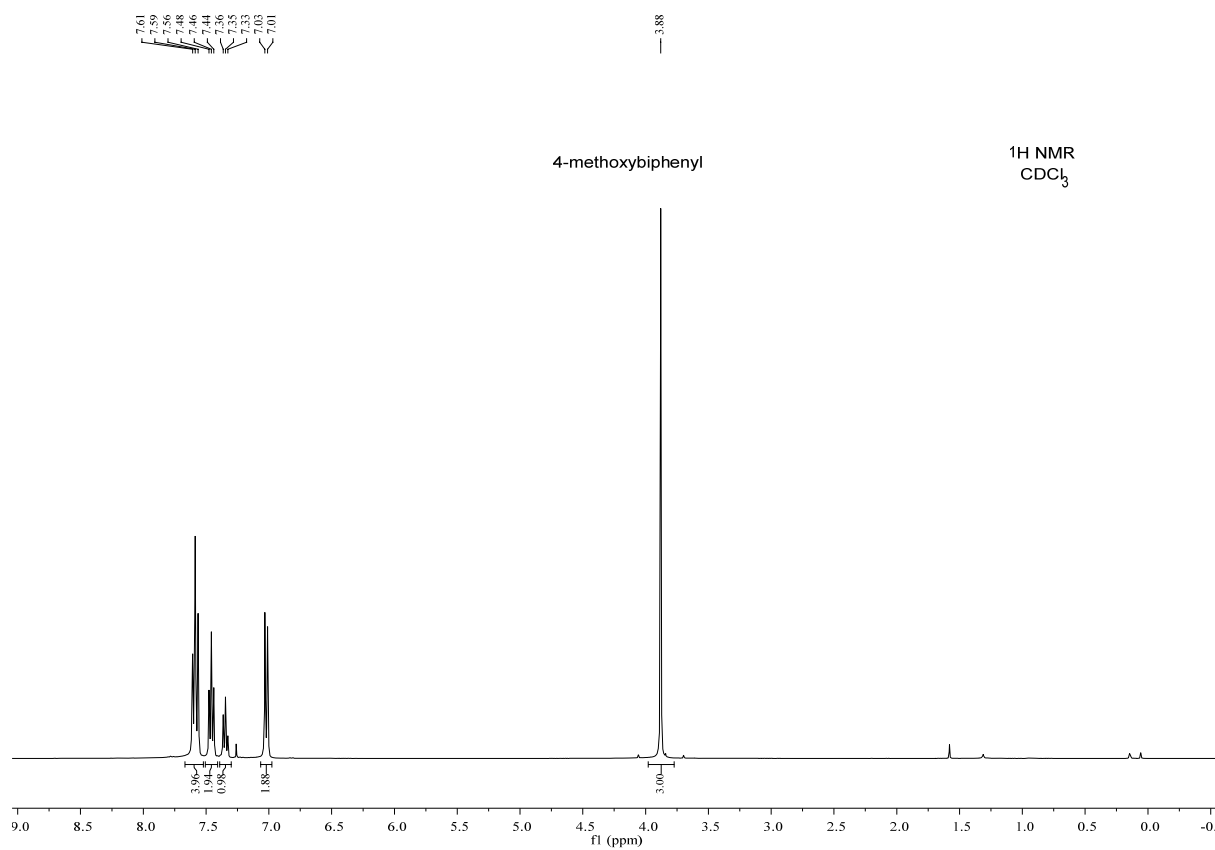


Entry	Ar	HetArZnCl	Yield (%) ^b
1	PhOC- 		26
2	EtOOC- 		64
3	EtOOC- 		<5%
4	PhOC- 		<5%

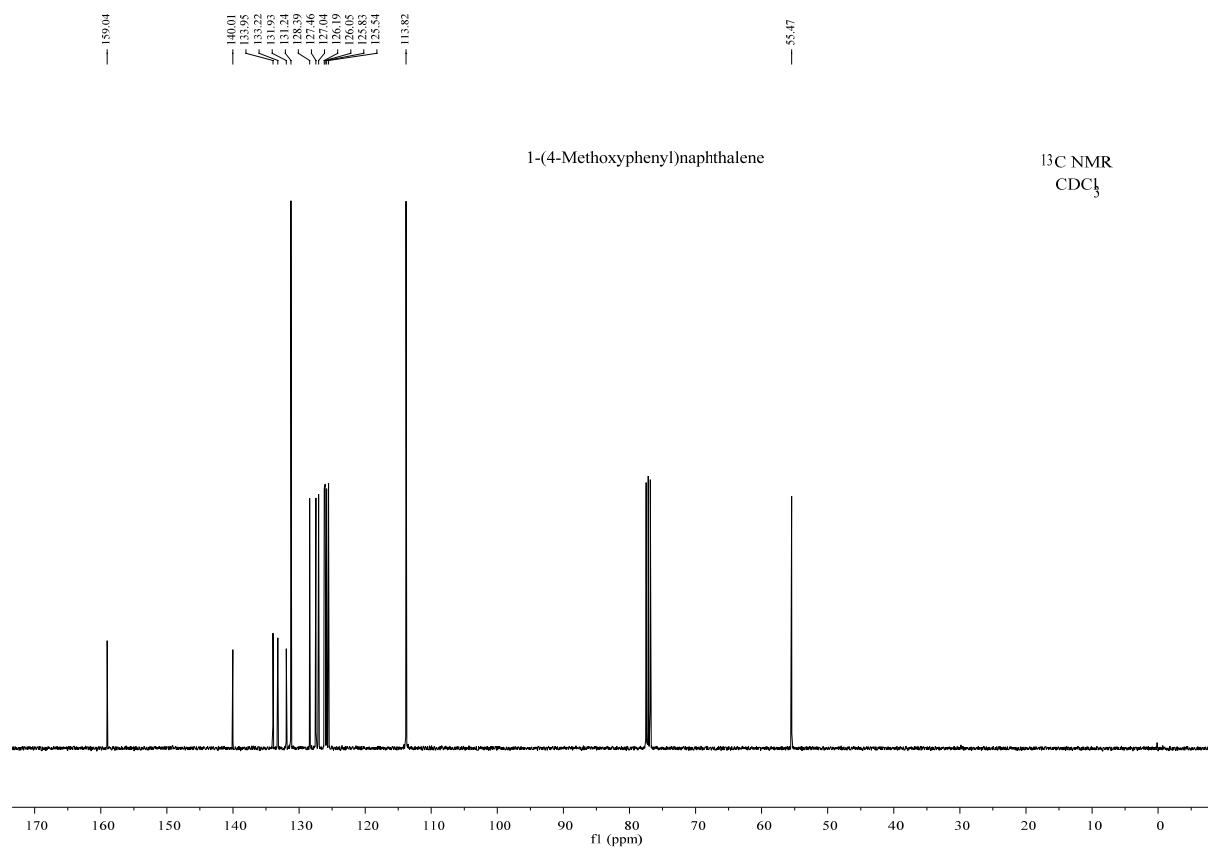
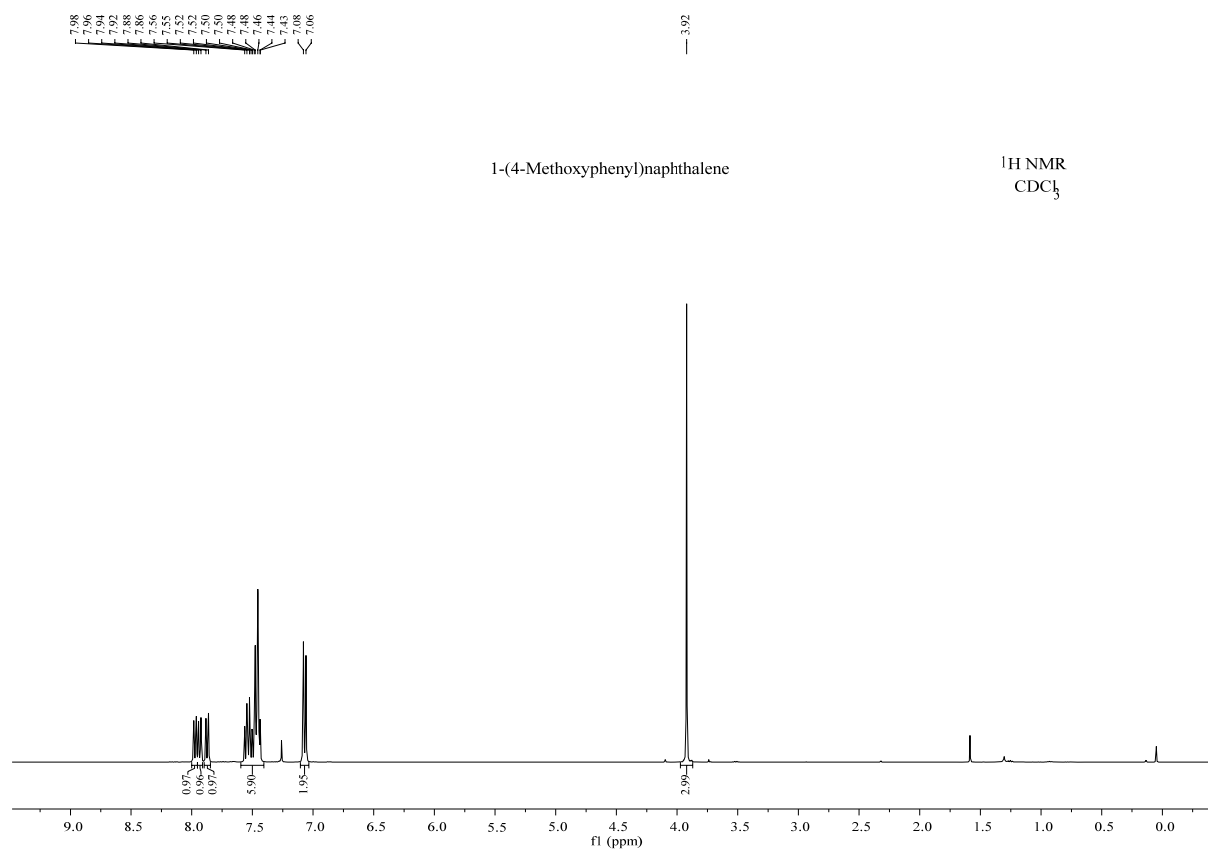
^a The reactions were carried out on a 0.5 mmol scale according to the conditions indicated by the above equation, 1.5 equiv. of ArZnCl were employed. The heteroarylzinc chlorides were prepared from ZnCl₂ and an equiv. of heteroaryllithium. ^b Isolated yield.

Copies of ^1H and ^{13}C NMR spectra

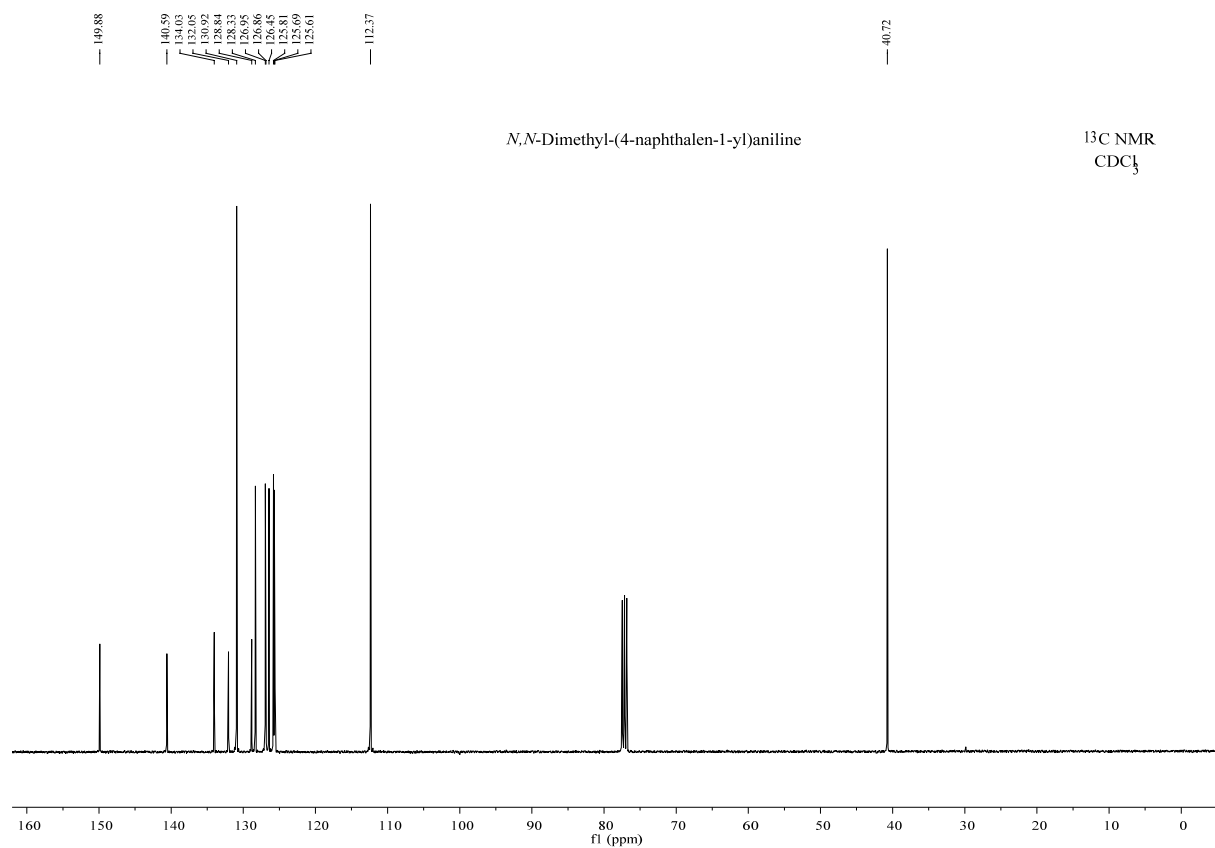
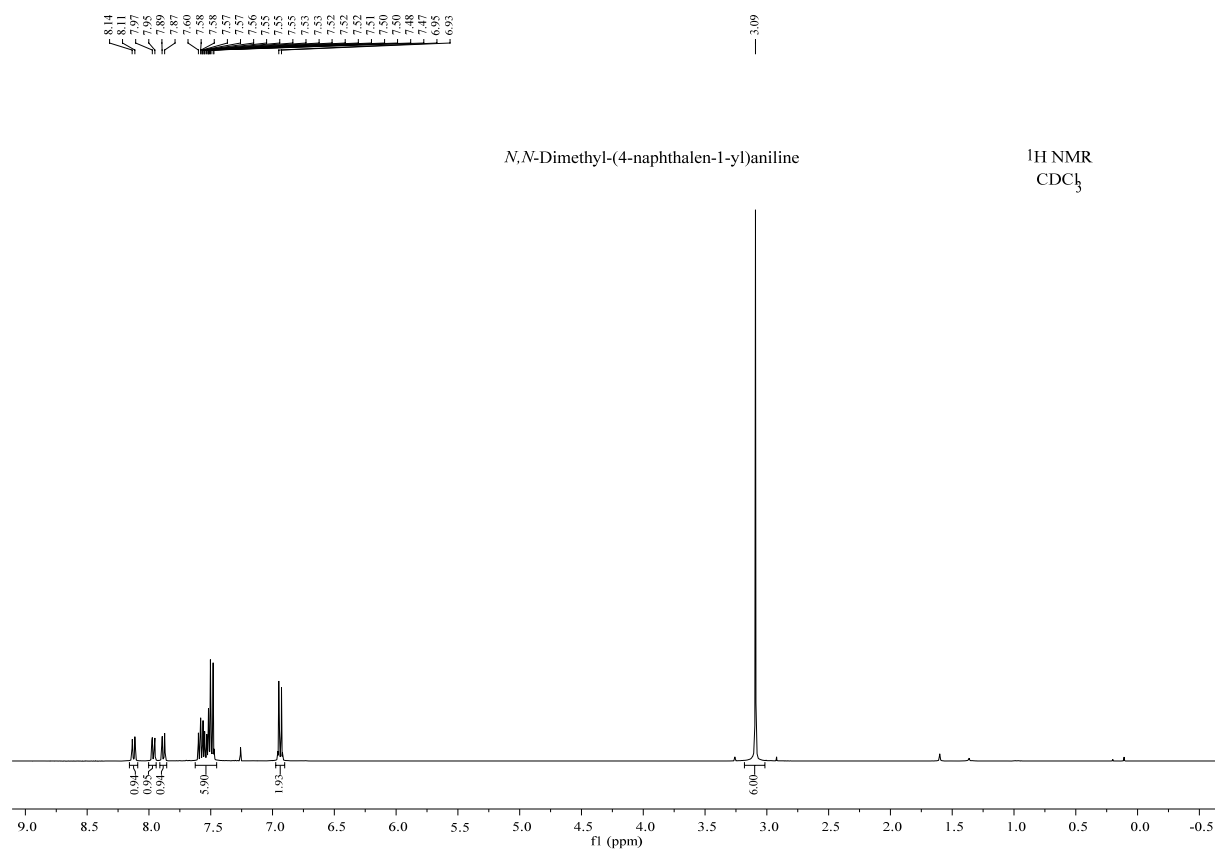
1. 4-Methoxybiphenyl



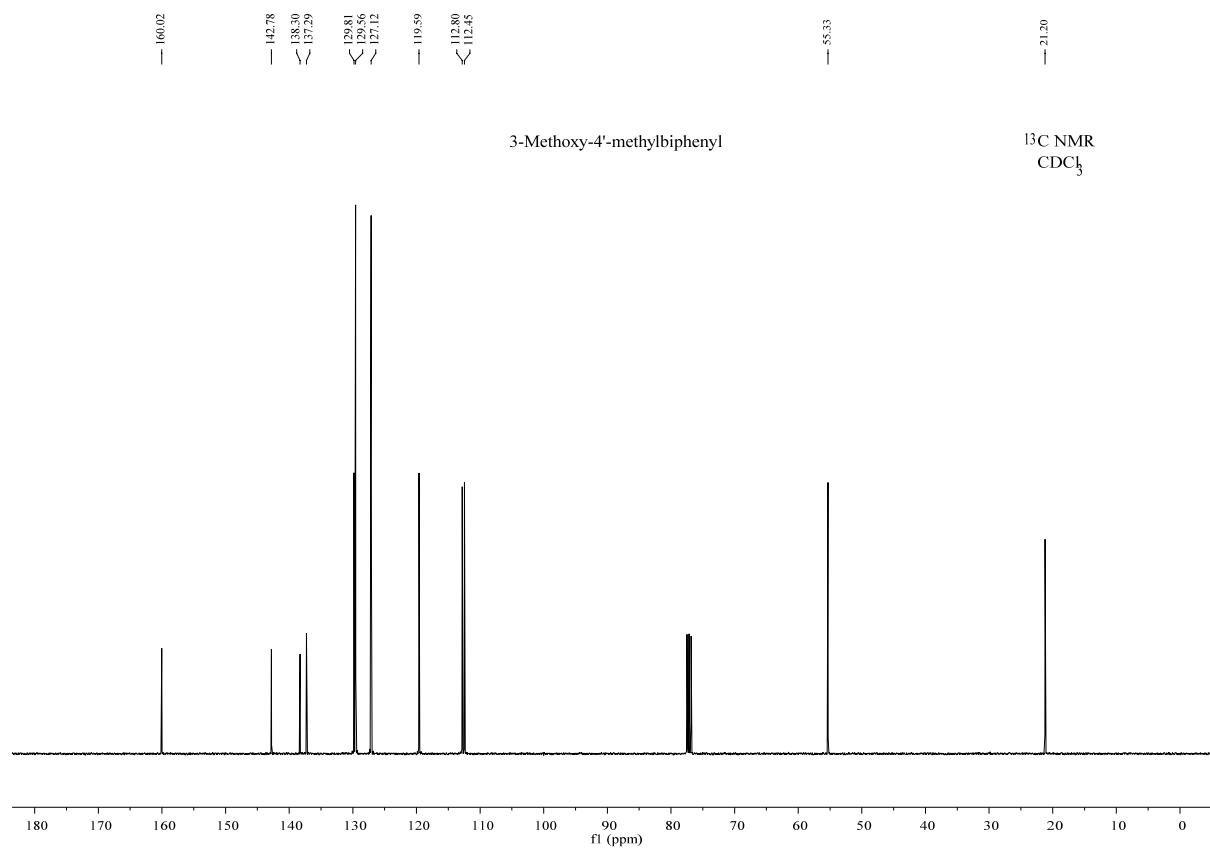
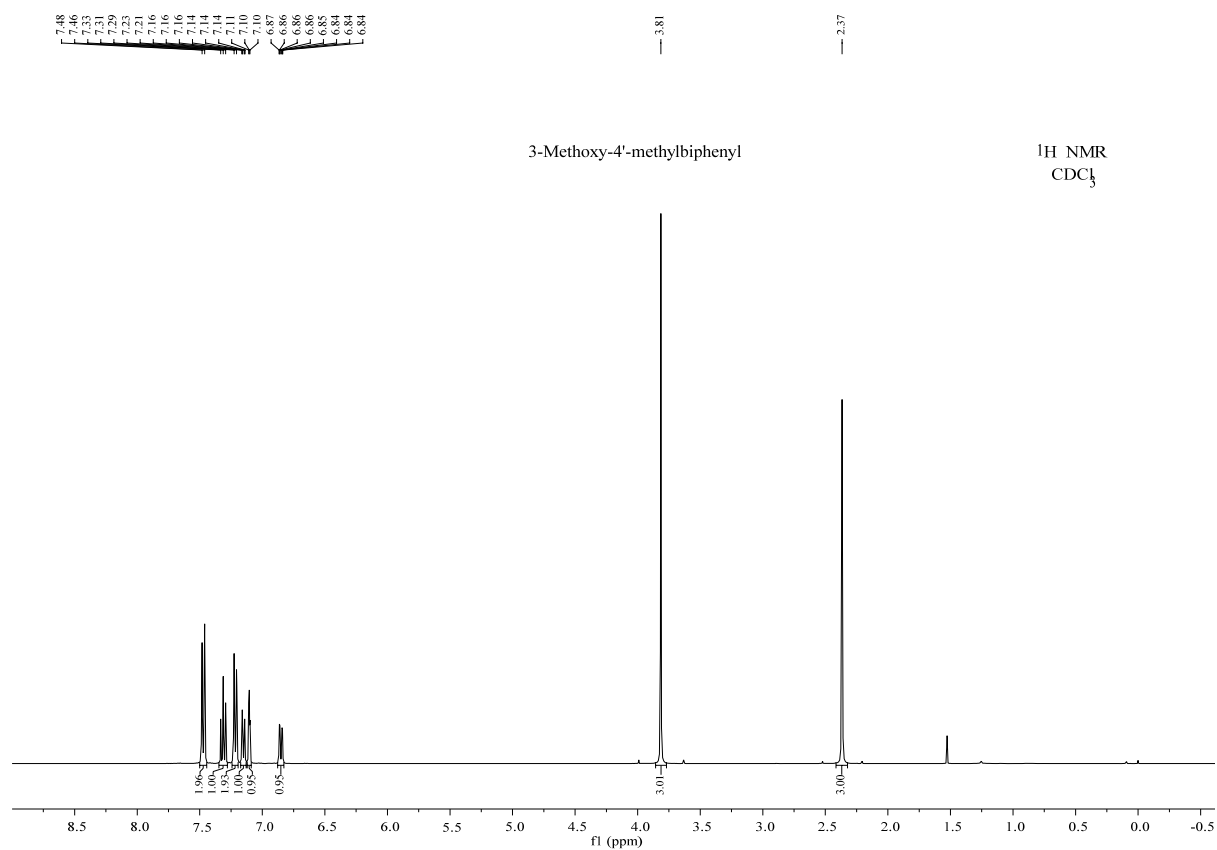
2. 1-(4-Methoxyphenyl)naphthalene



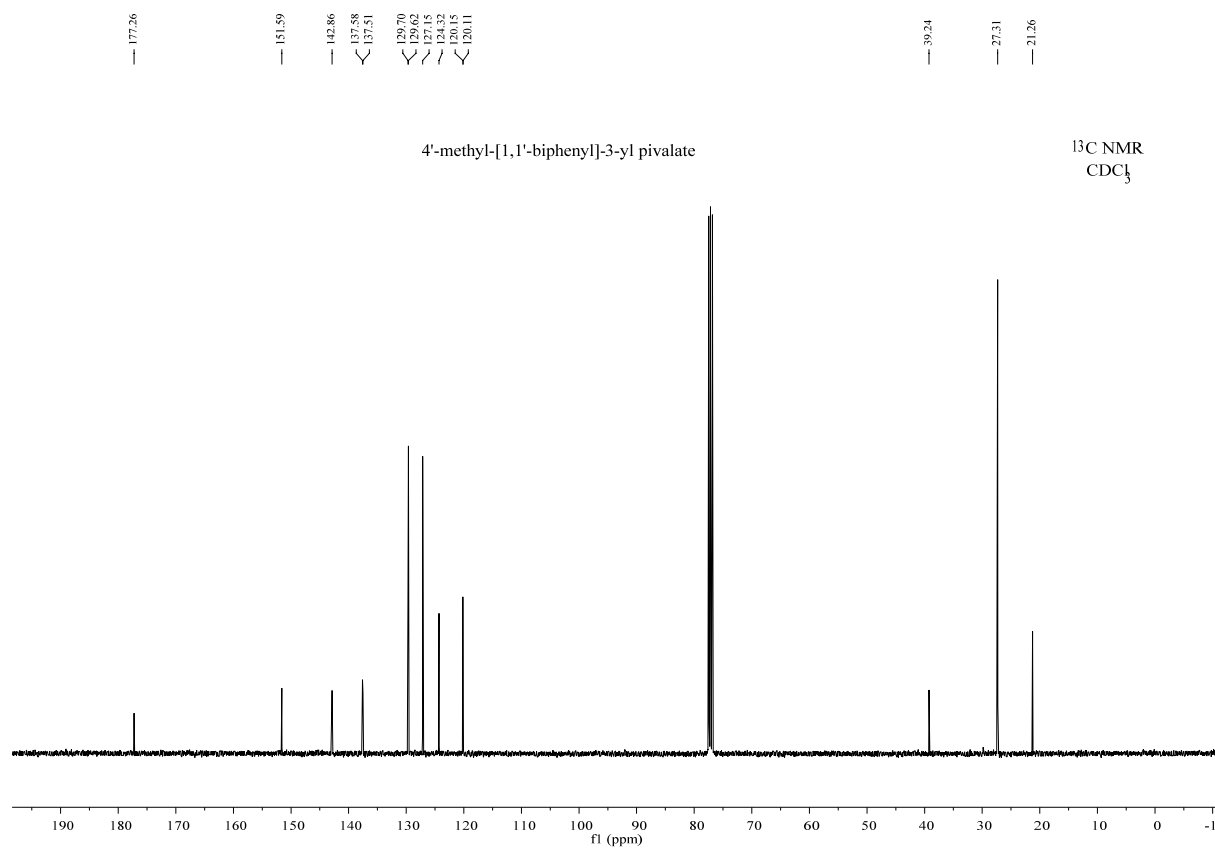
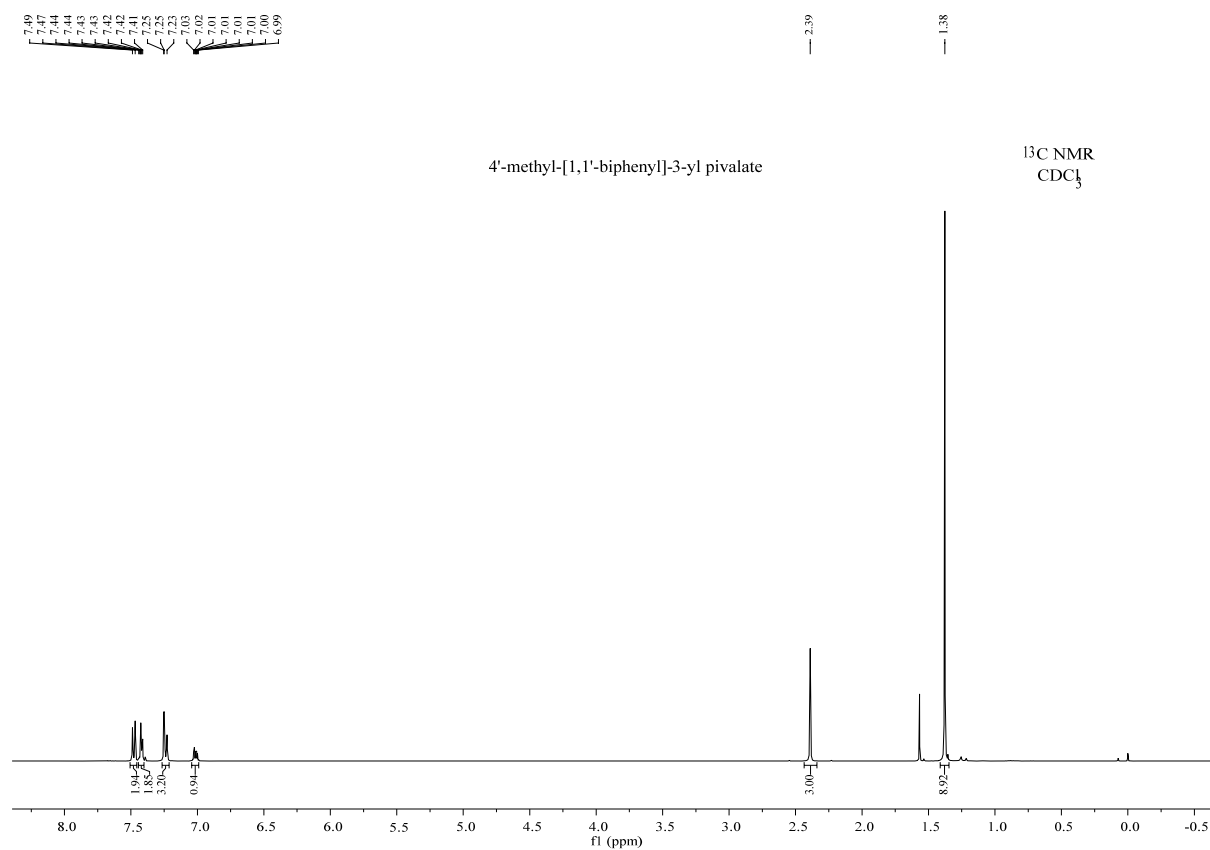
3. *N,N*-Dimethyl-(4-naphthalen-1-yl)aniline



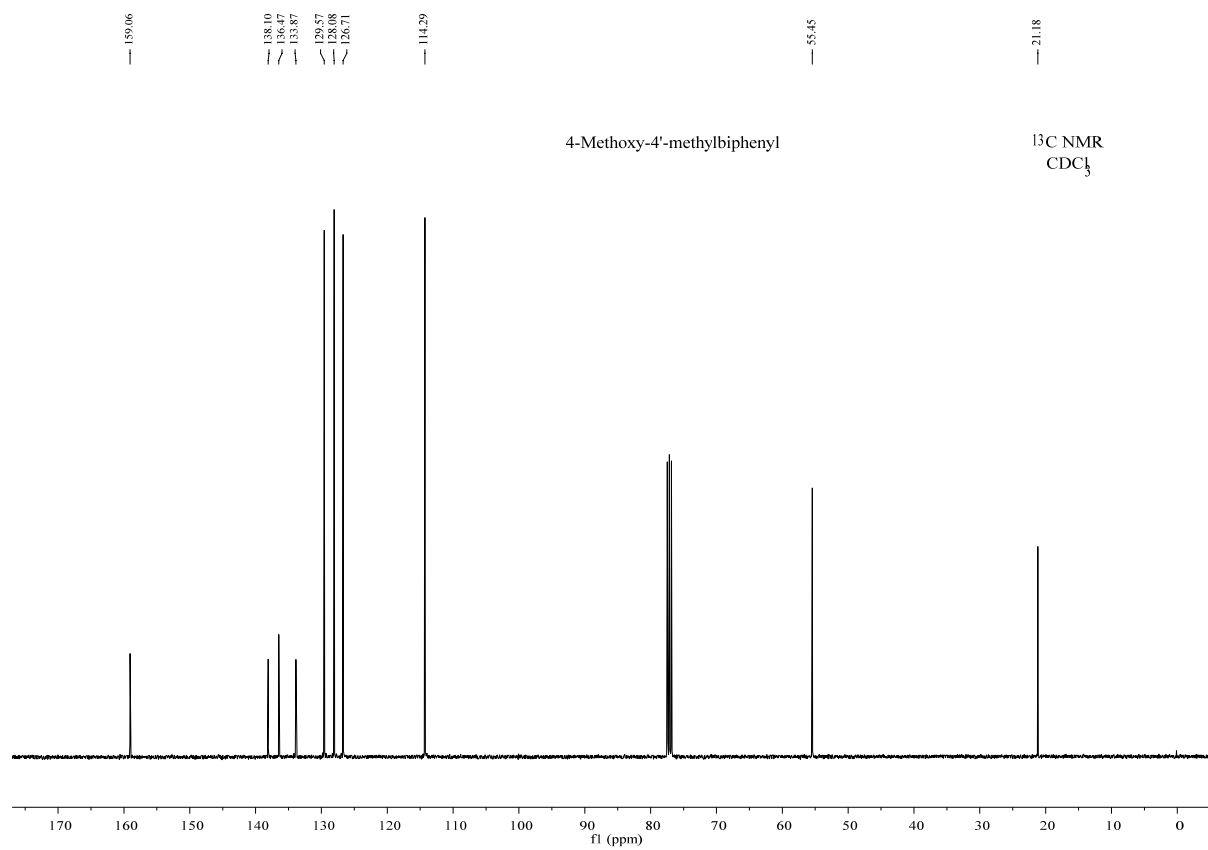
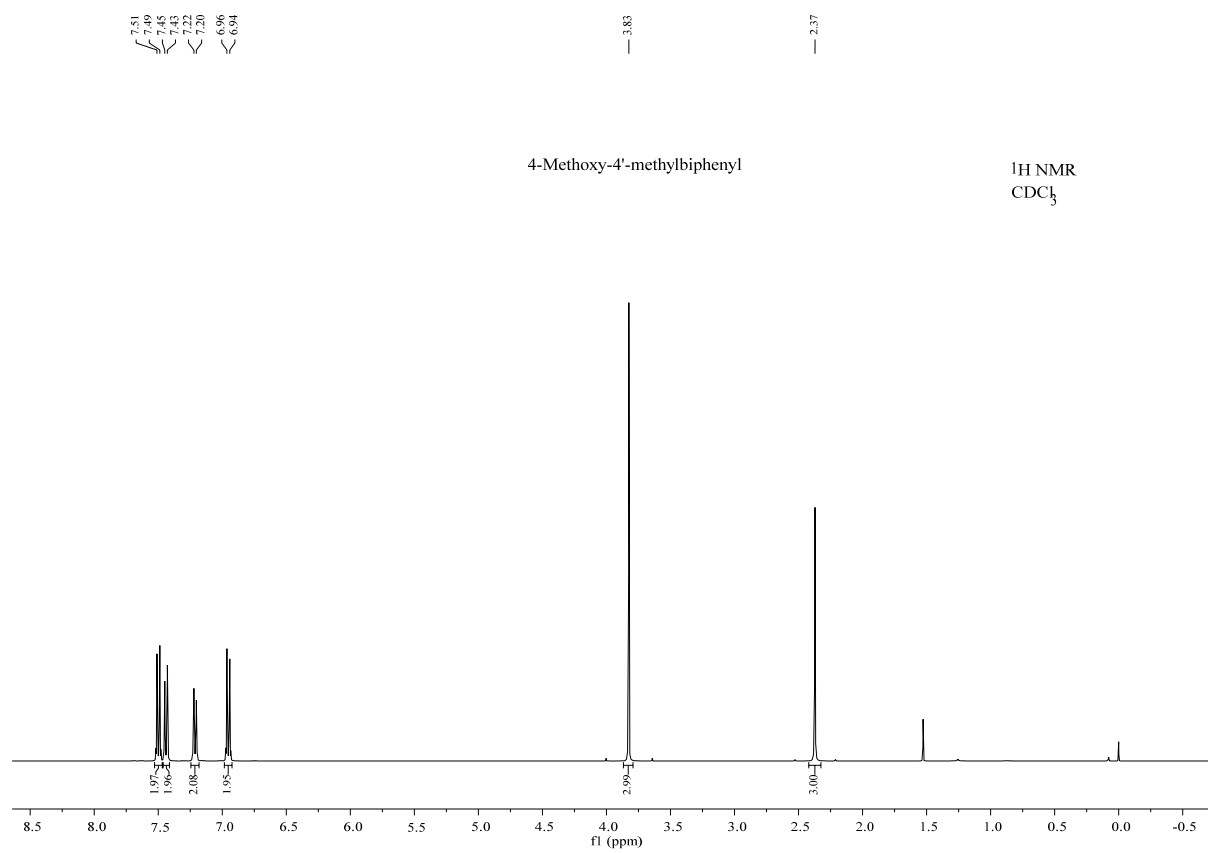
4. 3-Methoxy-4'-methylbiphenyl



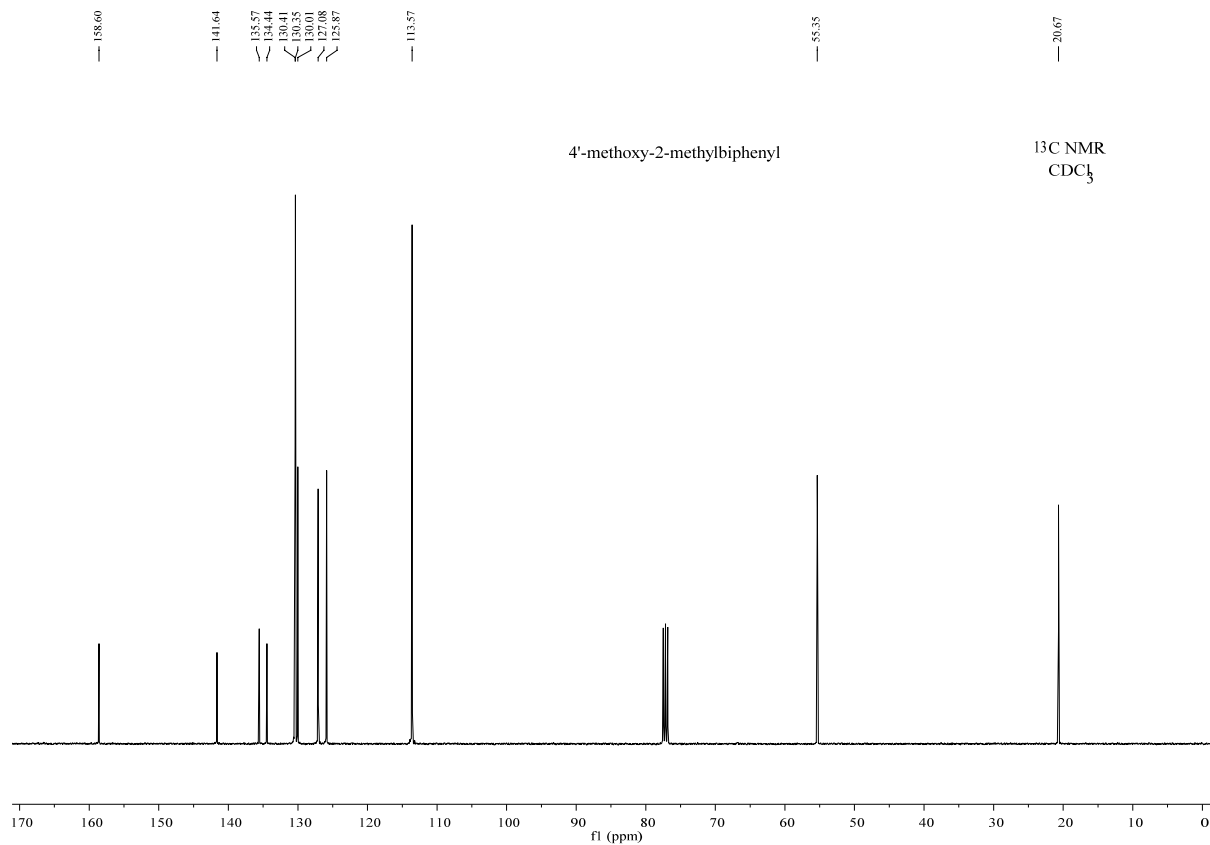
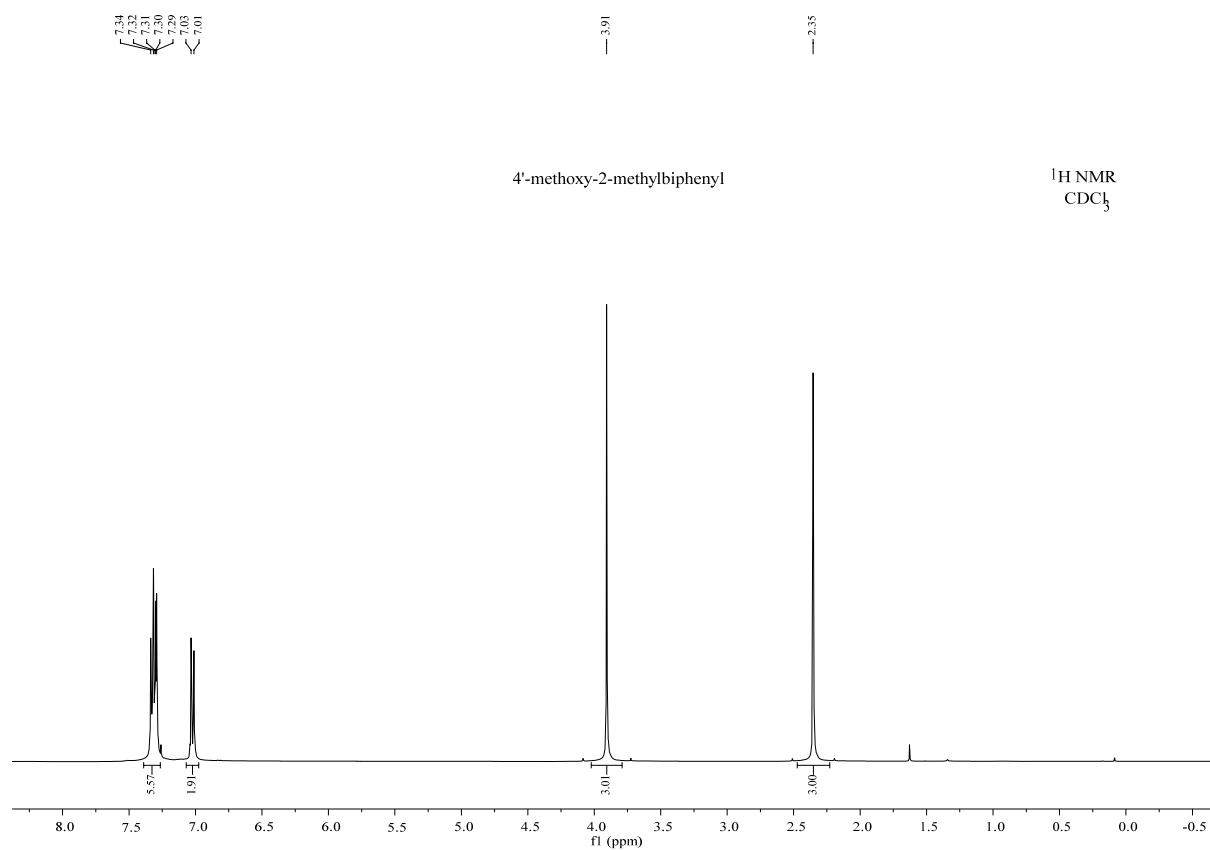
5. 4'-Methyl-[1,1'-biphenyl]-3-yl pivalate



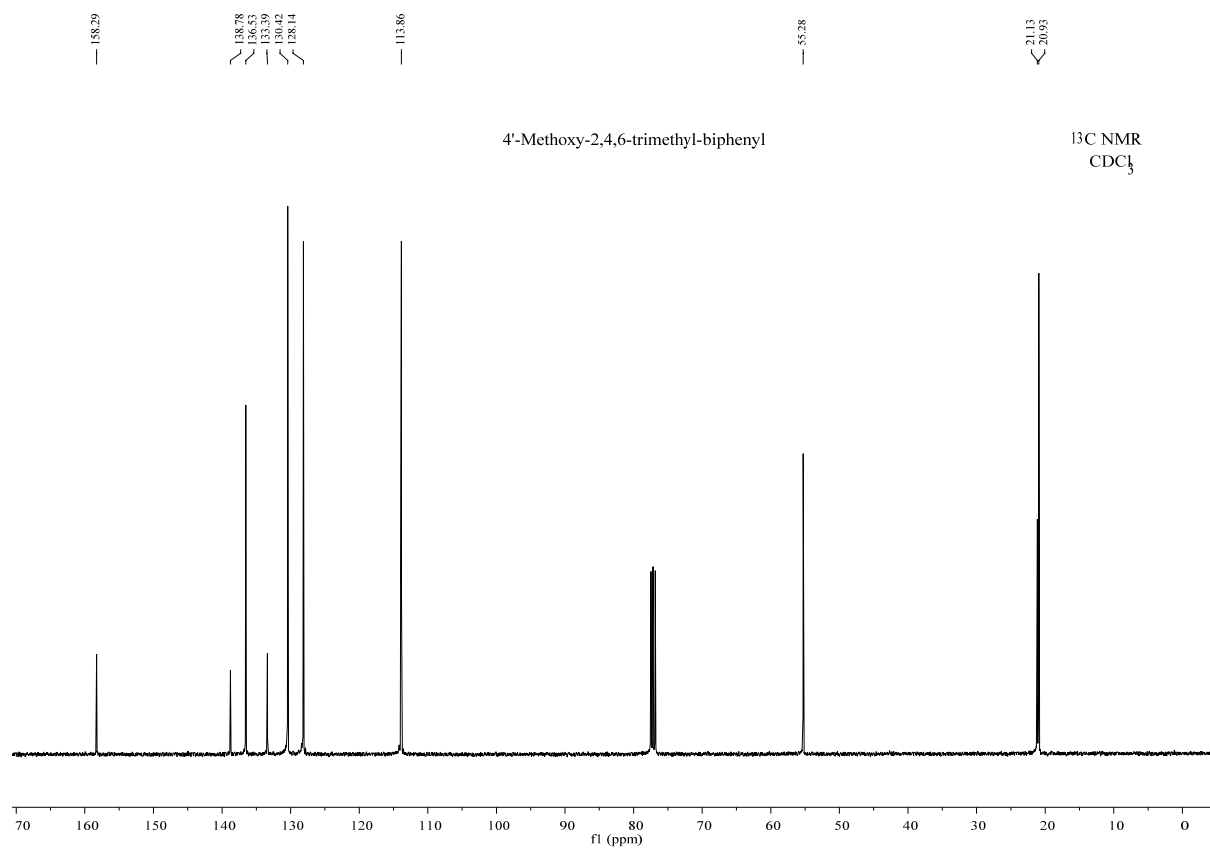
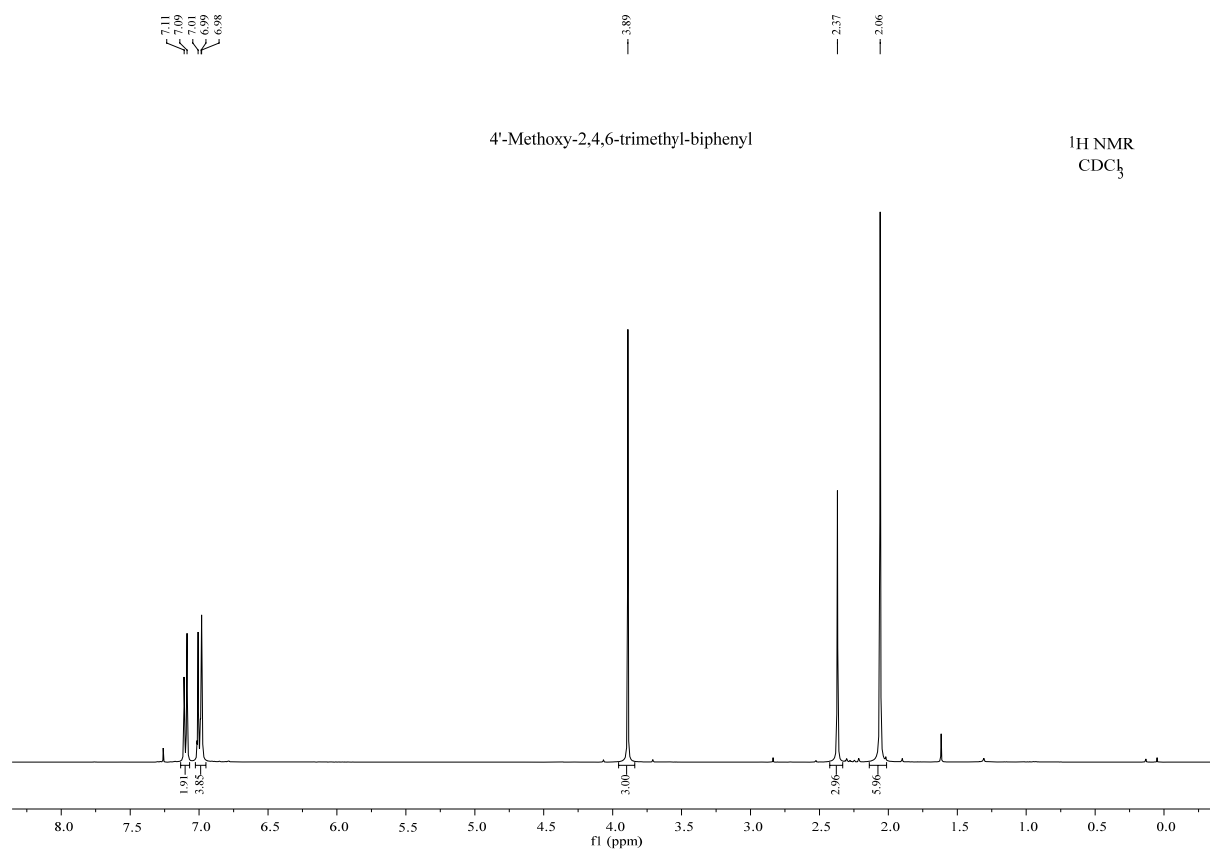
6. 4-Methoxy-4'-methylbiphenyl



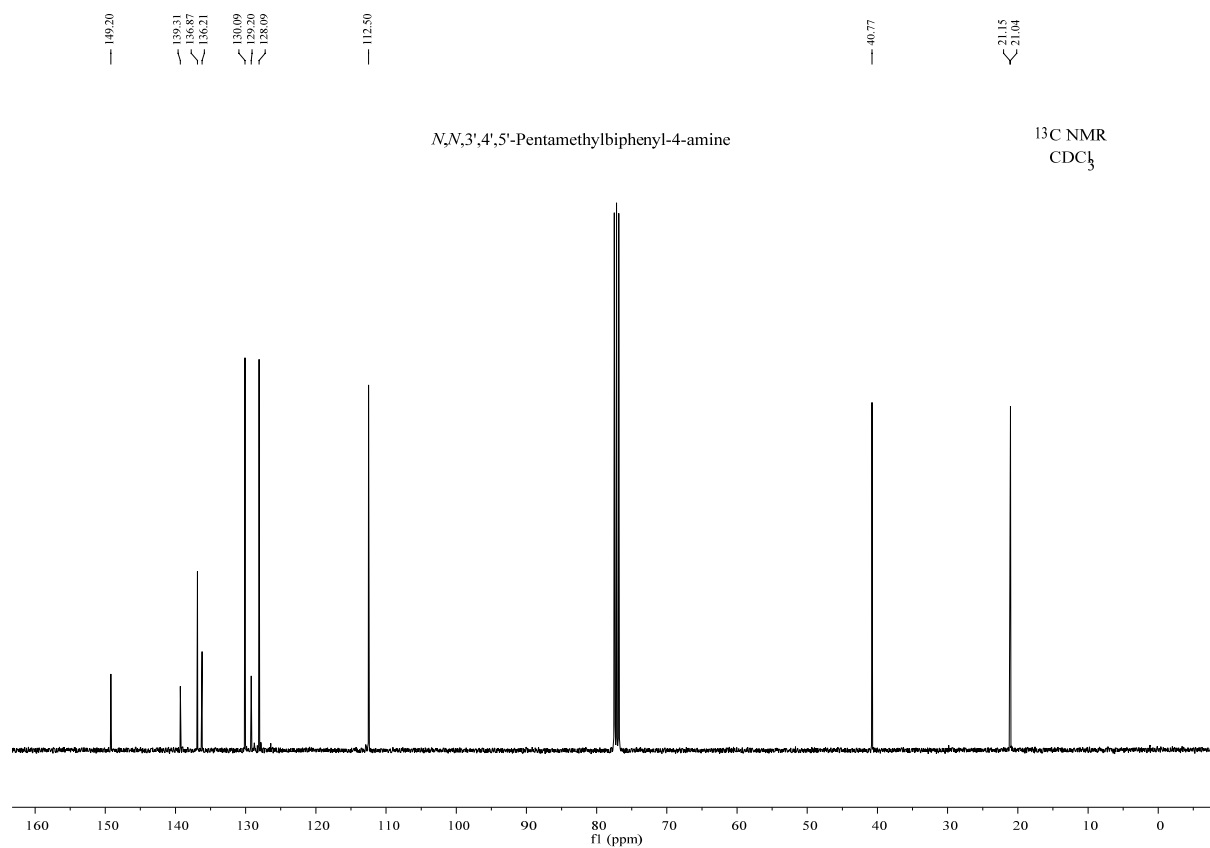
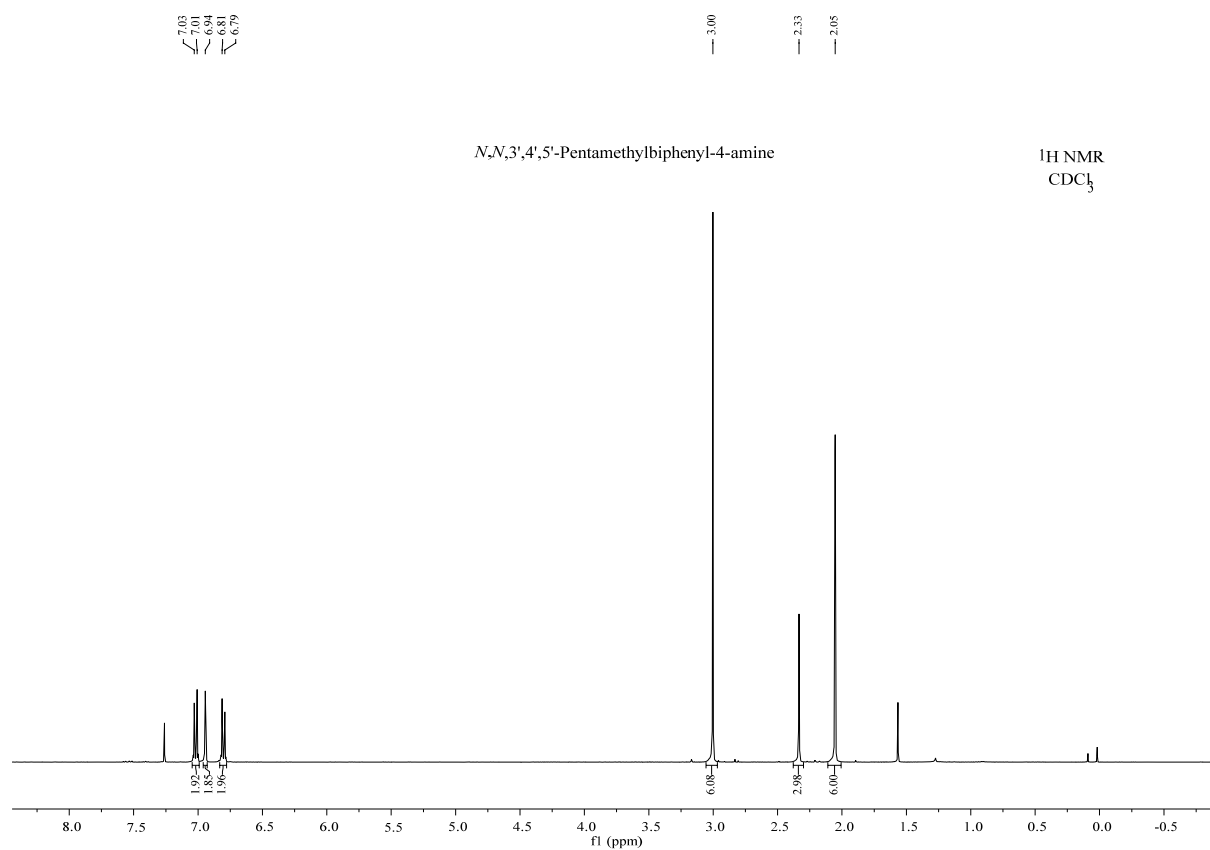
7. 4'-Methoxy-2-methylbiphenyl



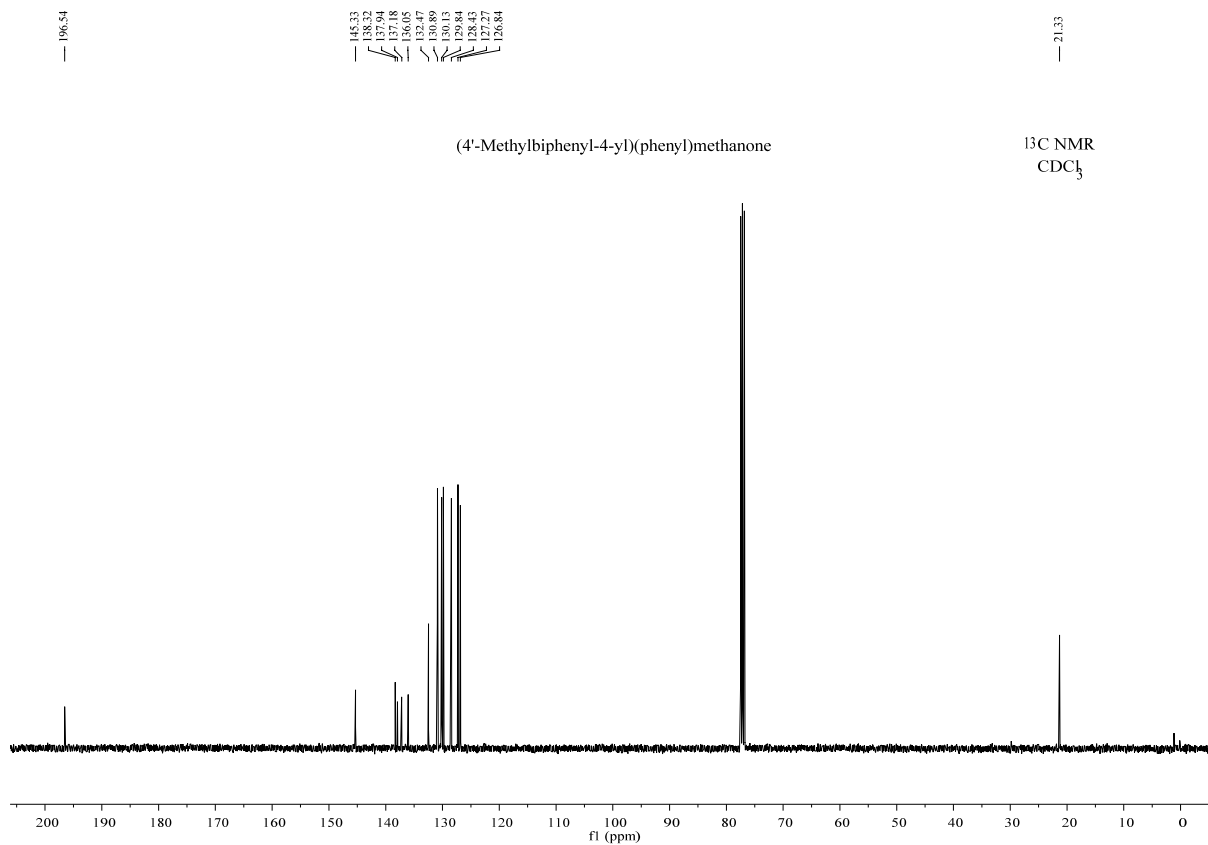
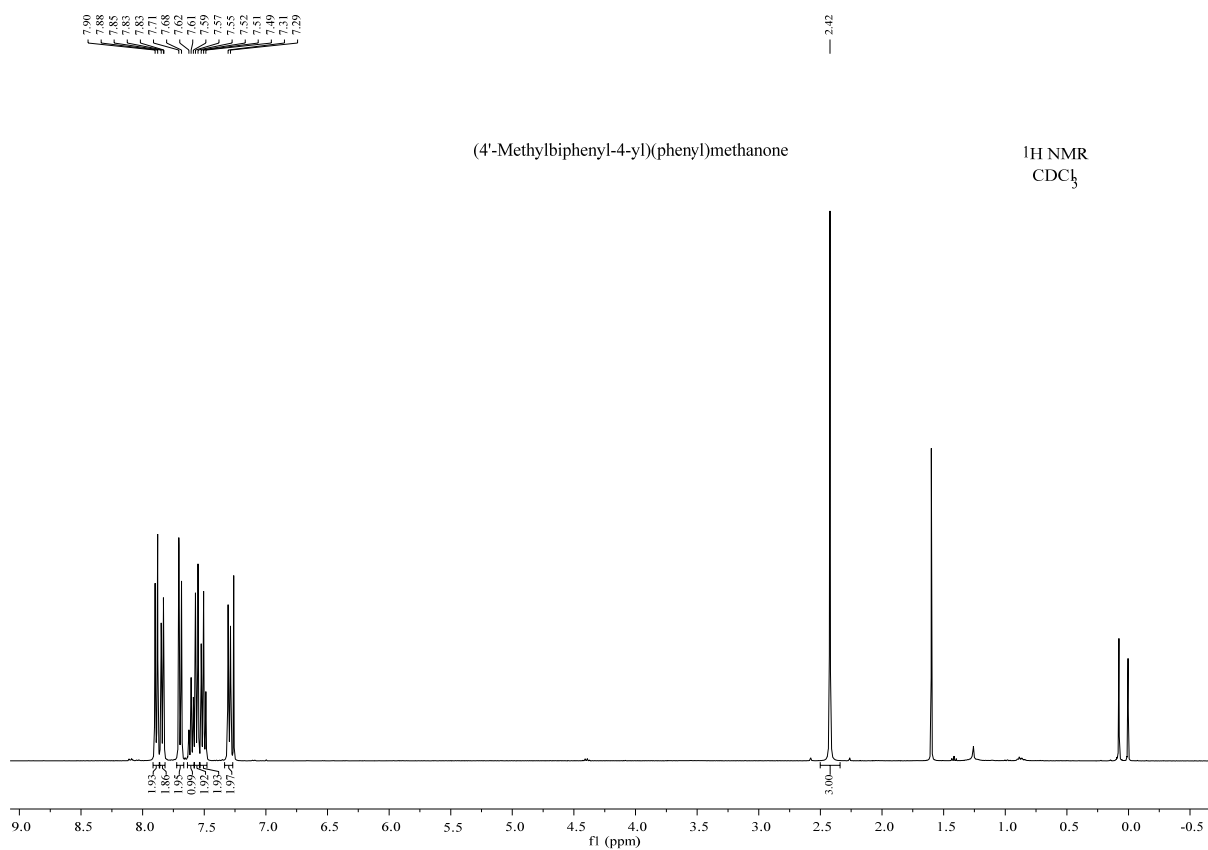
8. 4'-Methoxy-2,4,6-trimethyl-biphenyl



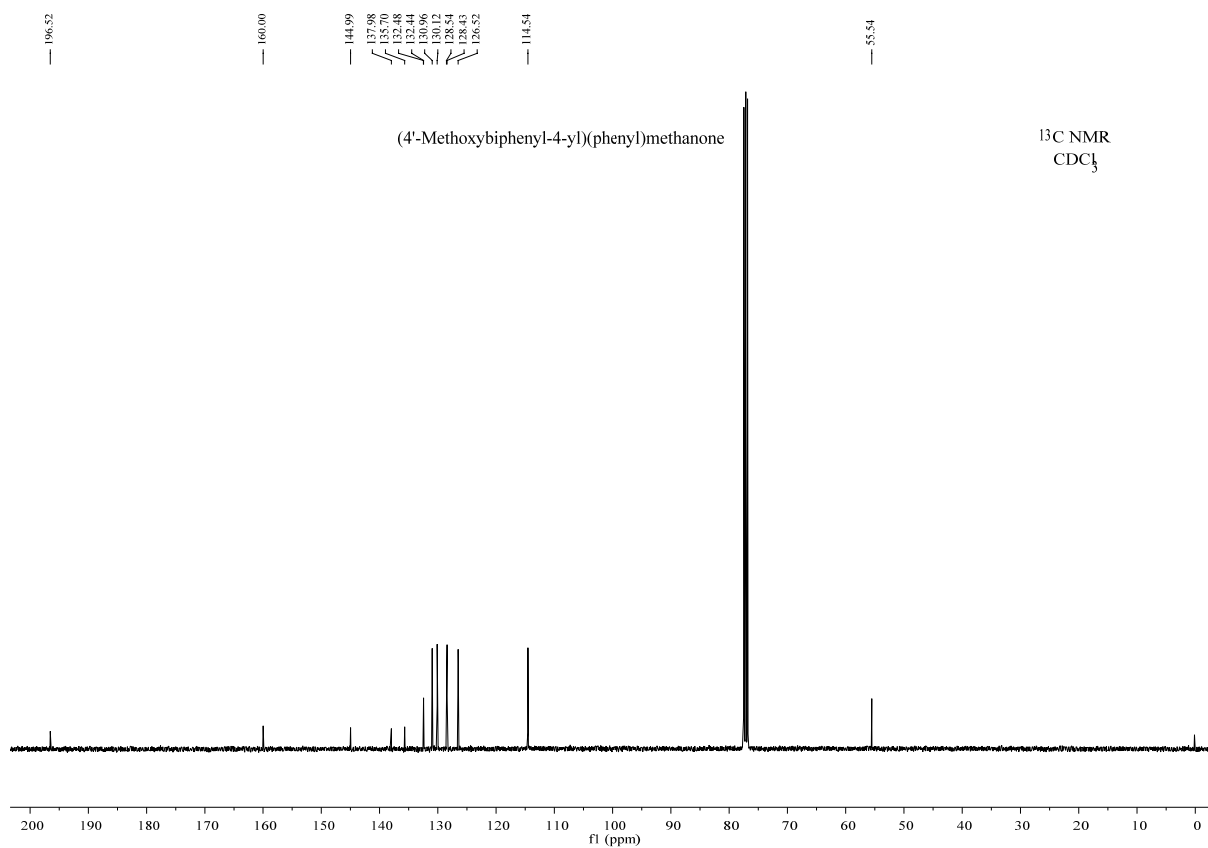
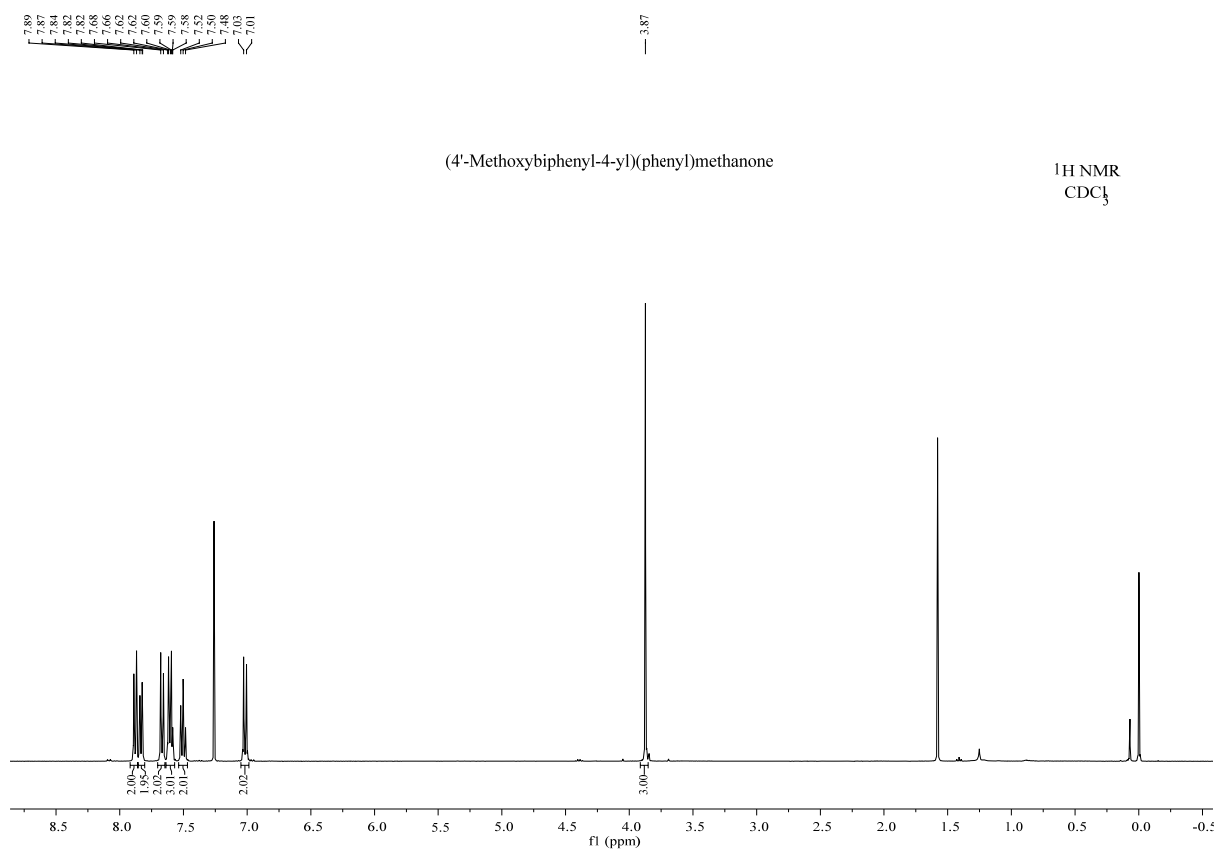
9. *N,N*, 3', 4', 5'- Pentamethylbiphenyl-4-amine



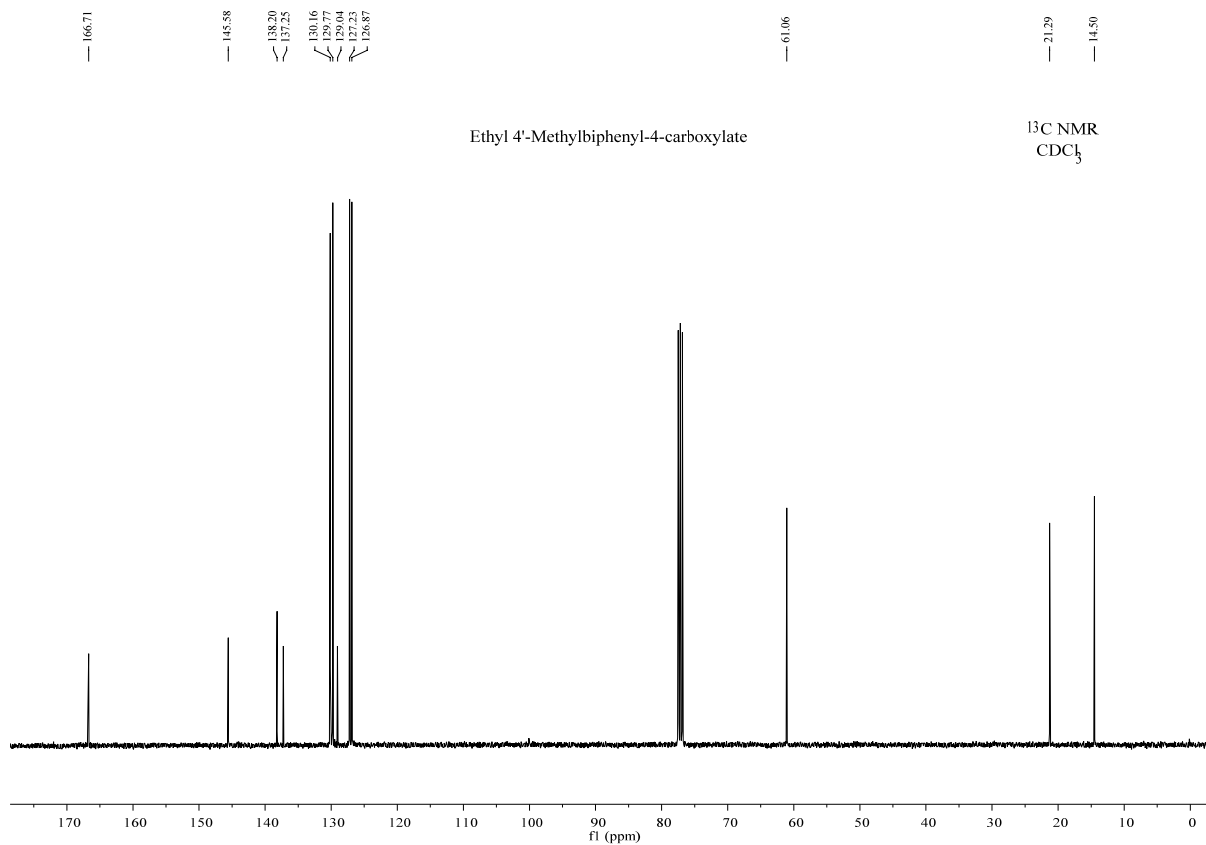
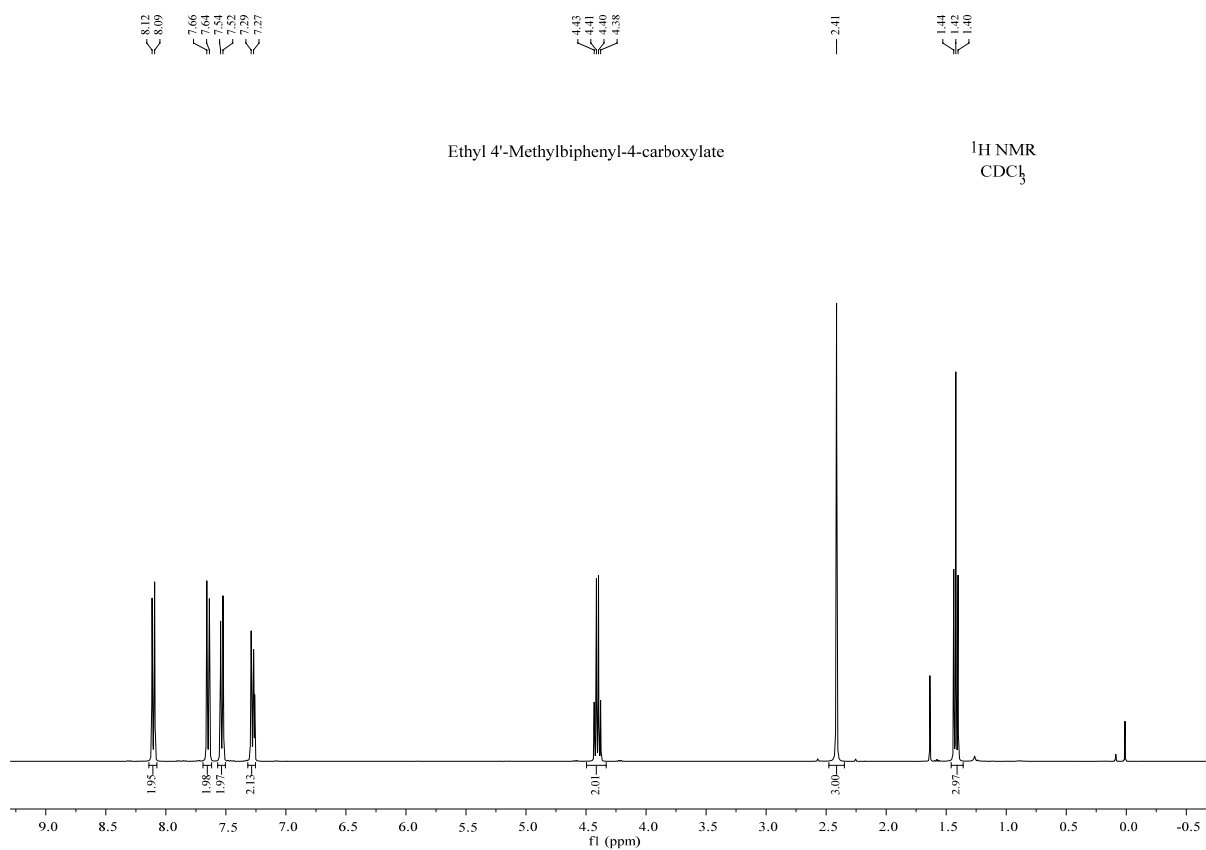
10. (4'-Methylbiphenyl-4-yl)(phenyl)methanone



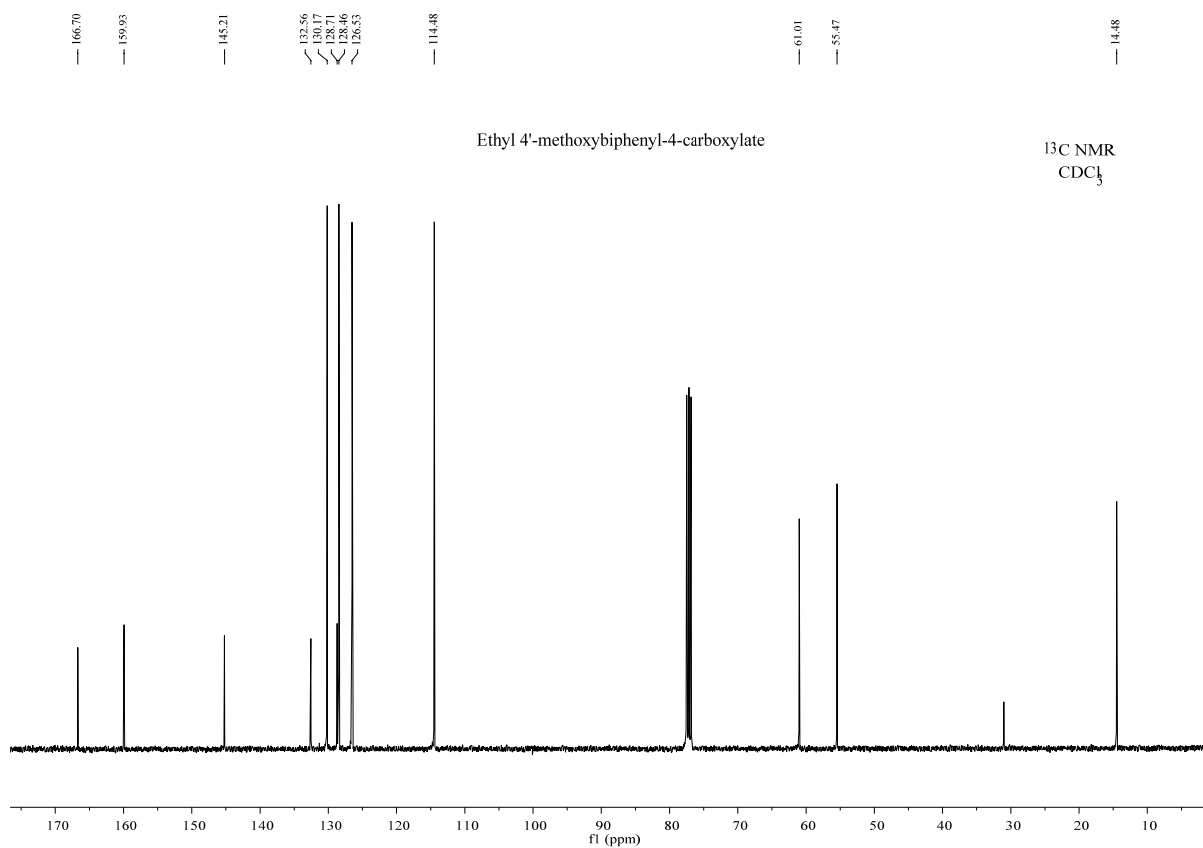
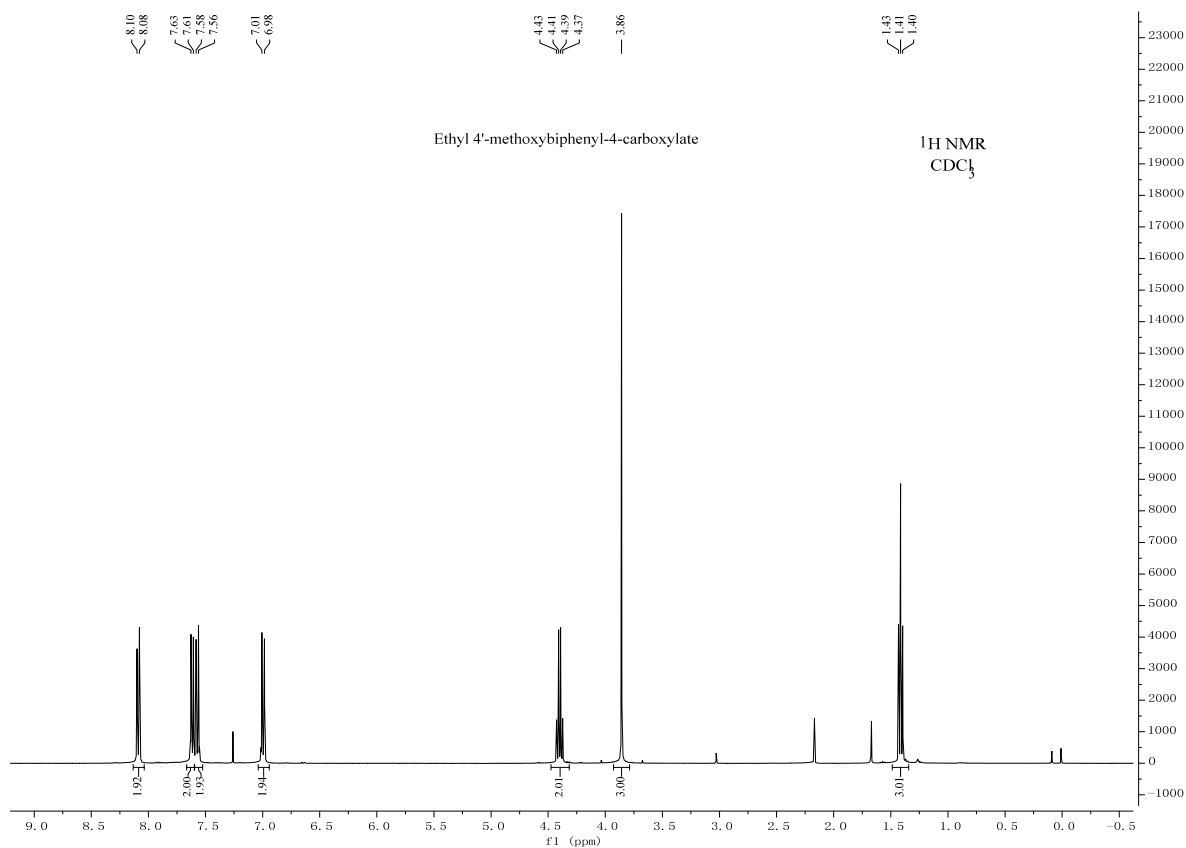
11. (4'-Methoxybiphenyl-4-yl)(phenyl)methanone



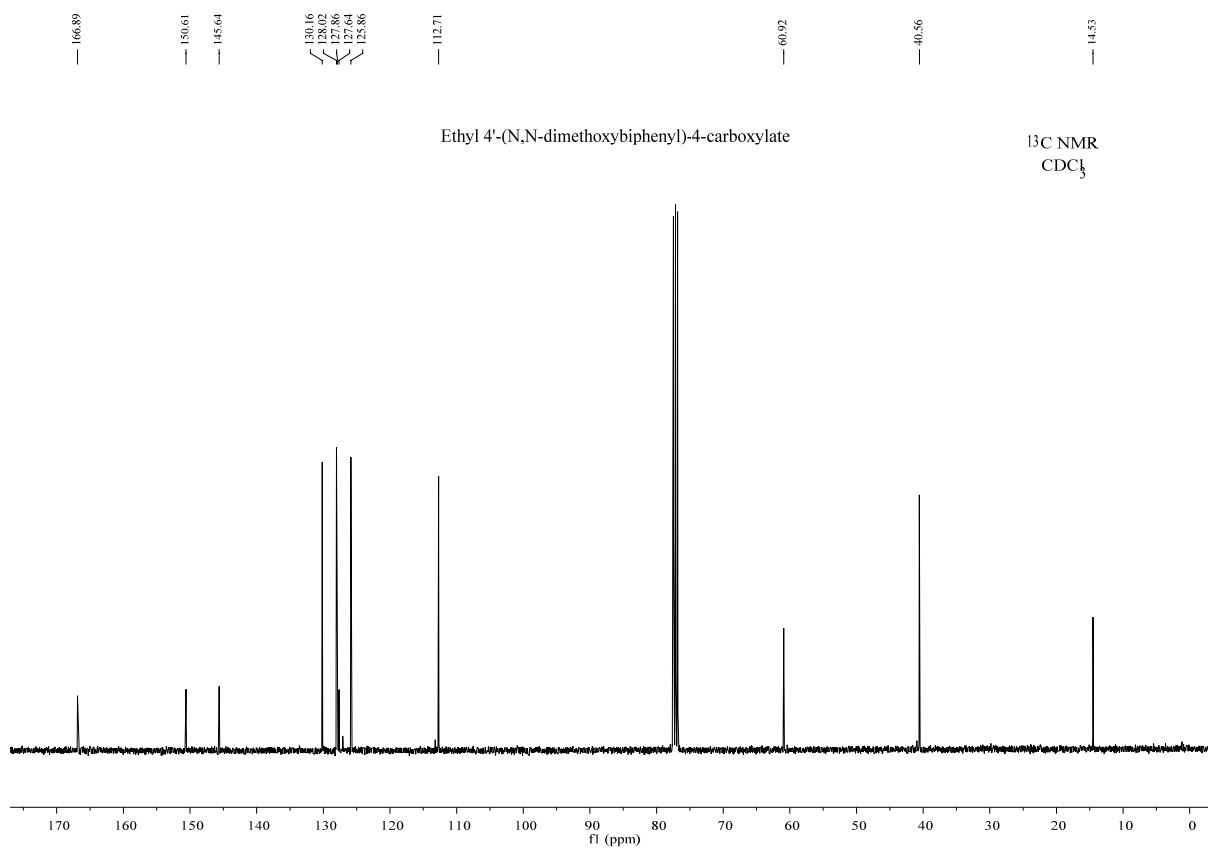
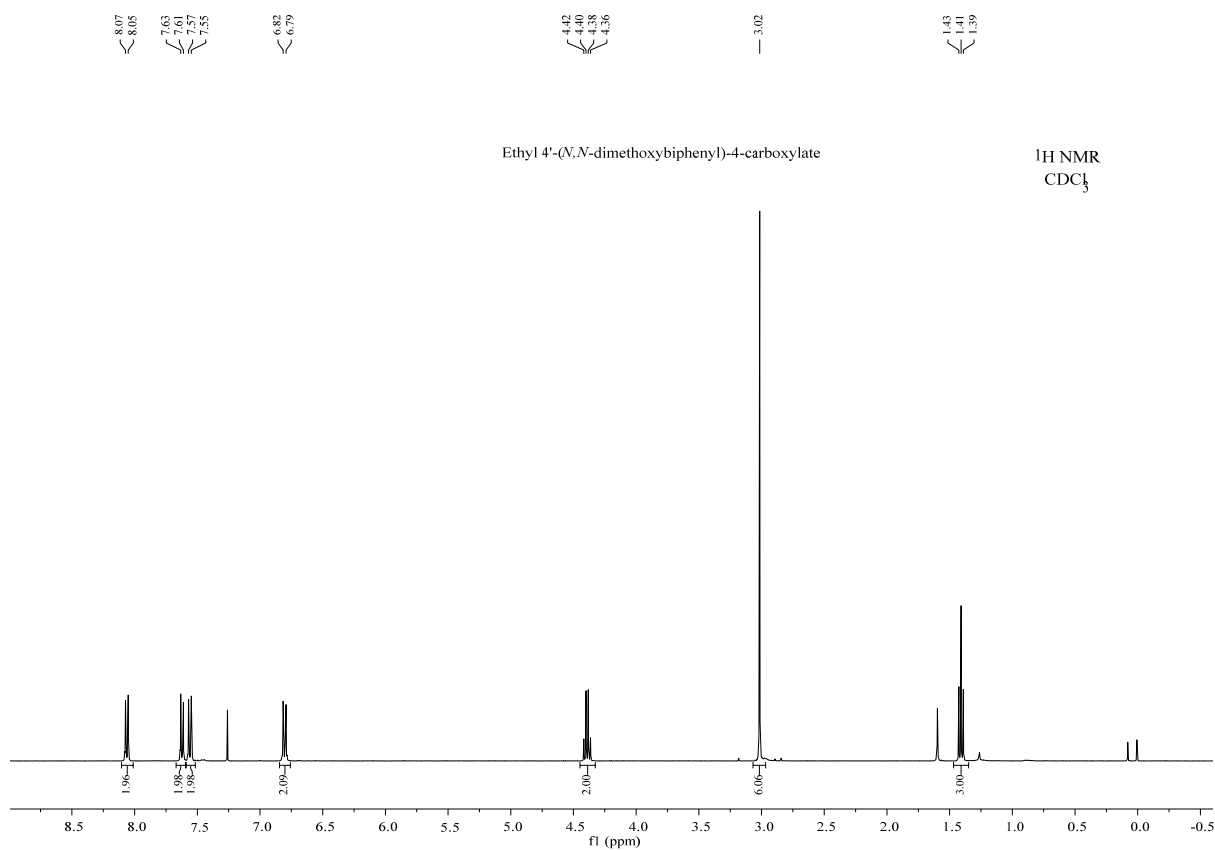
12. Ethyl 4'-methylbiphenyl-4-carboxylate



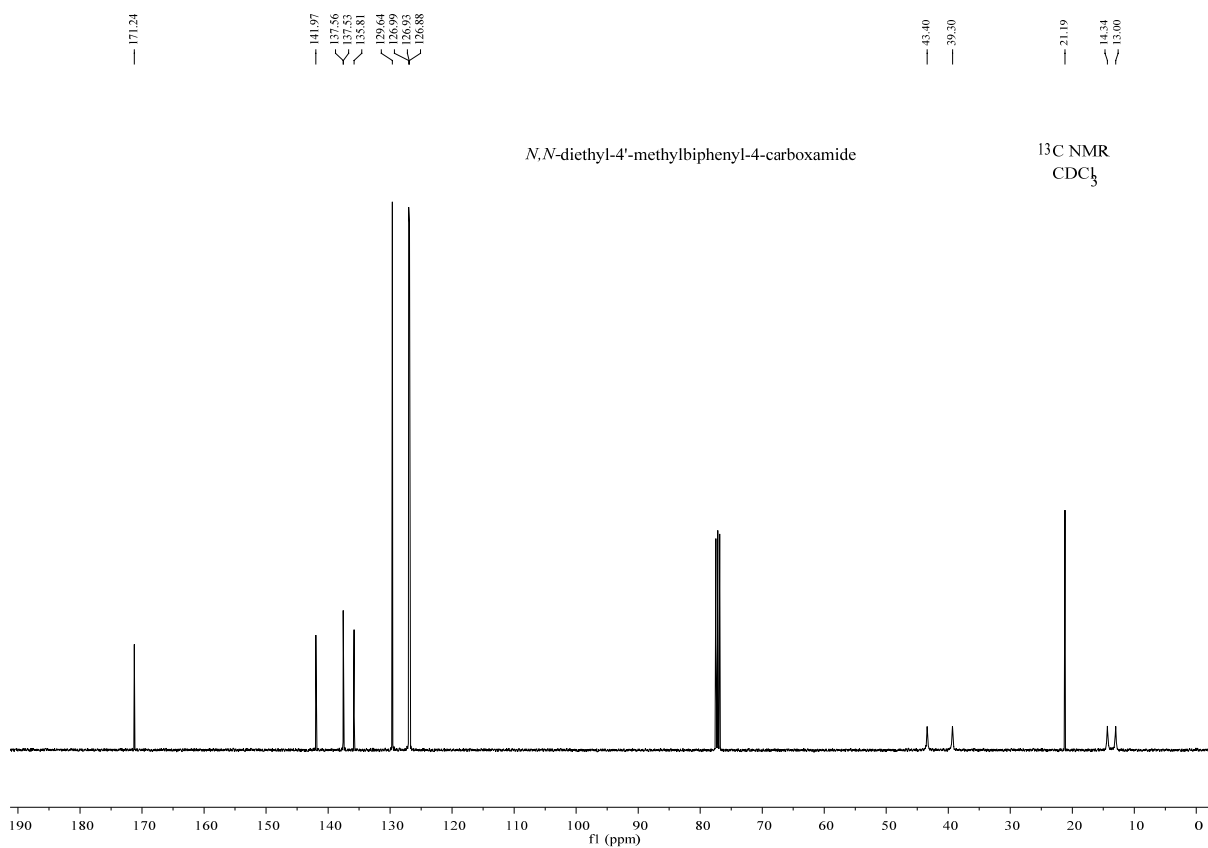
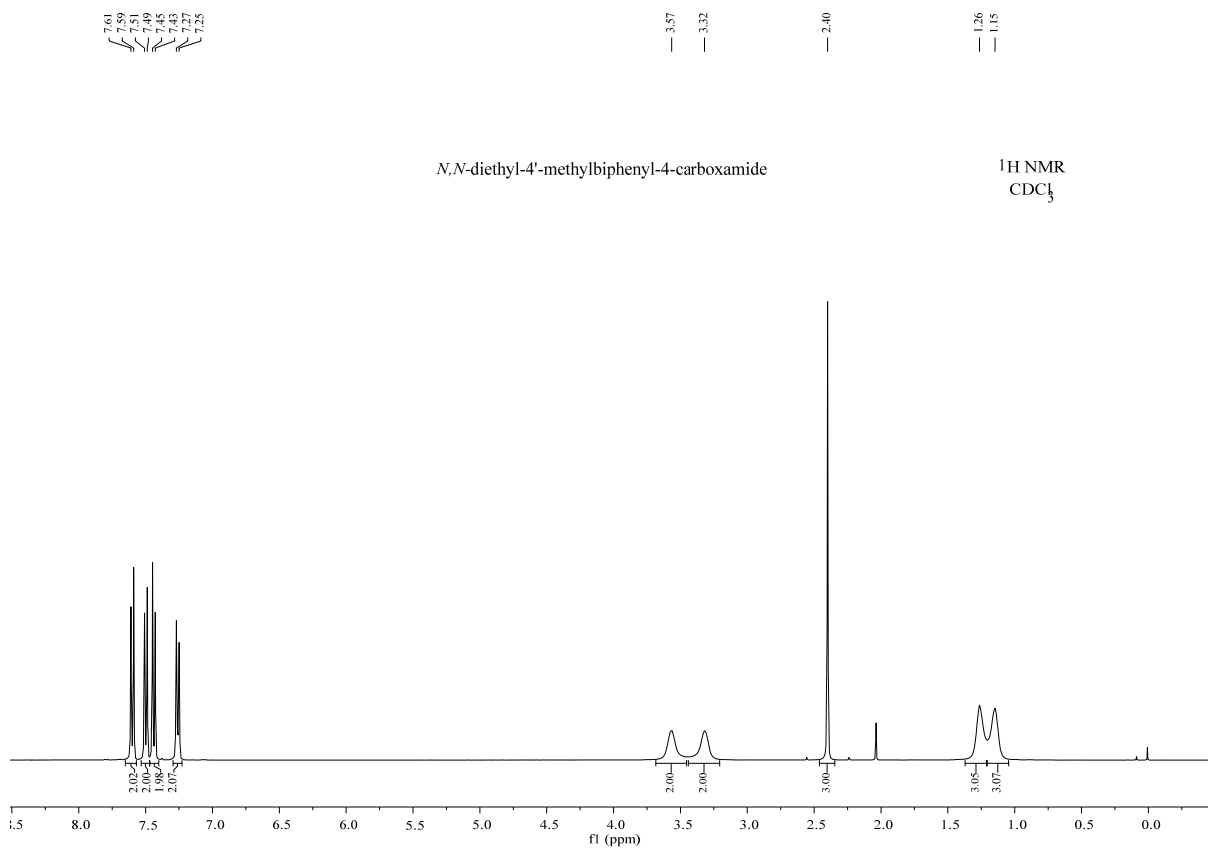
13. Ethyl 4'-methoxybiphenyl-4-carboxylate



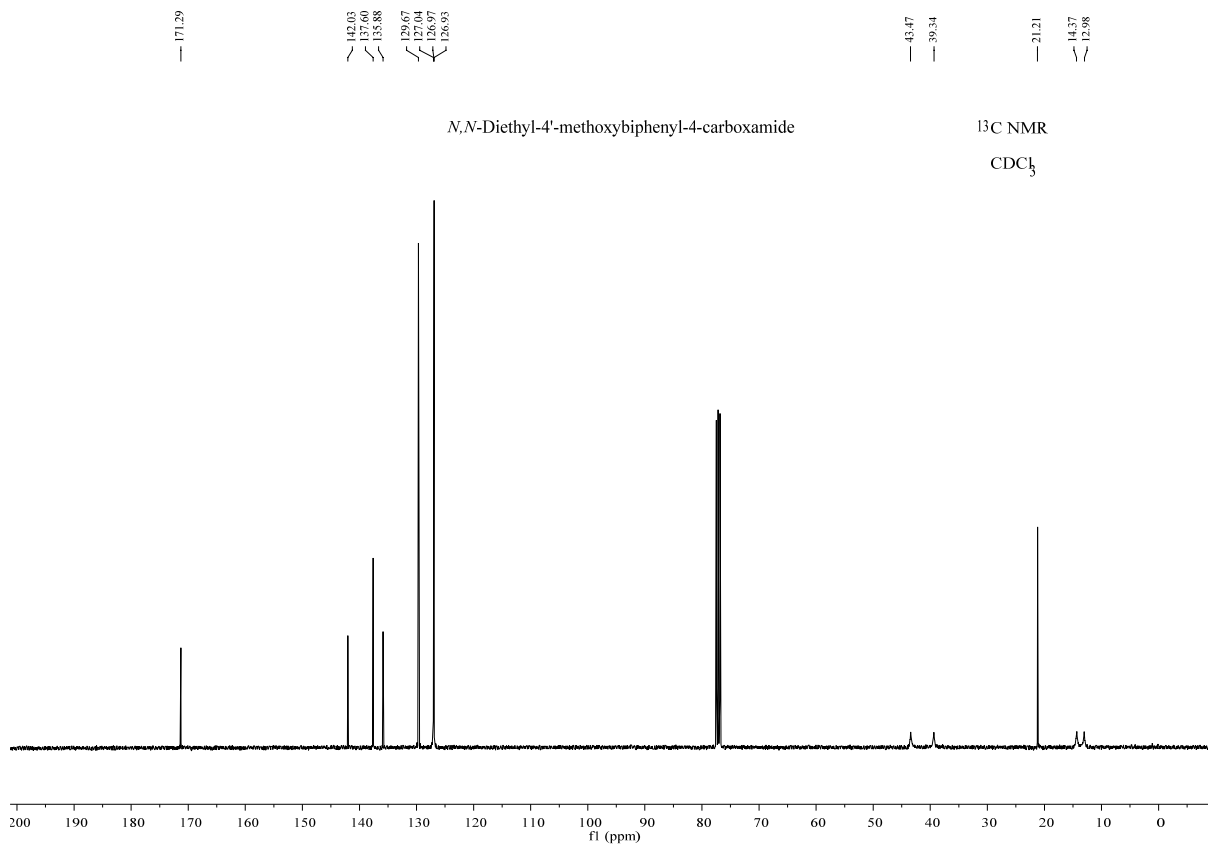
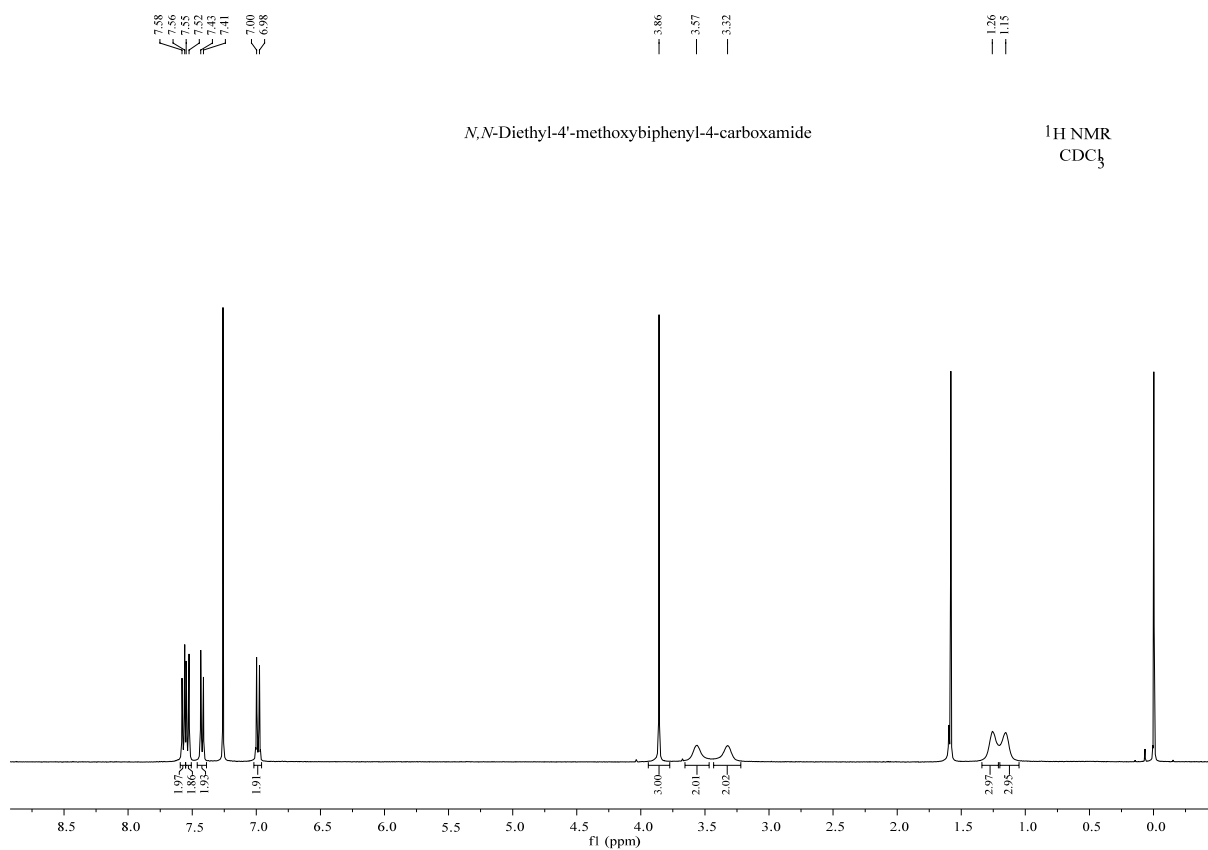
14. Ethyl 4'-(*N,N*-dimethoxybiphenyl)-4-carboxylate



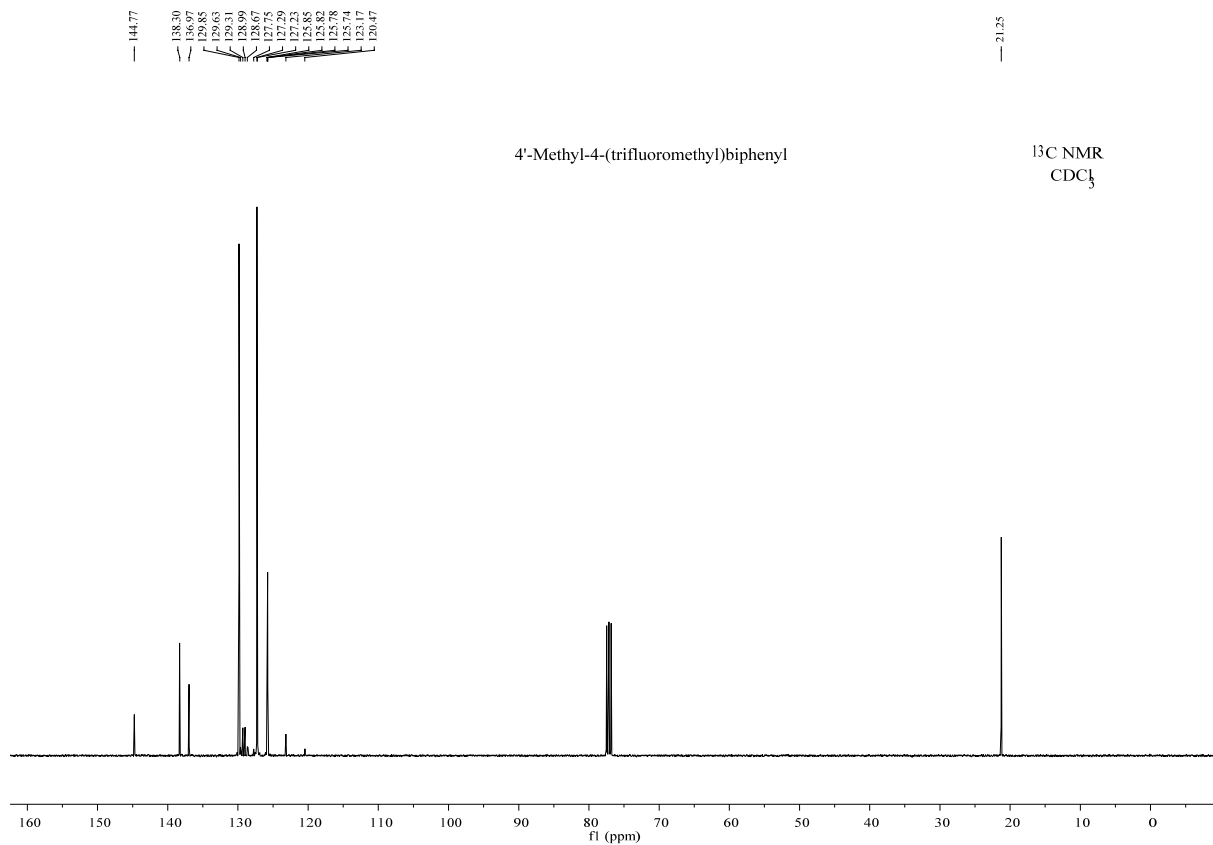
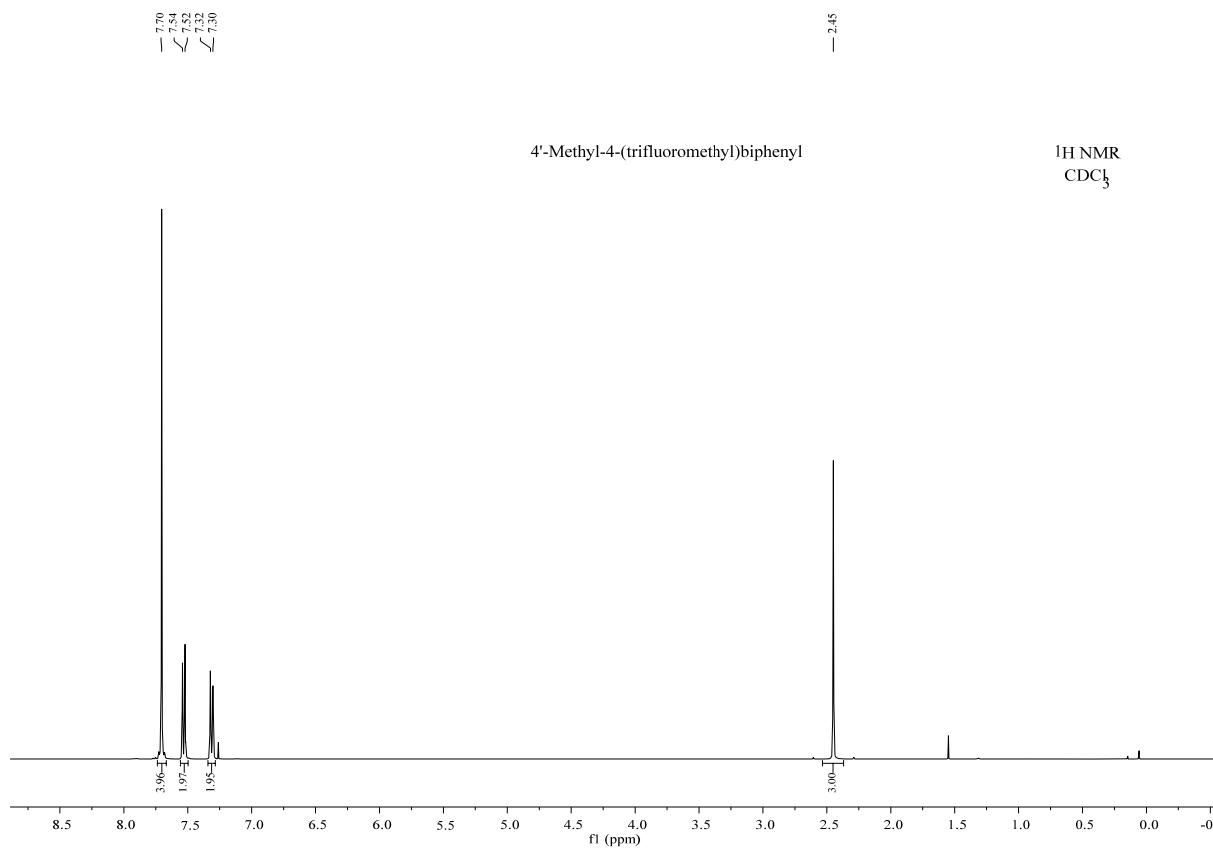
15. *N,N*-diethyl-4'-methylbiphenyl-4-carboxamide



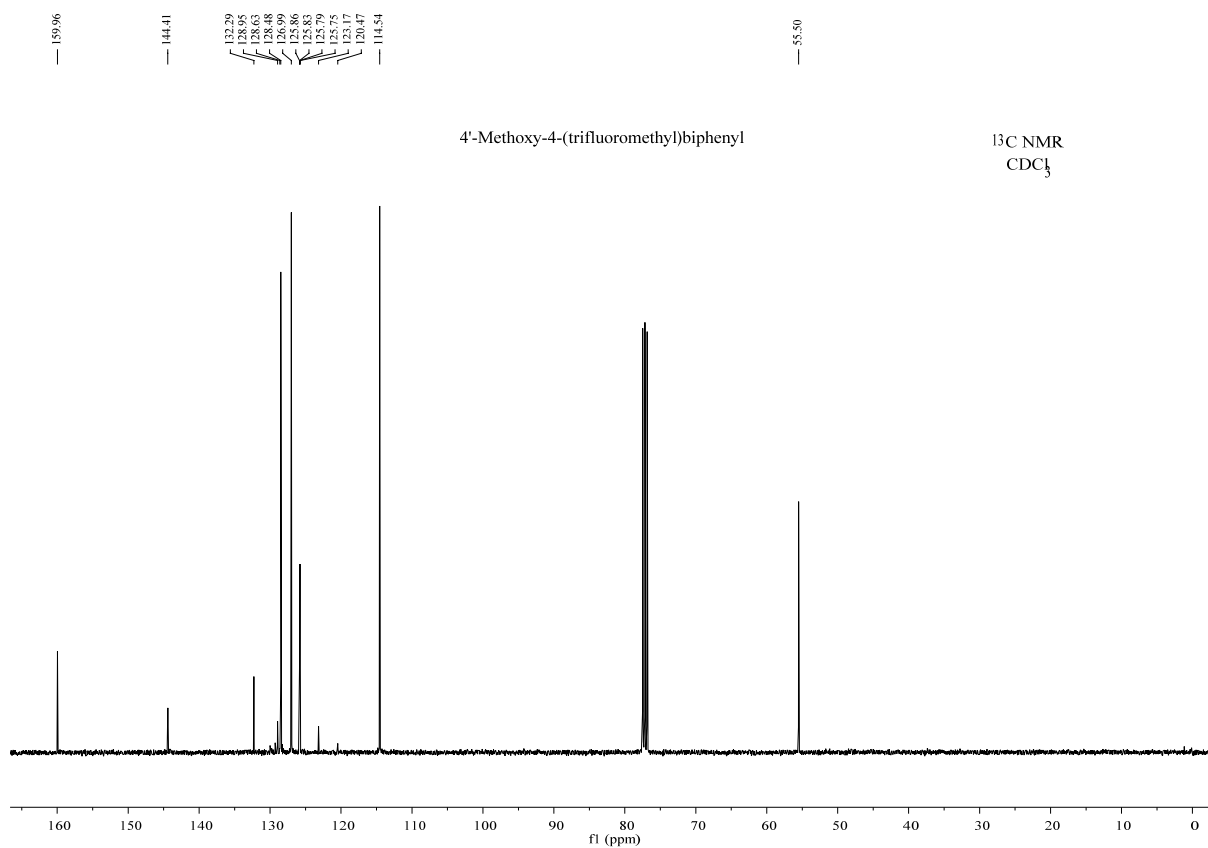
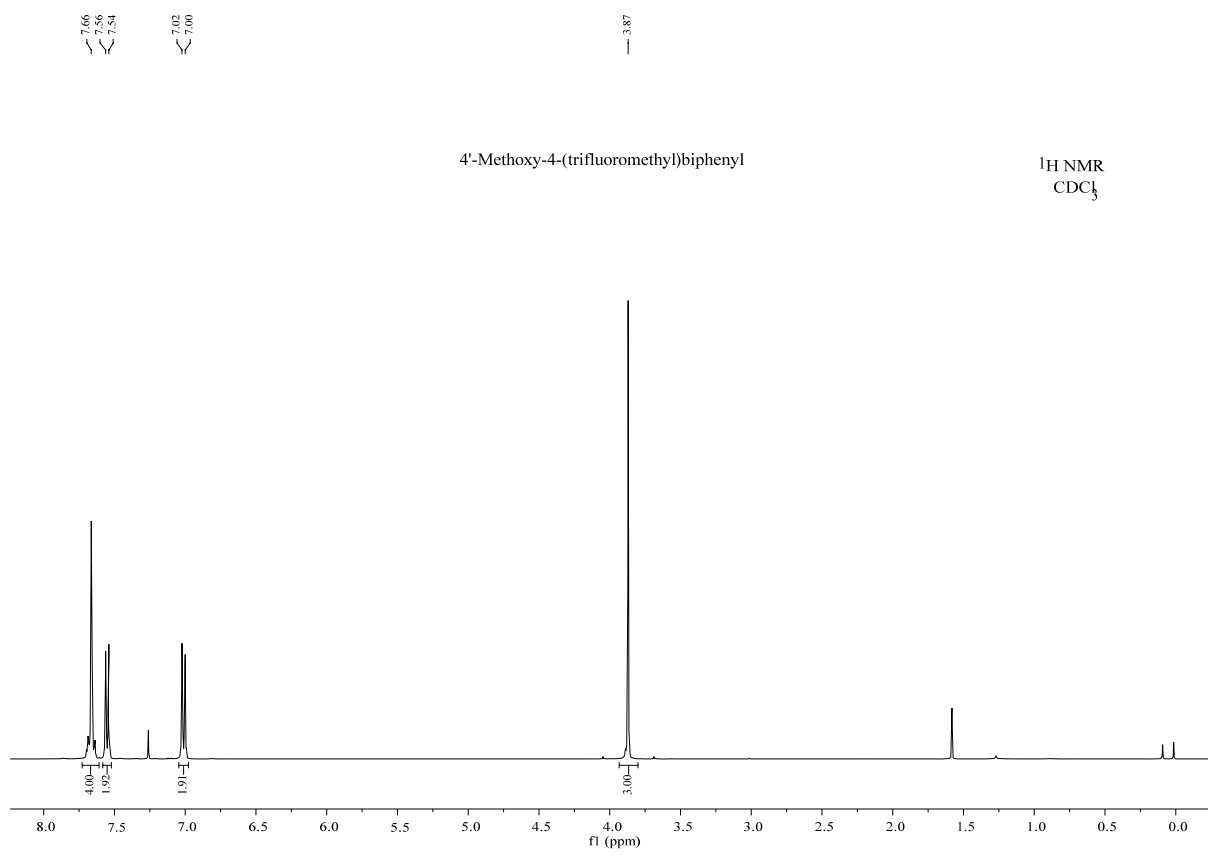
16. *N,N*-Diethyl-4'-Methoxybiphenyl-4-carboxamide



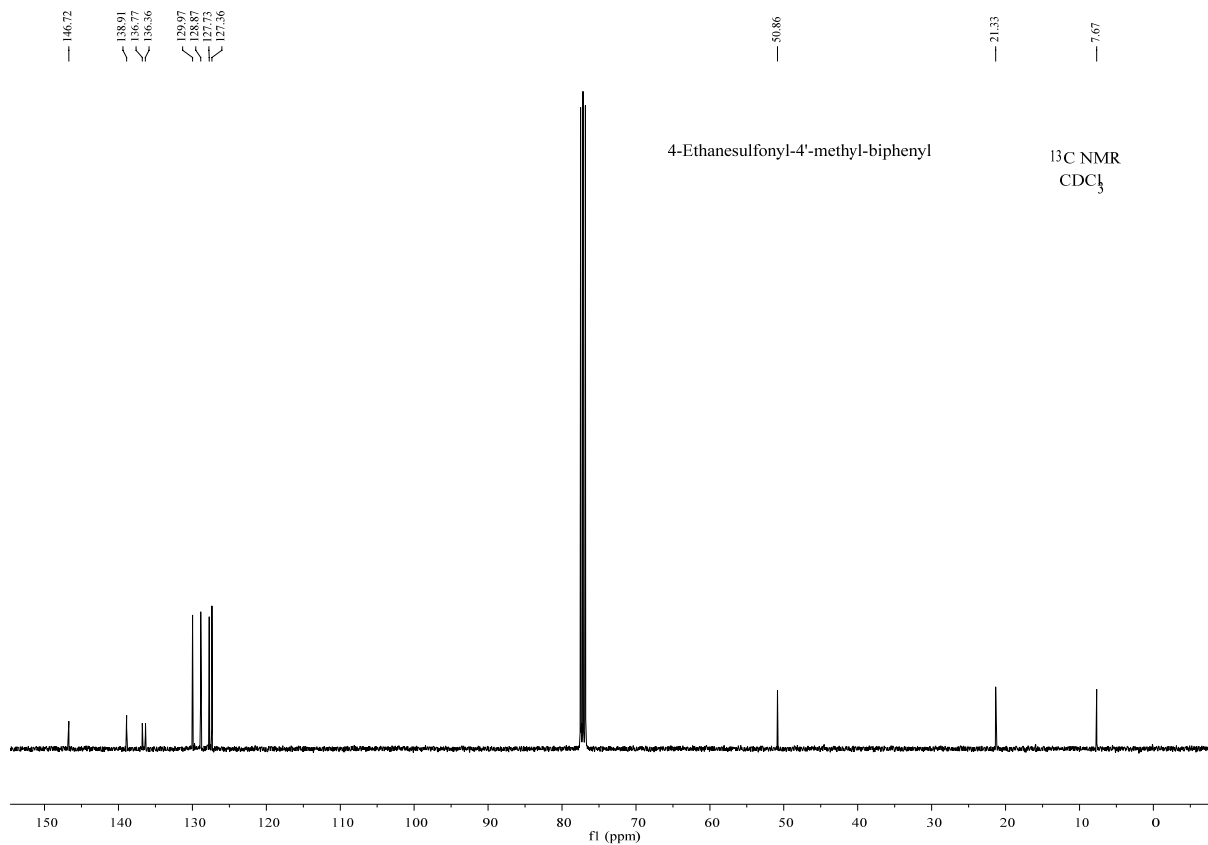
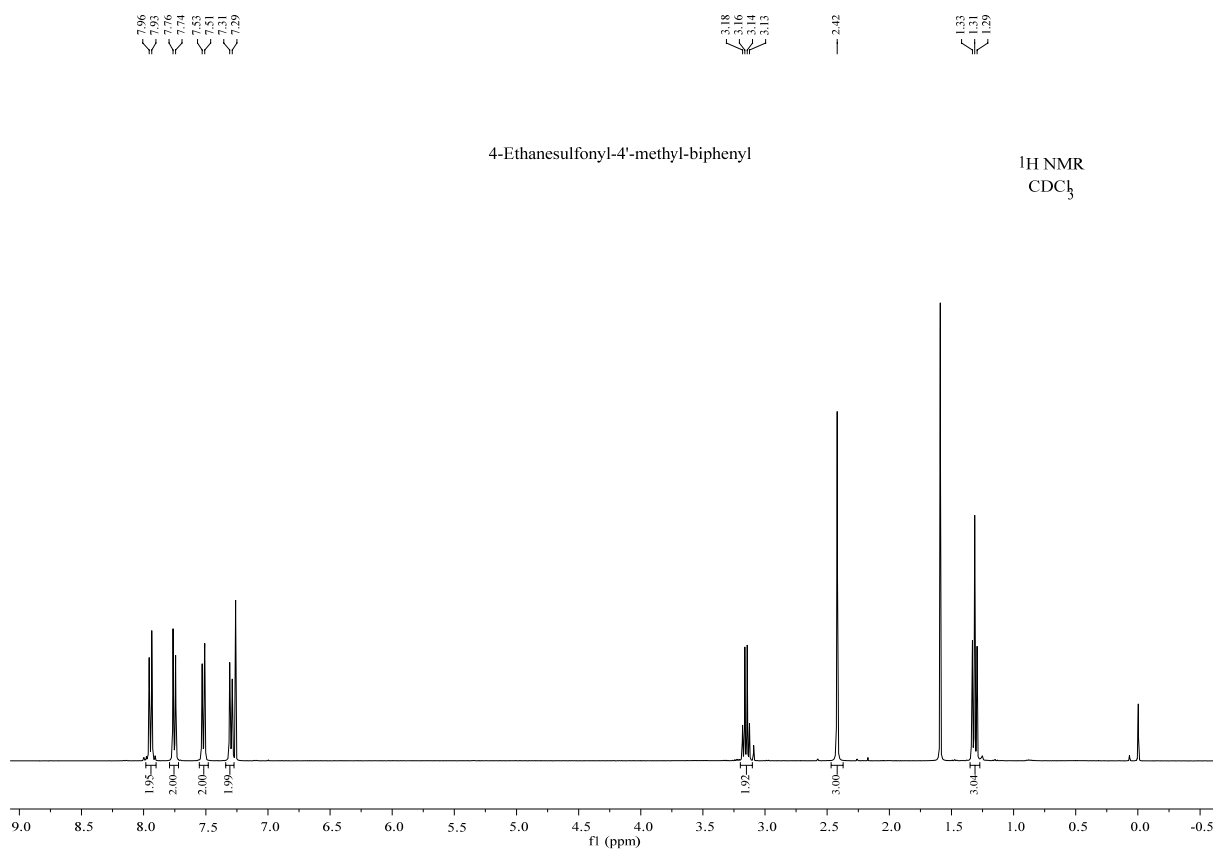
17. 4'-Methyl-4-(trifluoromethyl)biphenyl



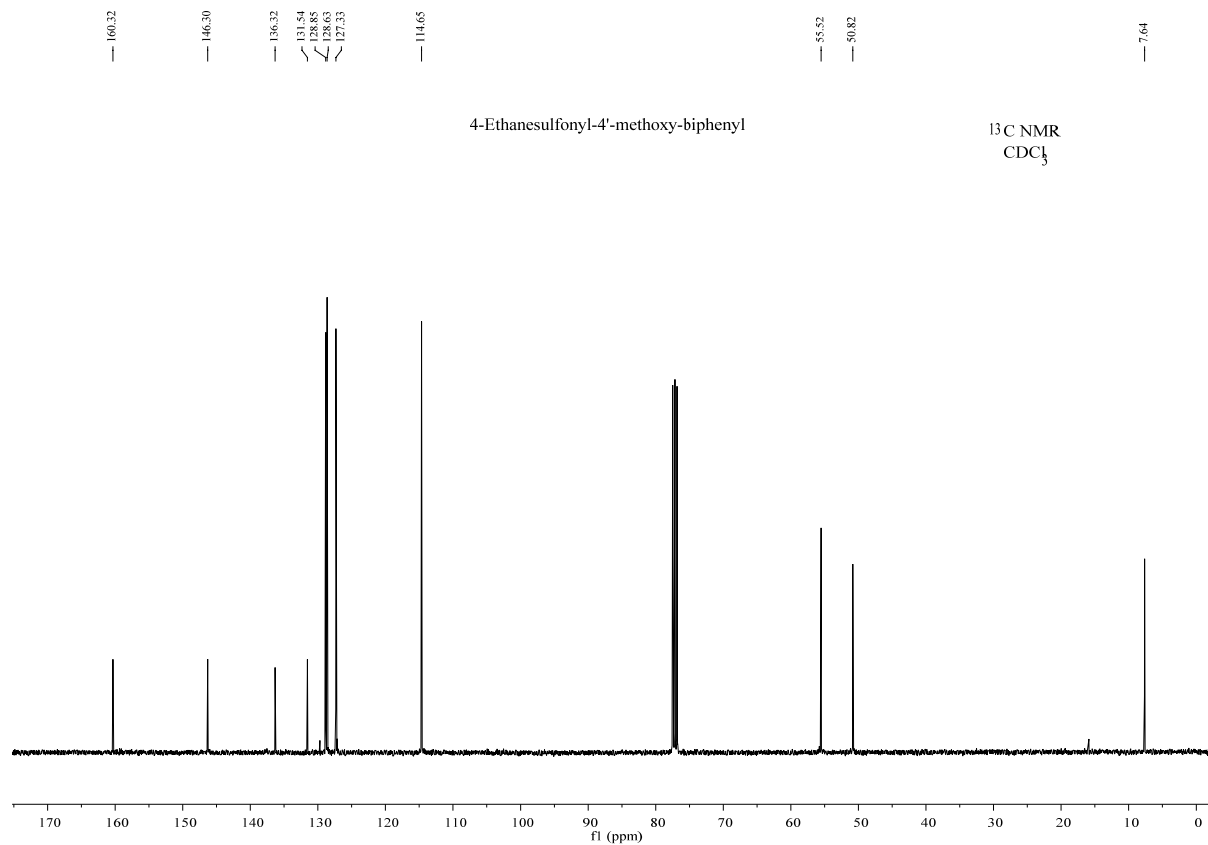
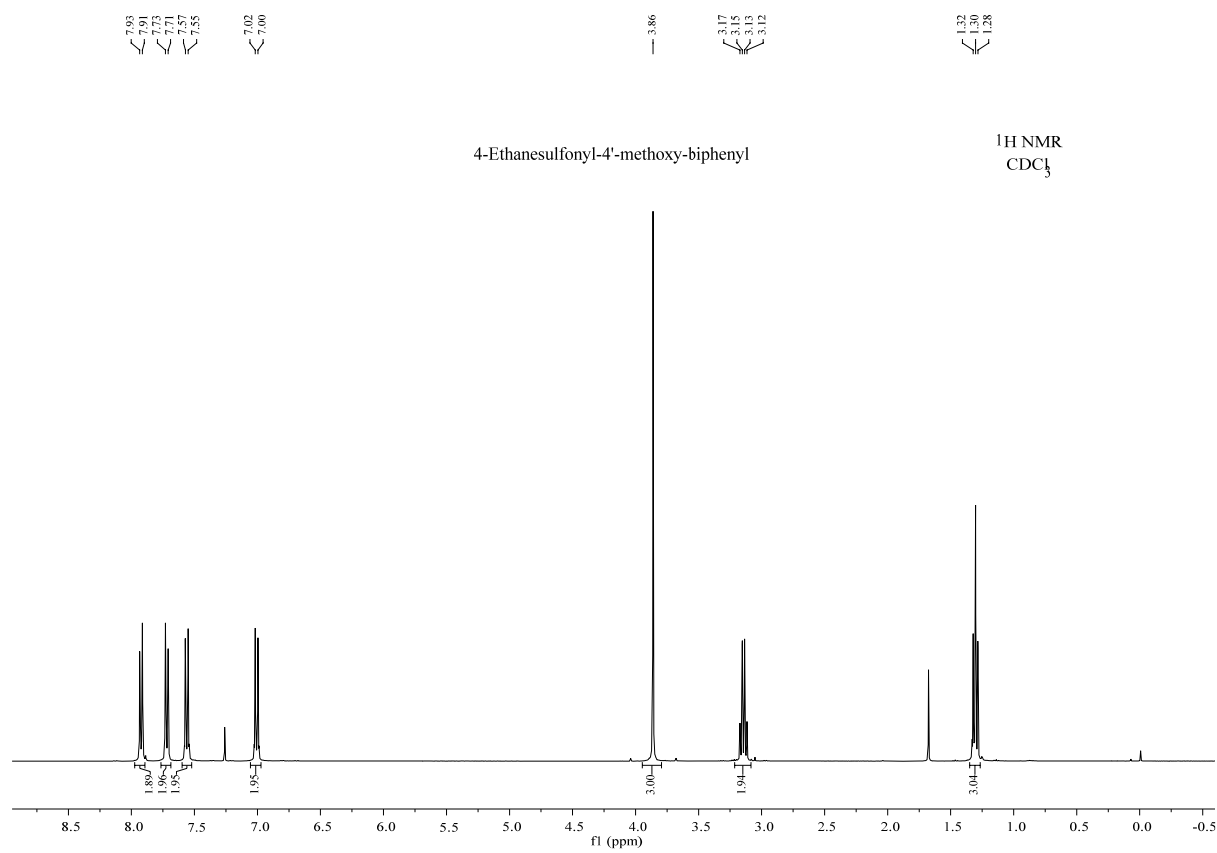
18. 4'-Methoxy-4-(trifluoromethyl)biphenyl



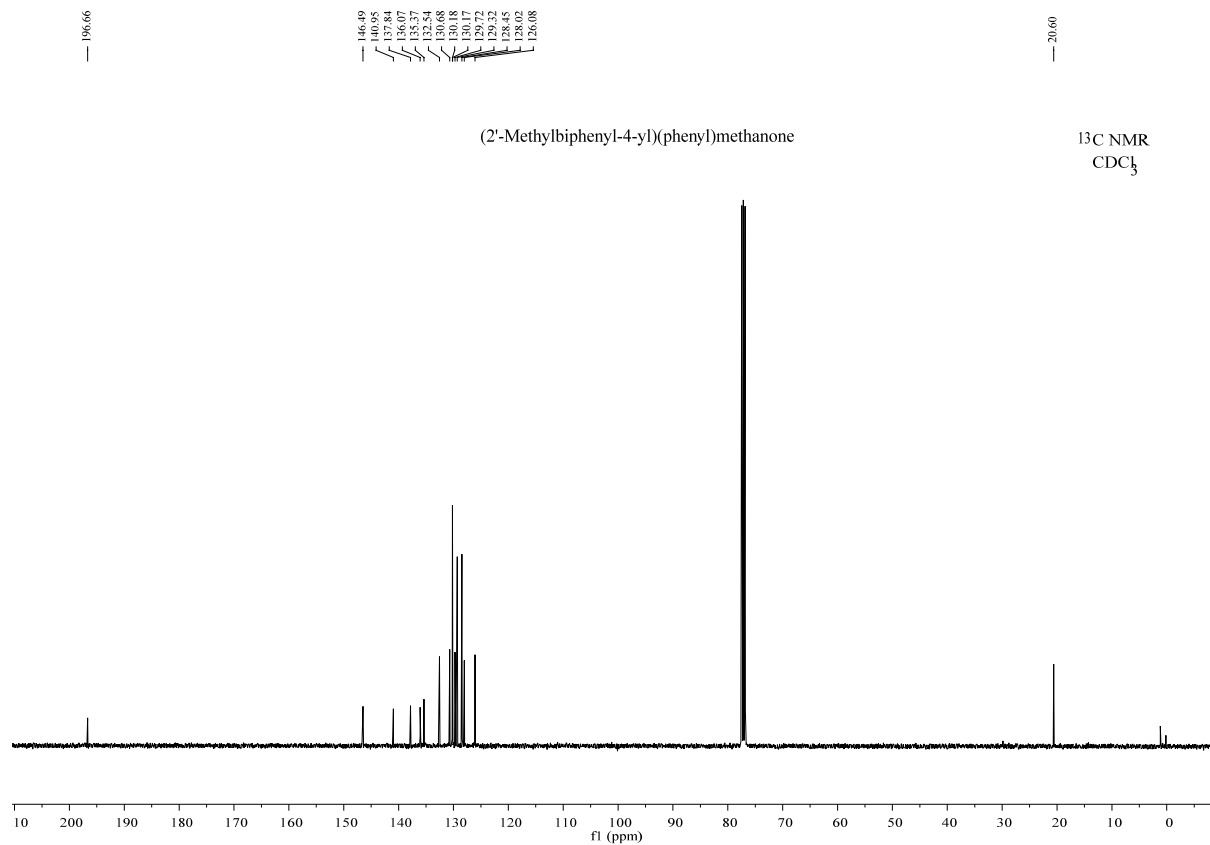
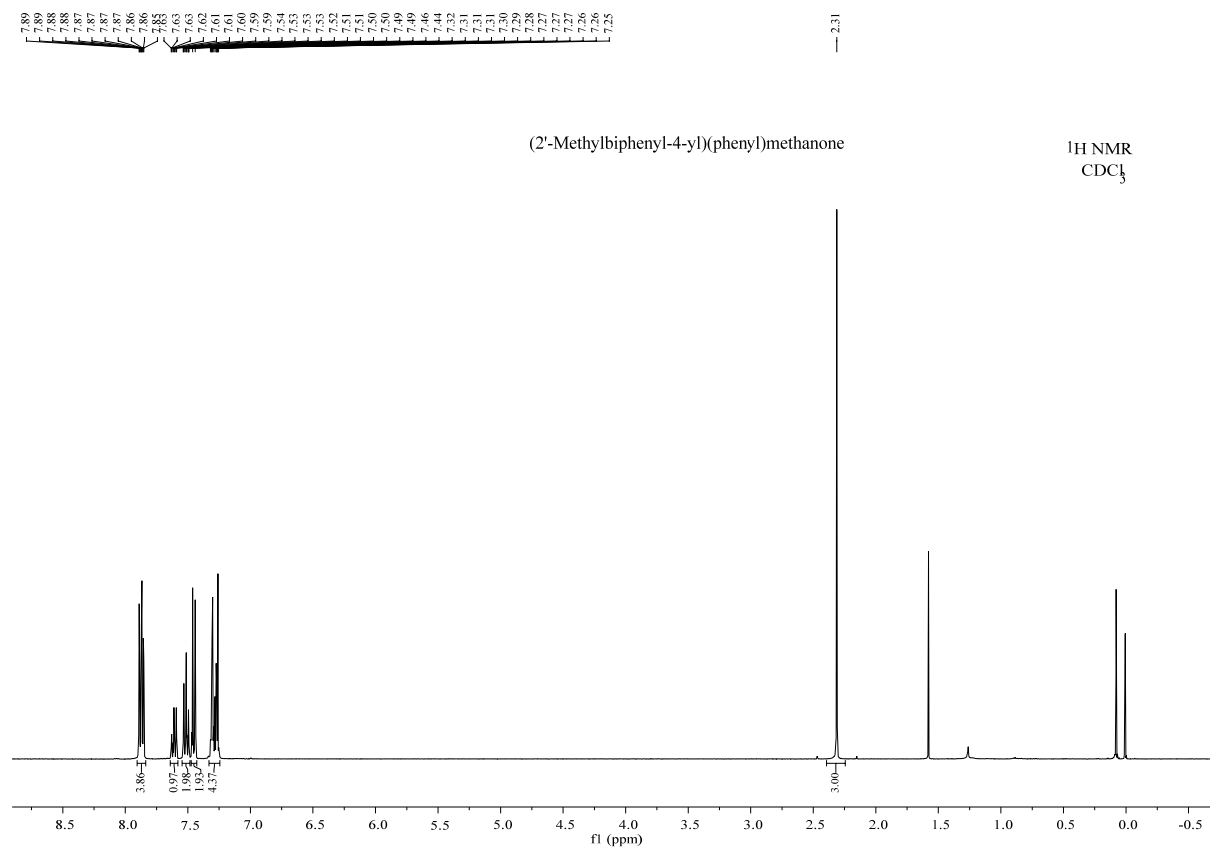
19. 4-Ethanesulfonyl-4'-methyl-biphenyl



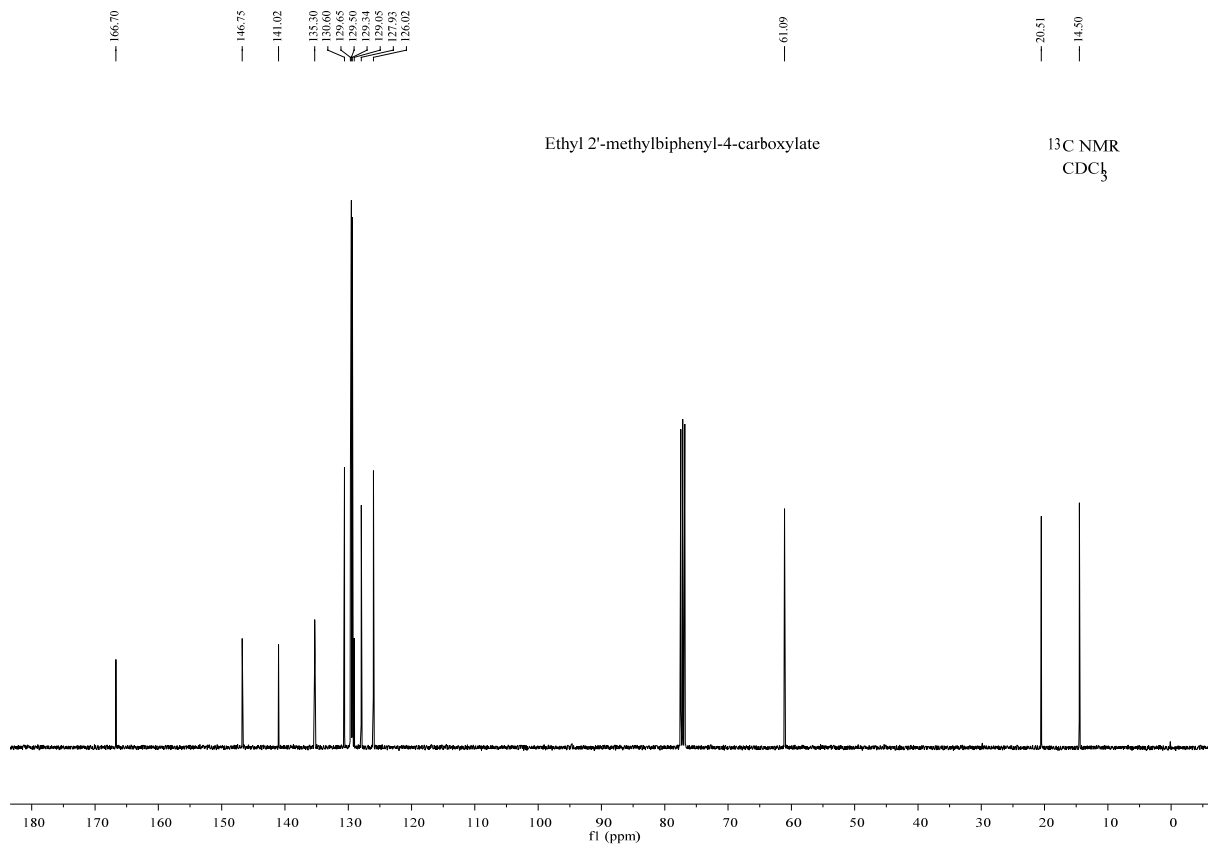
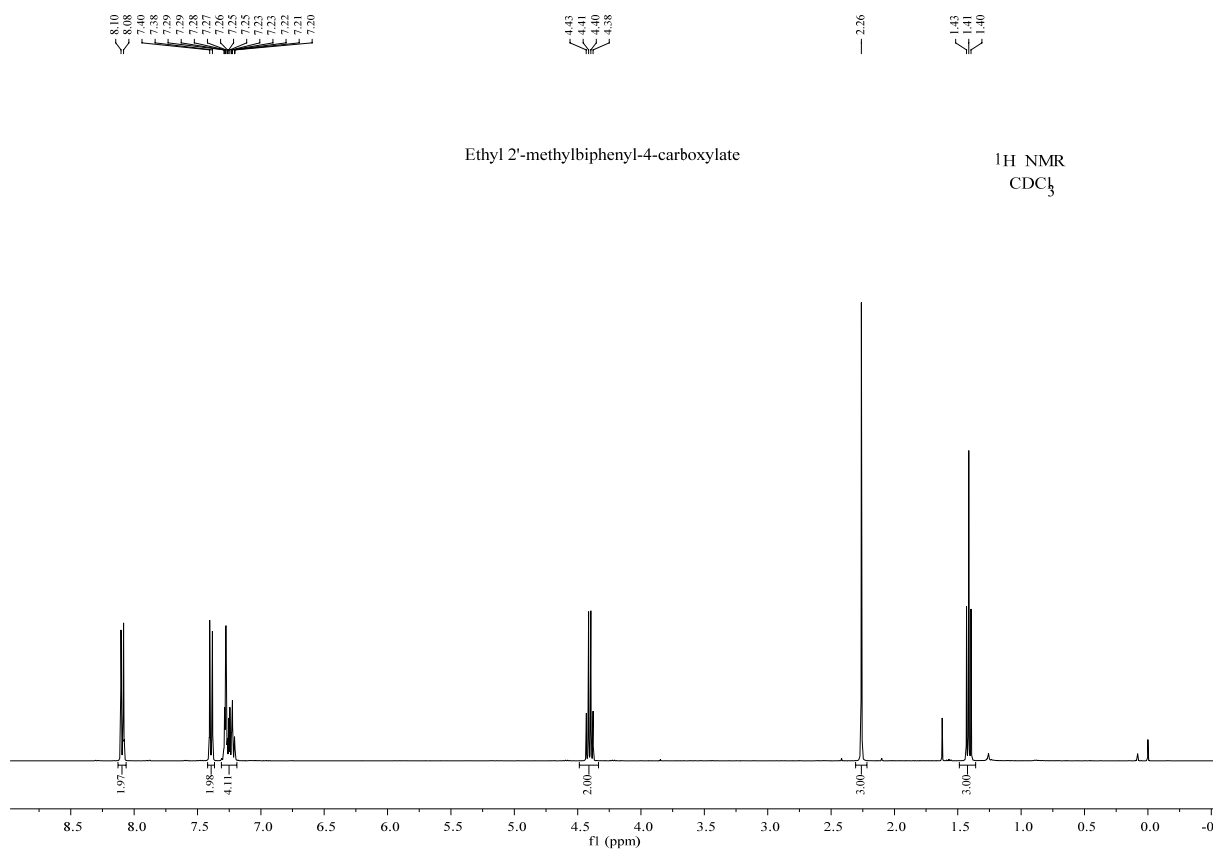
20. 4-Ethanesulfonyl-4'-methoxy-biphenyl



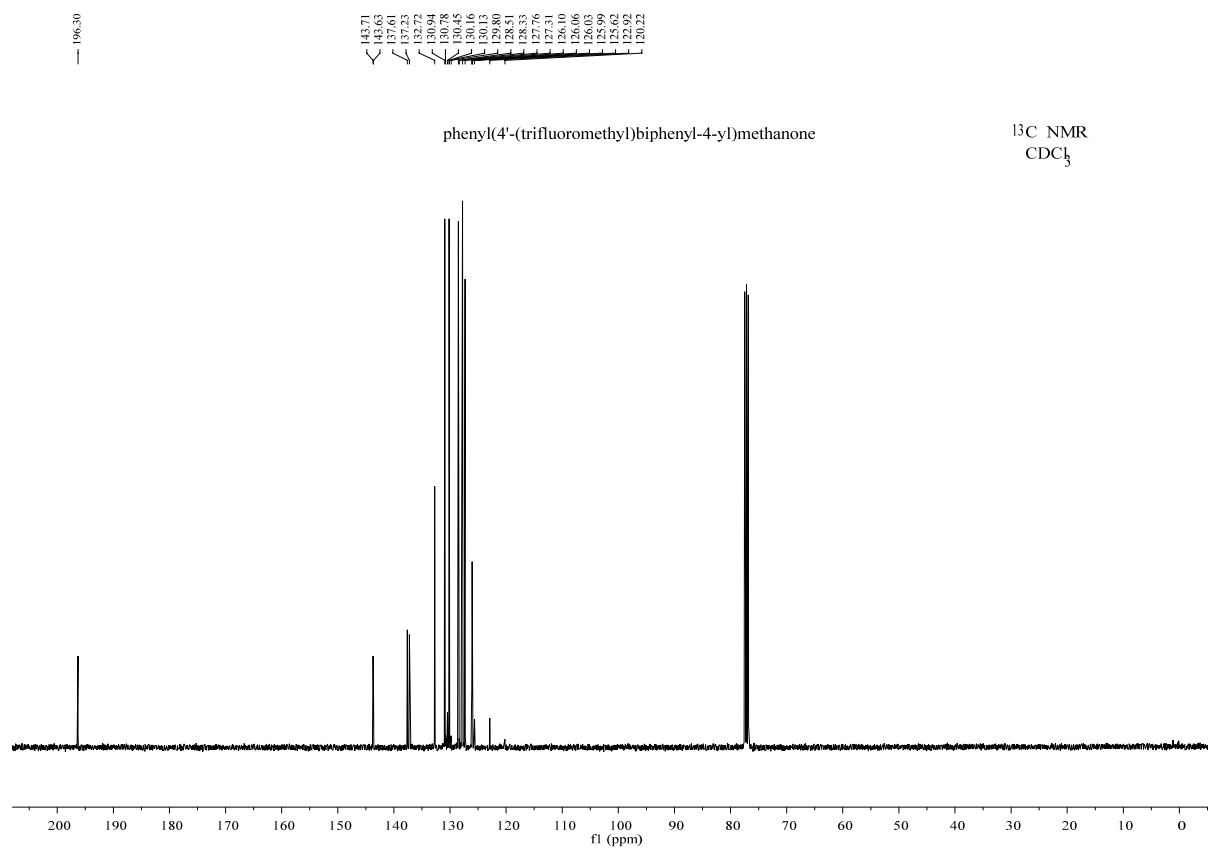
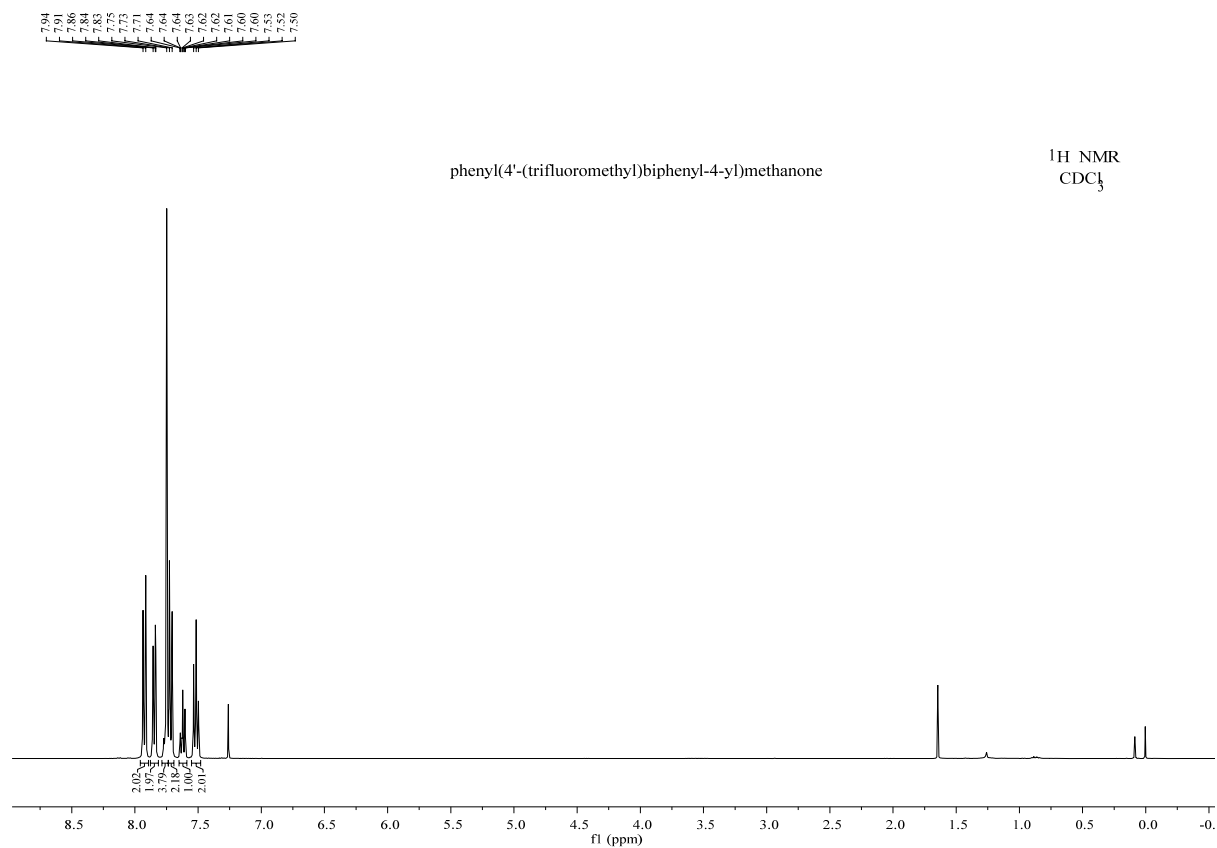
21. (2'-Methylbiphenyl-4-yl)(phenyl)methanone



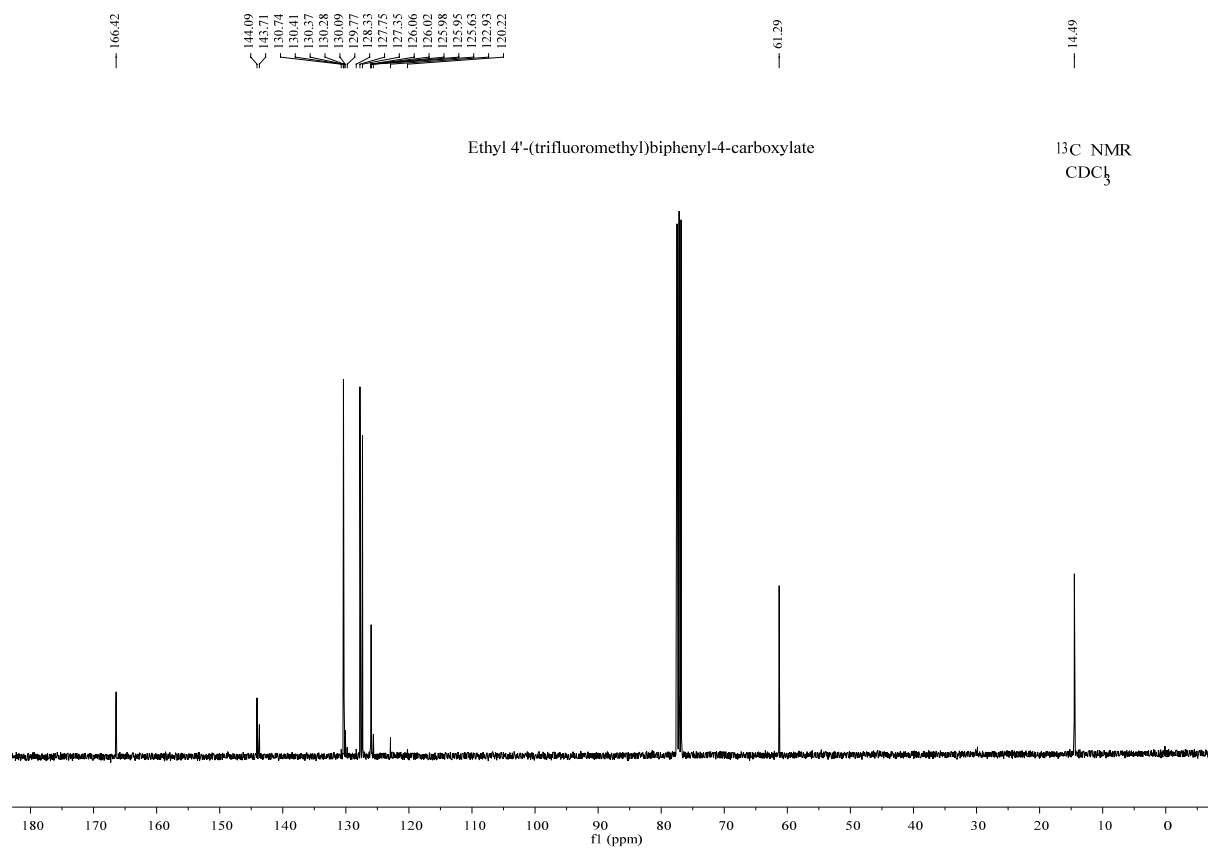
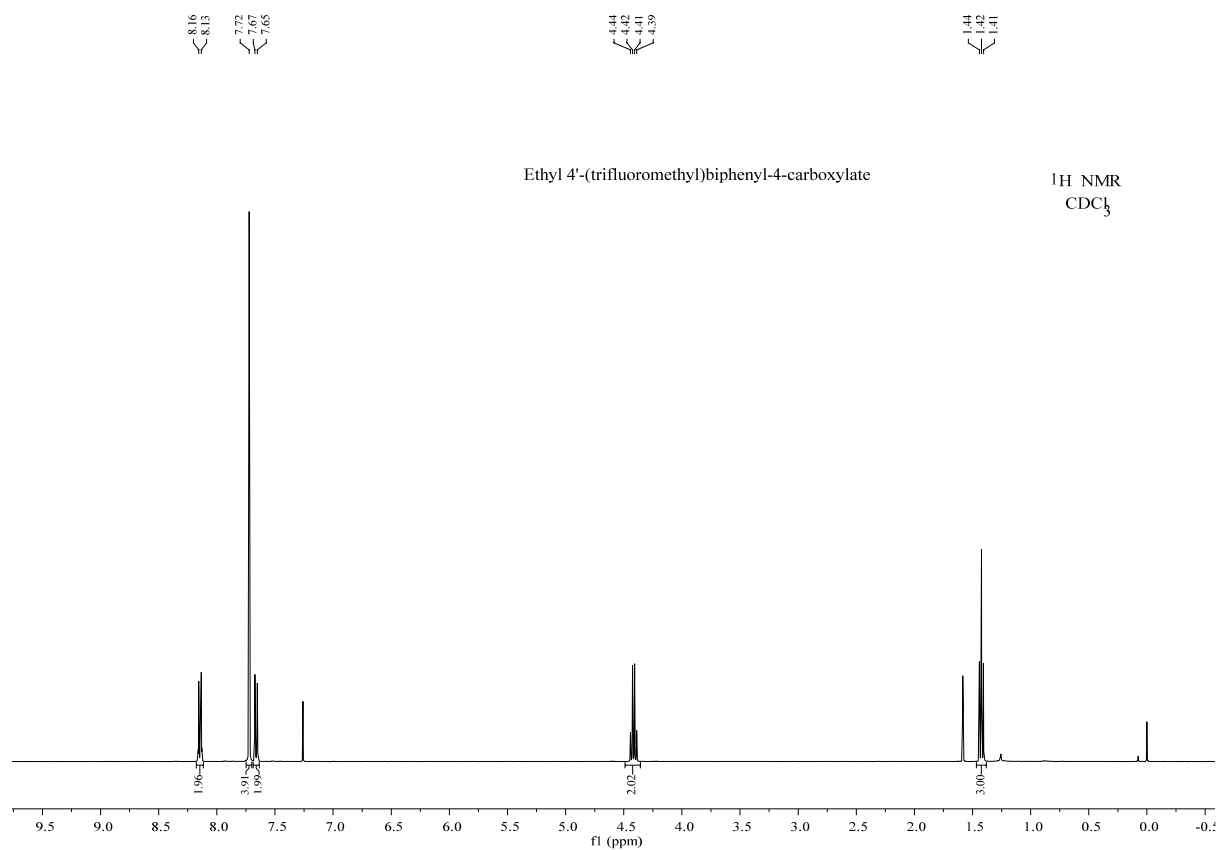
22. Ethyl 2'-methylbiphenyl-4-carboxylate



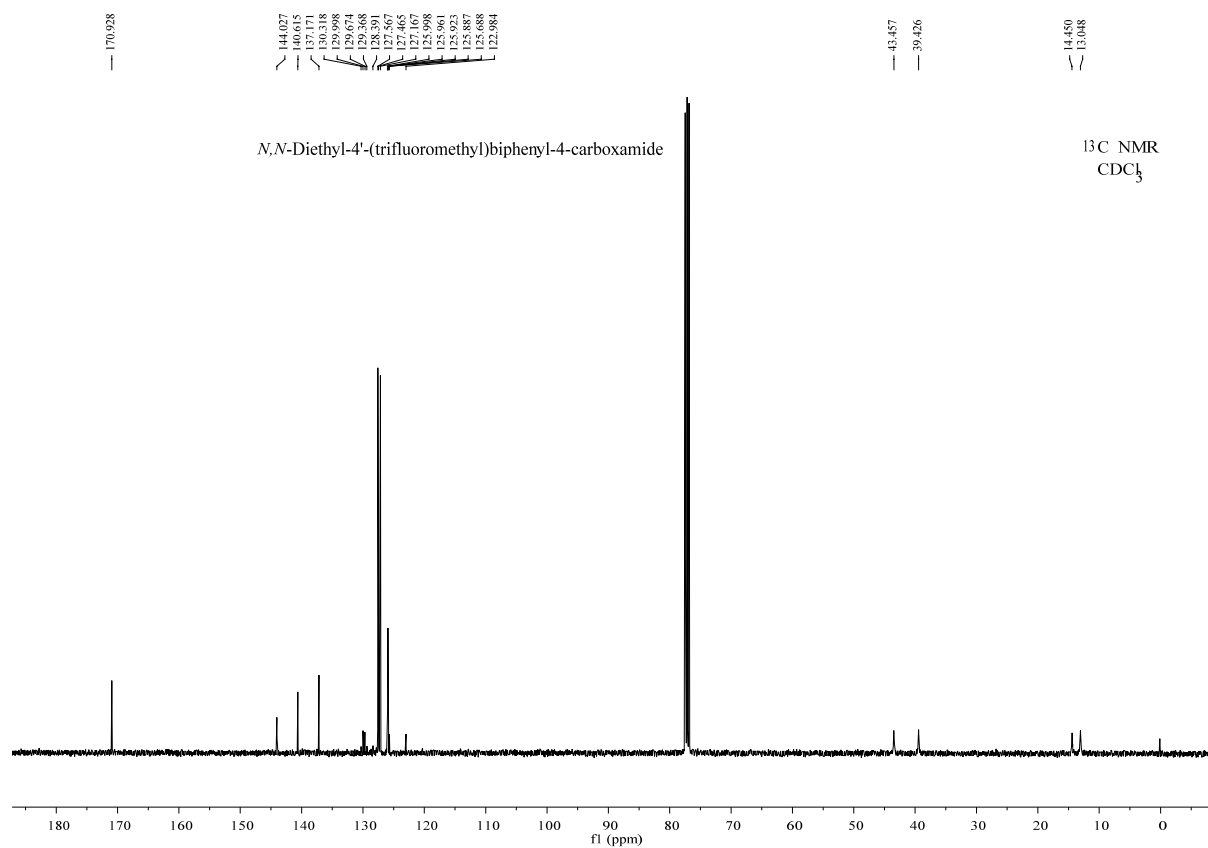
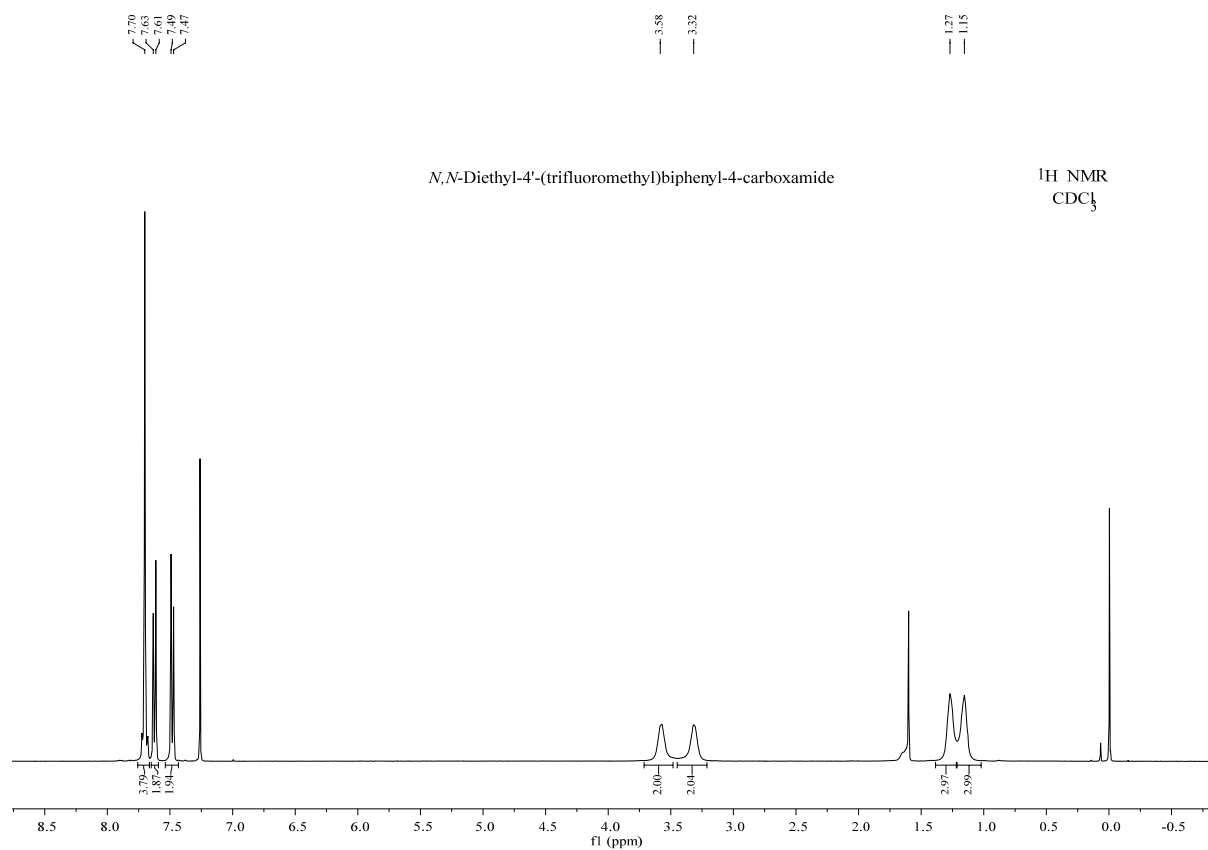
23. Phenyl(4'-(trifluoromethyl)biphenyl-4-yl)methanone



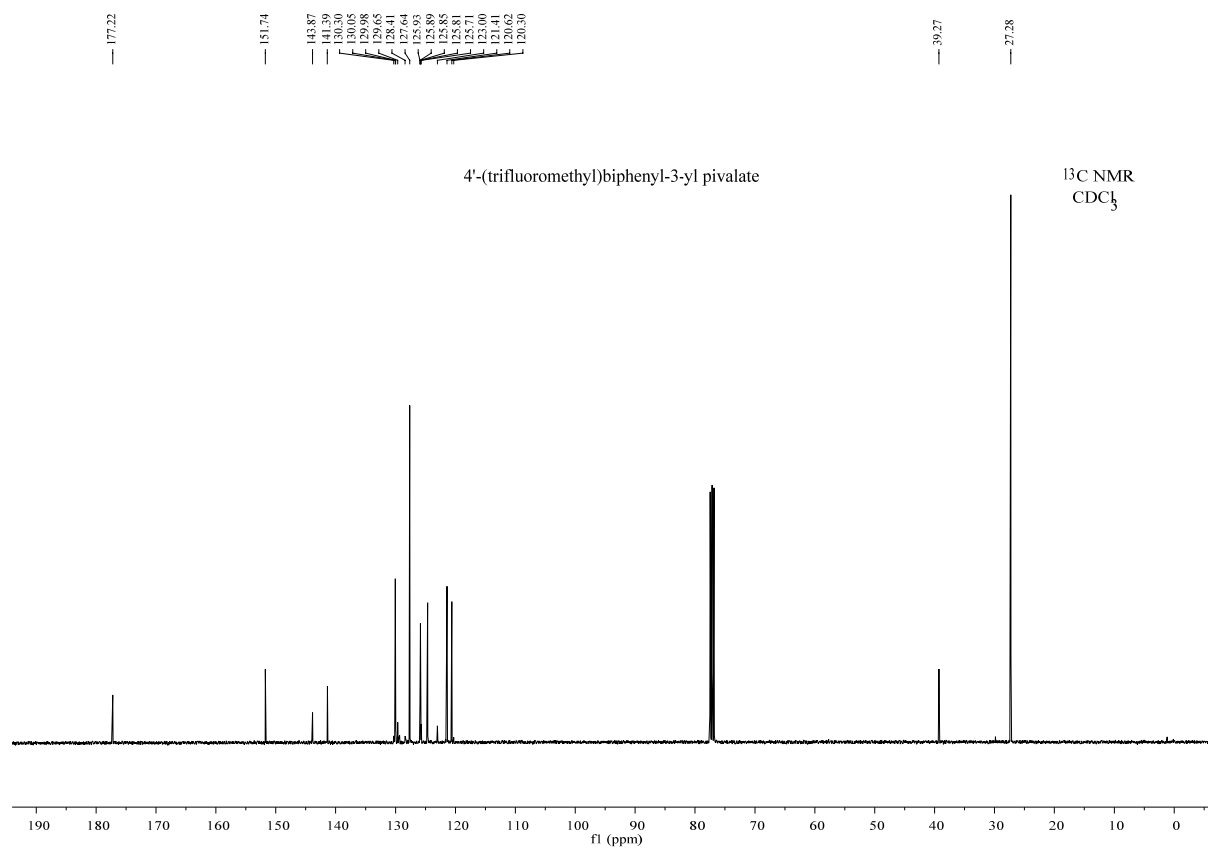
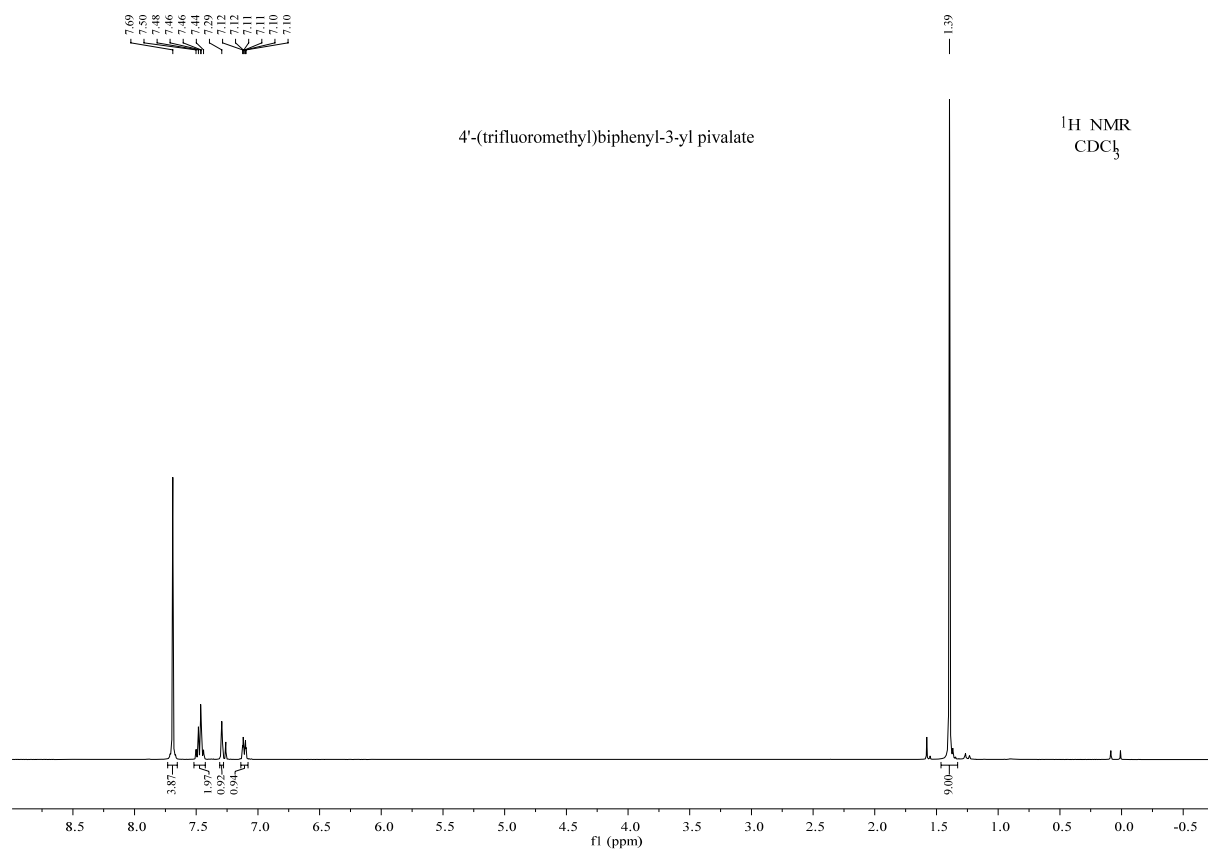
24. Ethyl 4'-(trifluoromethyl)biphenyl-4-carboxylate



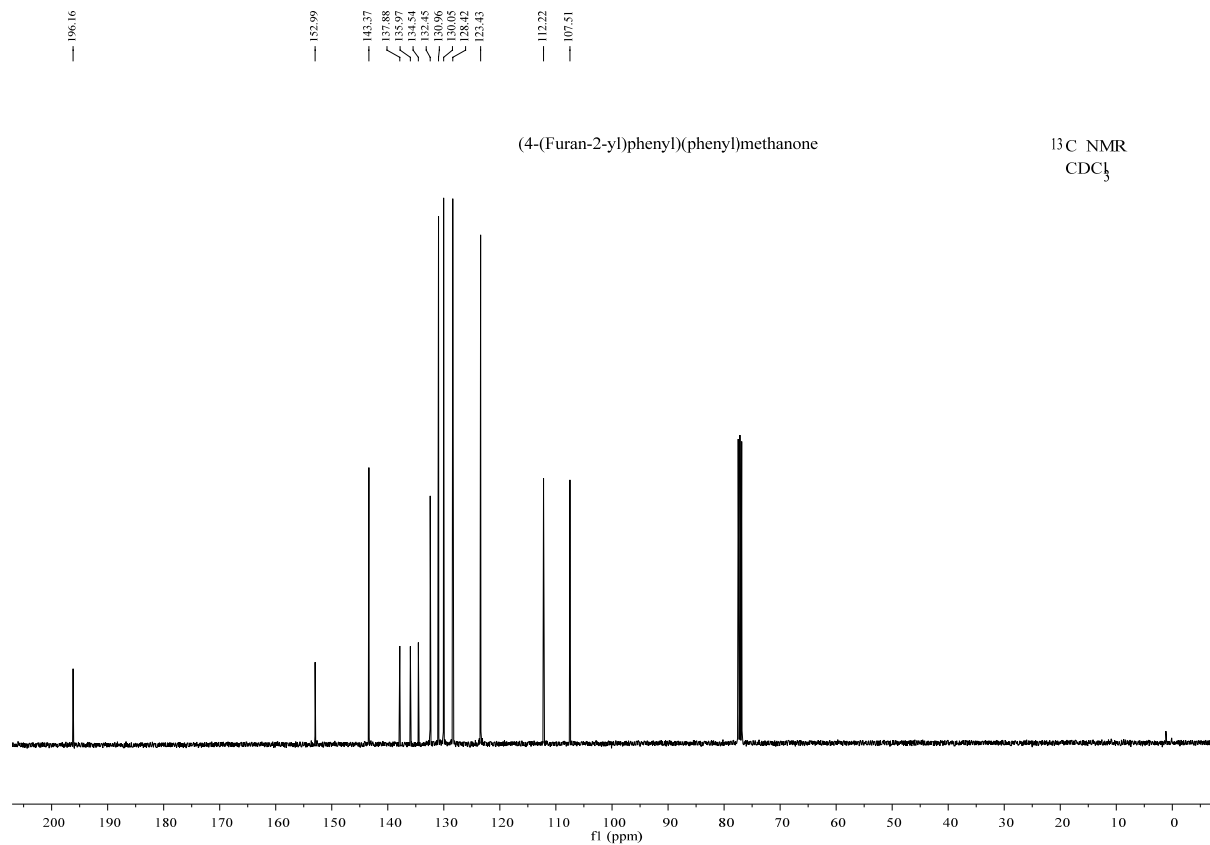
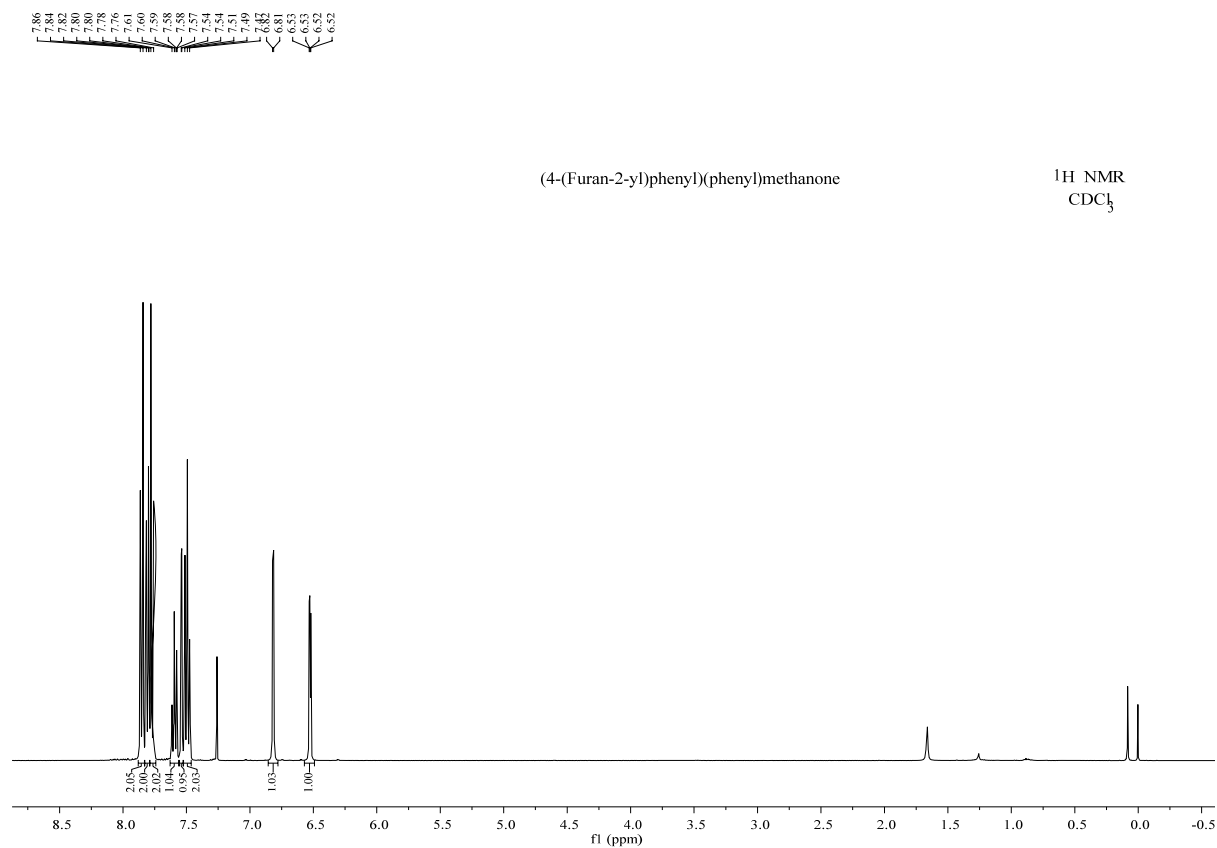
25. *N,N*-Diethyl-4'-(trifluoromethyl)biphenyl-4-carboxamide



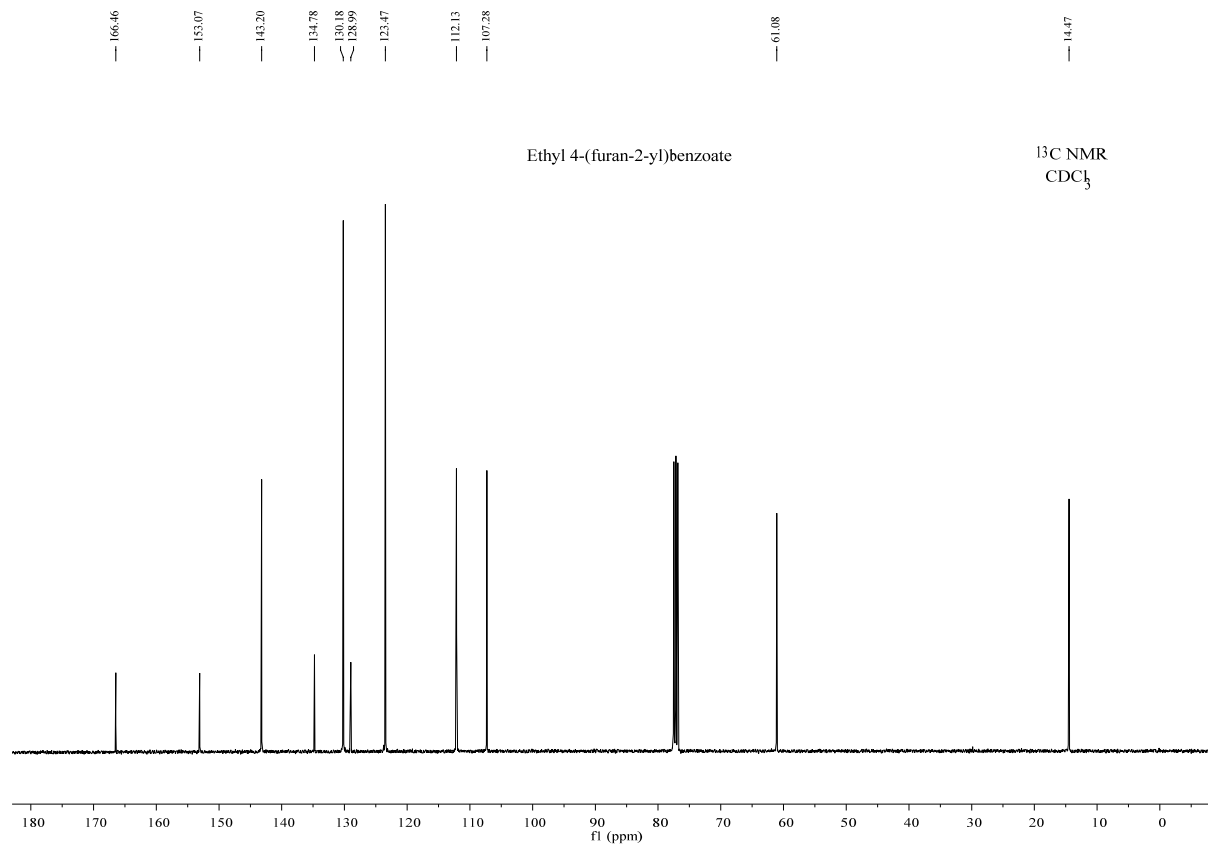
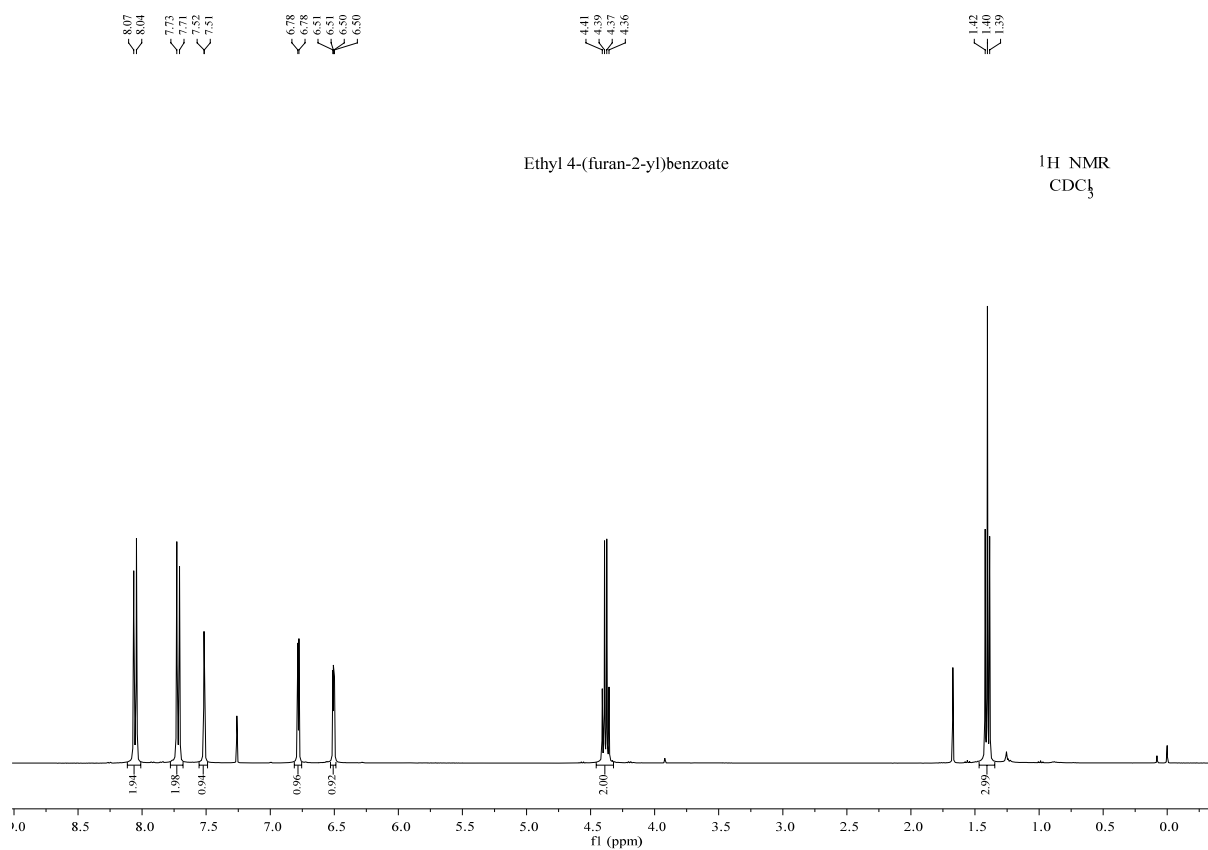
26. 4'-(Trifluoromethyl)biphenyl-3-yl pivalate



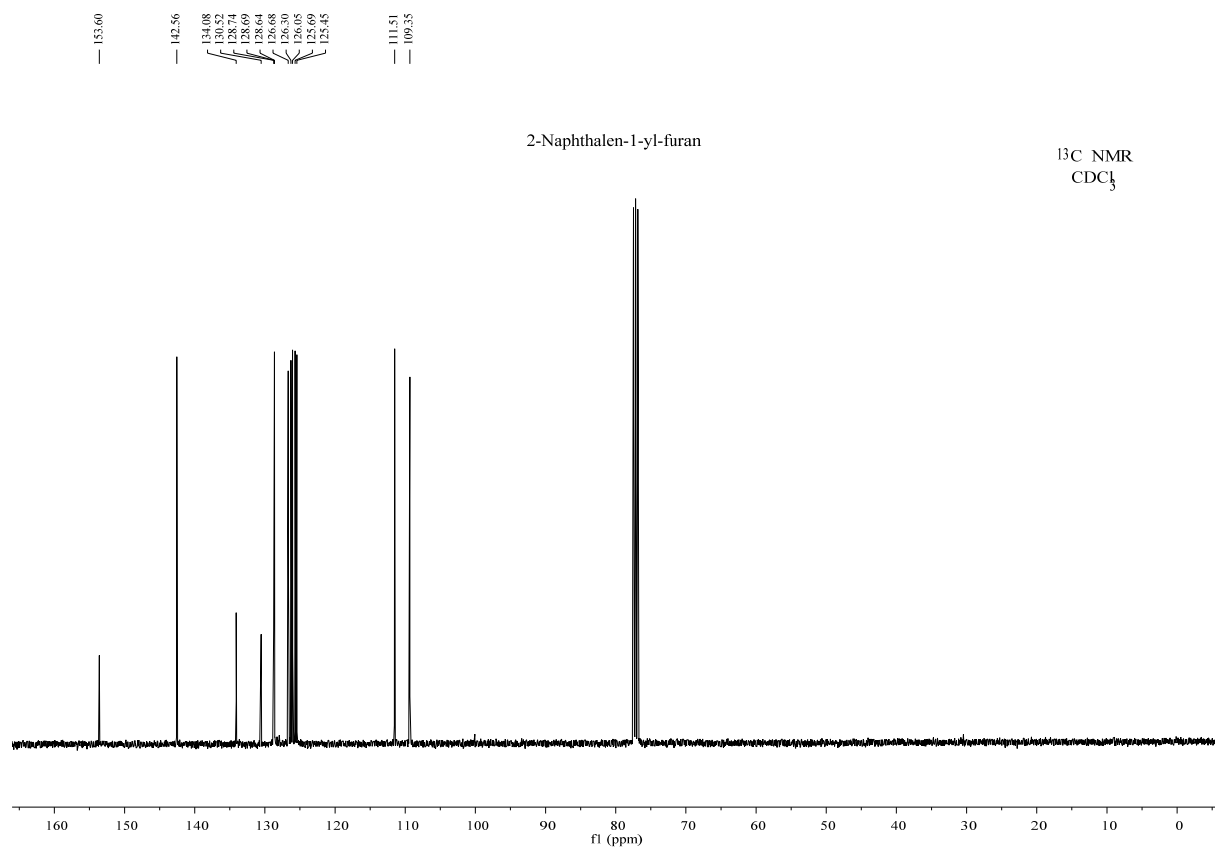
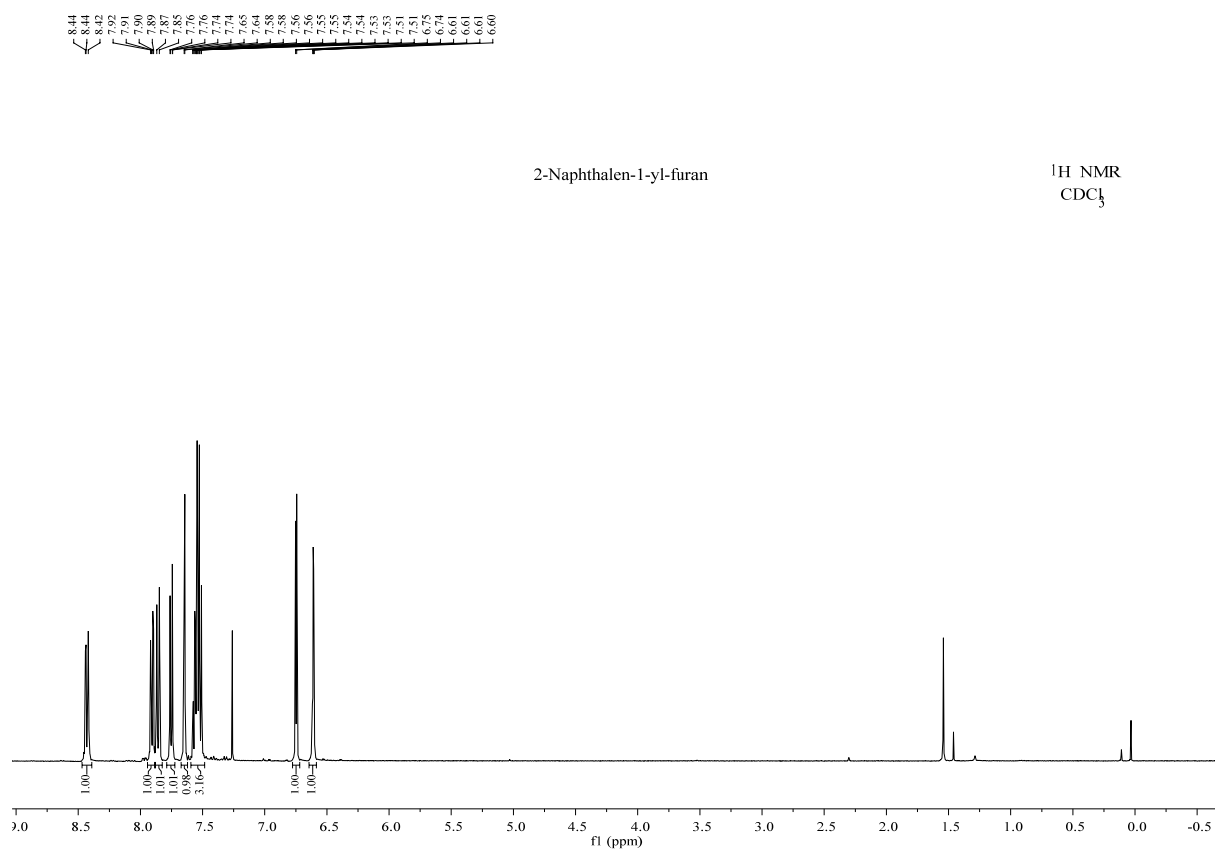
27. (4-(Furan-2-yl)phenyl)(phenyl)methanone



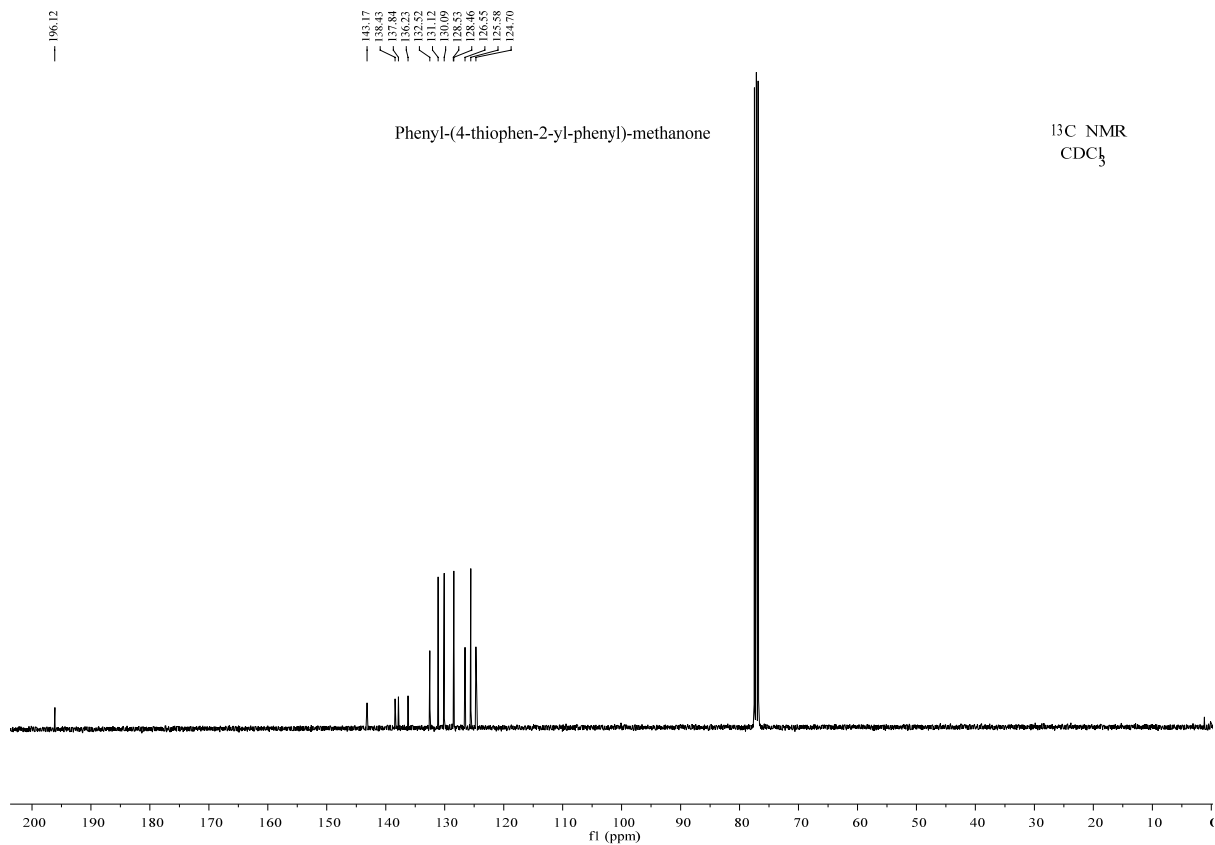
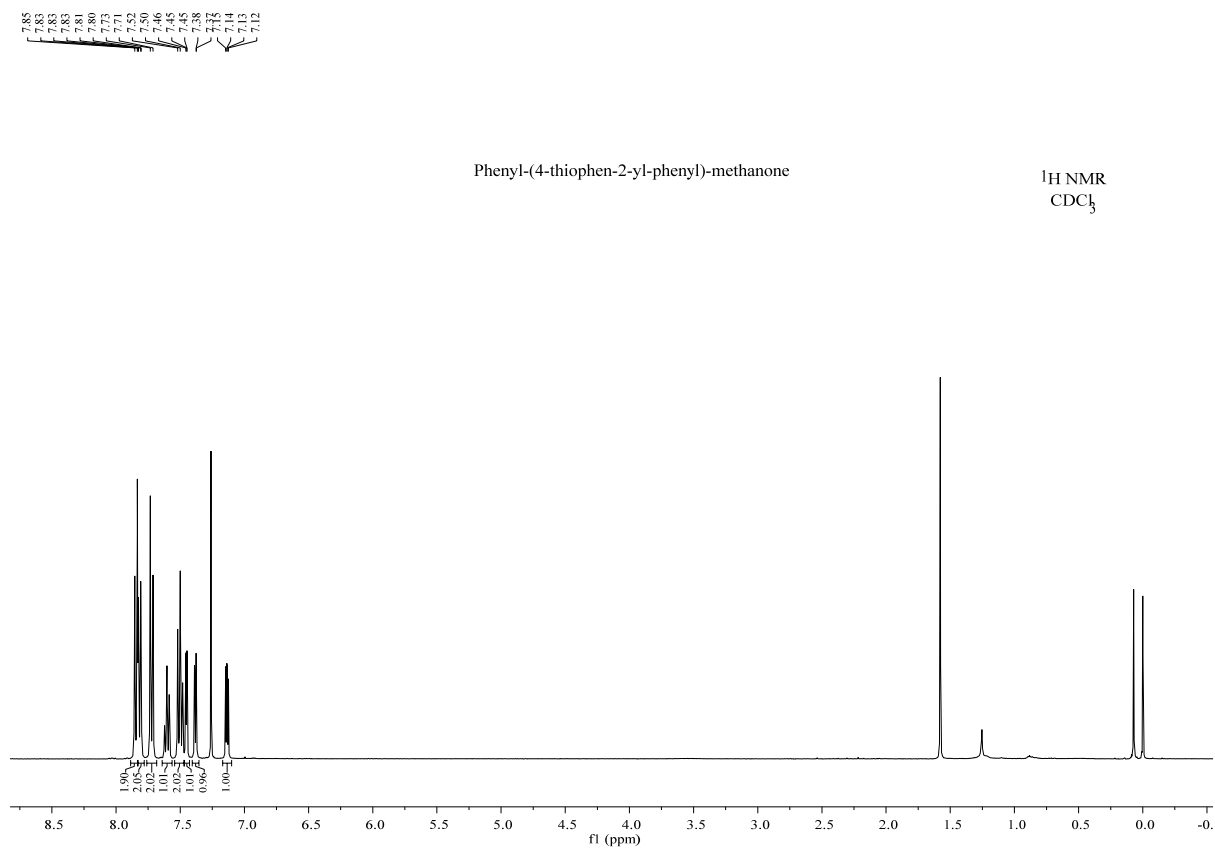
28. Ethyl 4-(furan-2-yl)benzoate



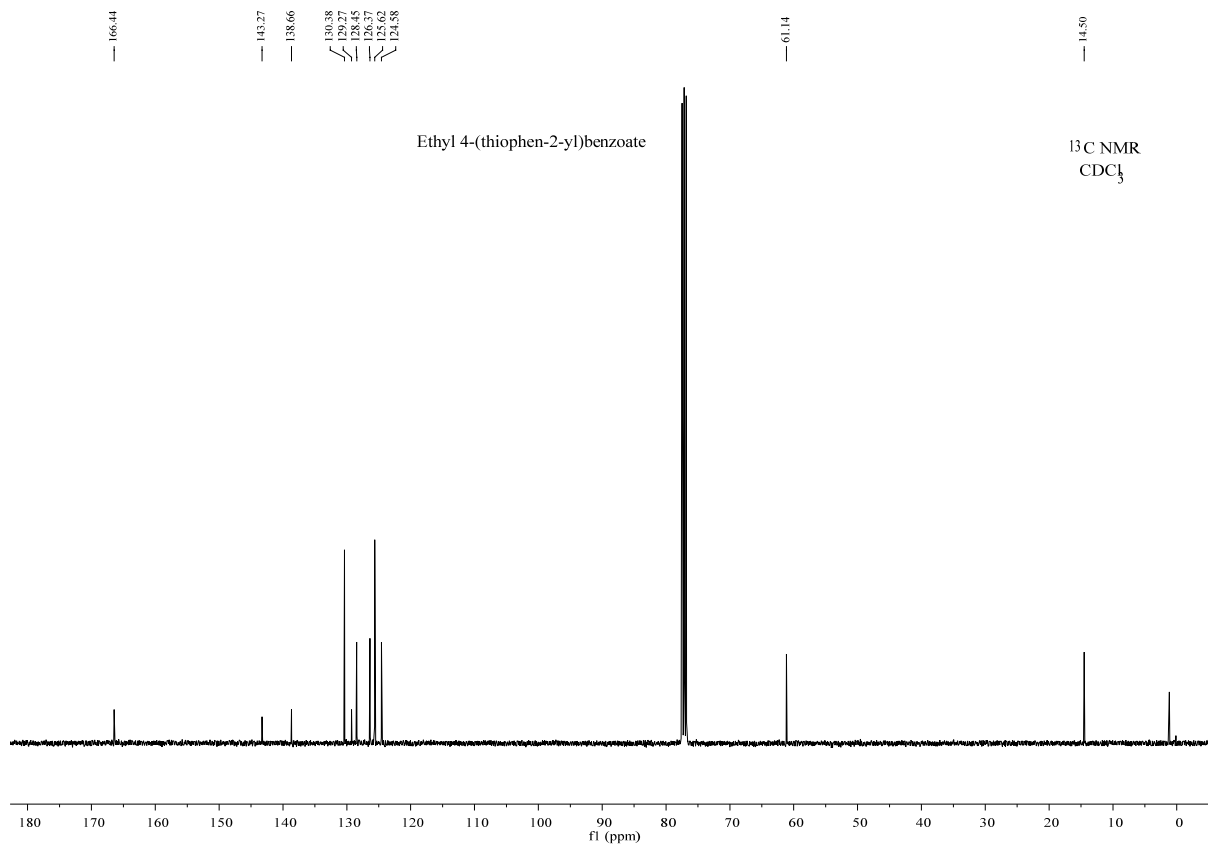
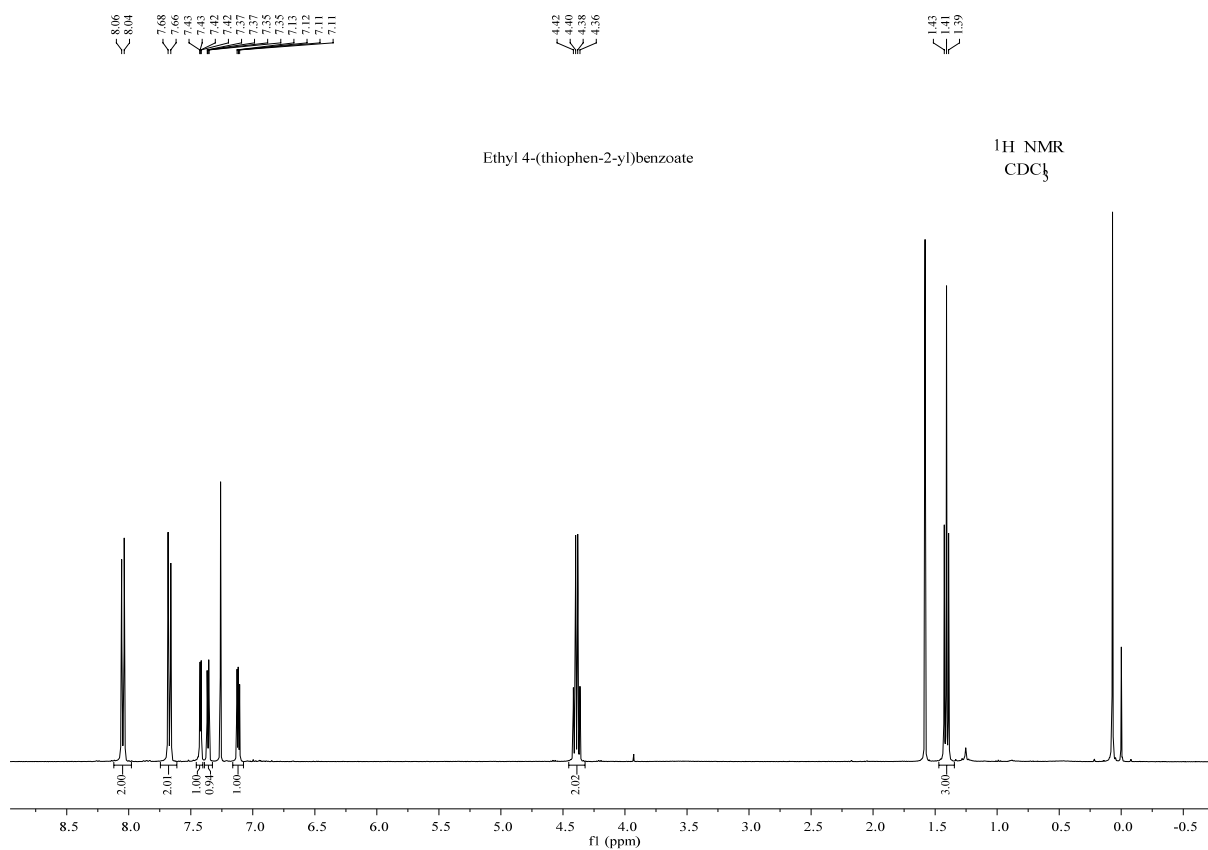
29. 2-Naphthalen-1-yl-furan



30. Phenyl-(4-thiophen-2-yl-phenyl)methanone



31. Ethyl 4-(thiophen-2-yl)benzoate



32. 2-Naphthalen-1-yl-thiophene

