Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry.

Palladium-Catalyzed Dimerization of *N*-Aryl Propargylamines for the Synthesis of 3-Vinylquinolines

Xiao-Fang Li, **Xing-Guo Zhang*, Bo-Lun Hu**, **Xiao-Hong Zhang***

College of Chemistry and Materials Engineering, Wenzhou University, Wenzhou 325035, China

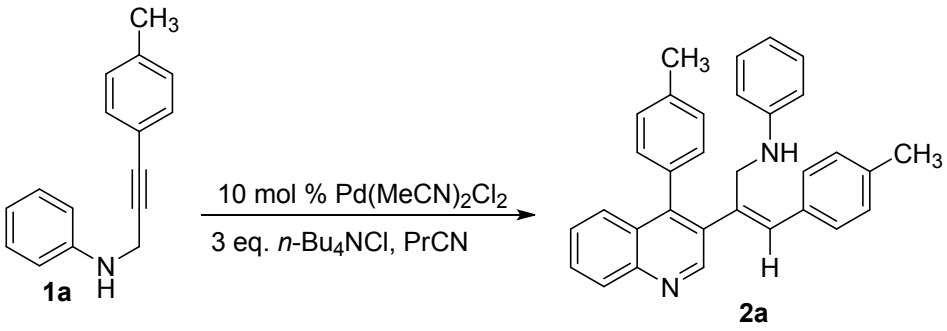
zxg@wzu.edu.cn; kamenzxh@wzu.edu.cn

Supporting Information

List of Contents

Contents:

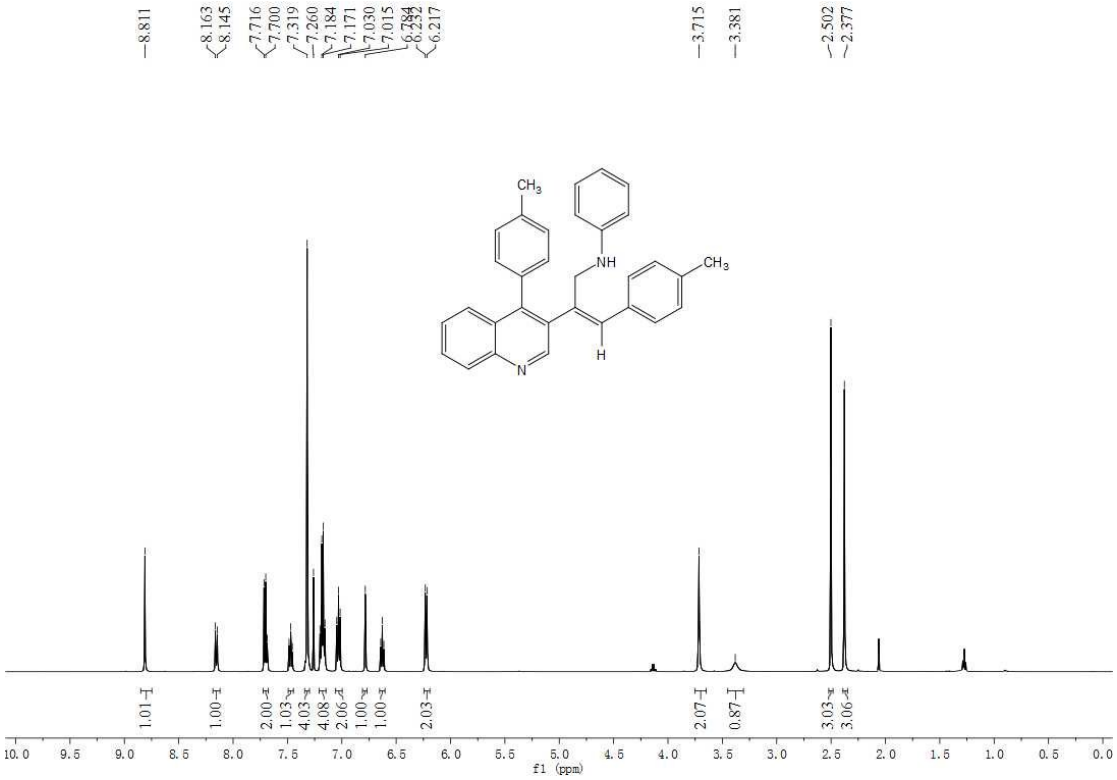
S-table-1 Optimization of temperature and reaction time [a,b]



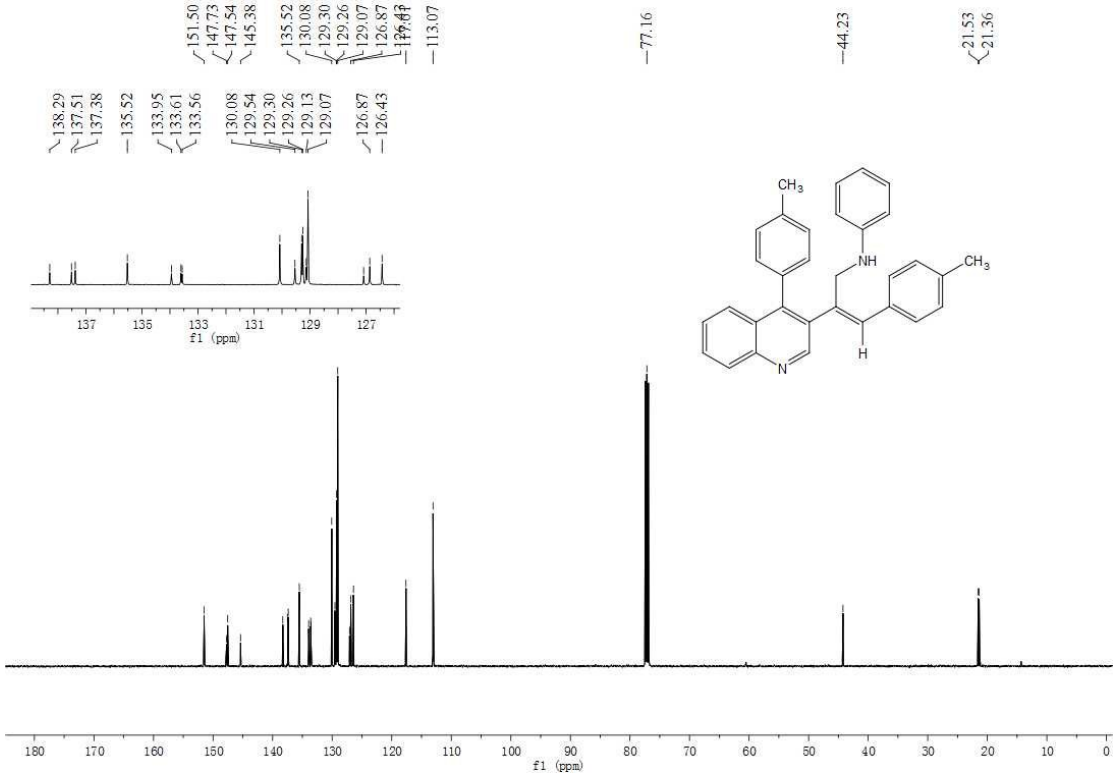
Entry	Catalyst (10 mol%)	Time (h)	Temperature (℃)	Yield (%)
1	$Pd(MeCN)_2Cl_2$	6h	90	69
2	$Pd(MeCN)_2Cl_2$	12h	90	76
3	$Pd(MeCN)_2Cl_2$	18h	90	76
4	$Pd(MeCN)_2Cl_2$	24h	90	77
5	$Pd(MeCN)_2Cl_2$	12h	80	66
6	$Pd(MeCN)_2Cl_2$	12h	100	75
7	$Pd(MeCN)_2Cl_2$	12h	110	72

[a] Reaction conditions: *N*-propargylamines **1a** (0.2 mmol), $Pd(MeCN)_2Cl_2$ (10 mol %), *n*-Bu_4NCl (0.6 mmol, 3 equiv), butyronitrile (2 mL); [b] Isolated yields

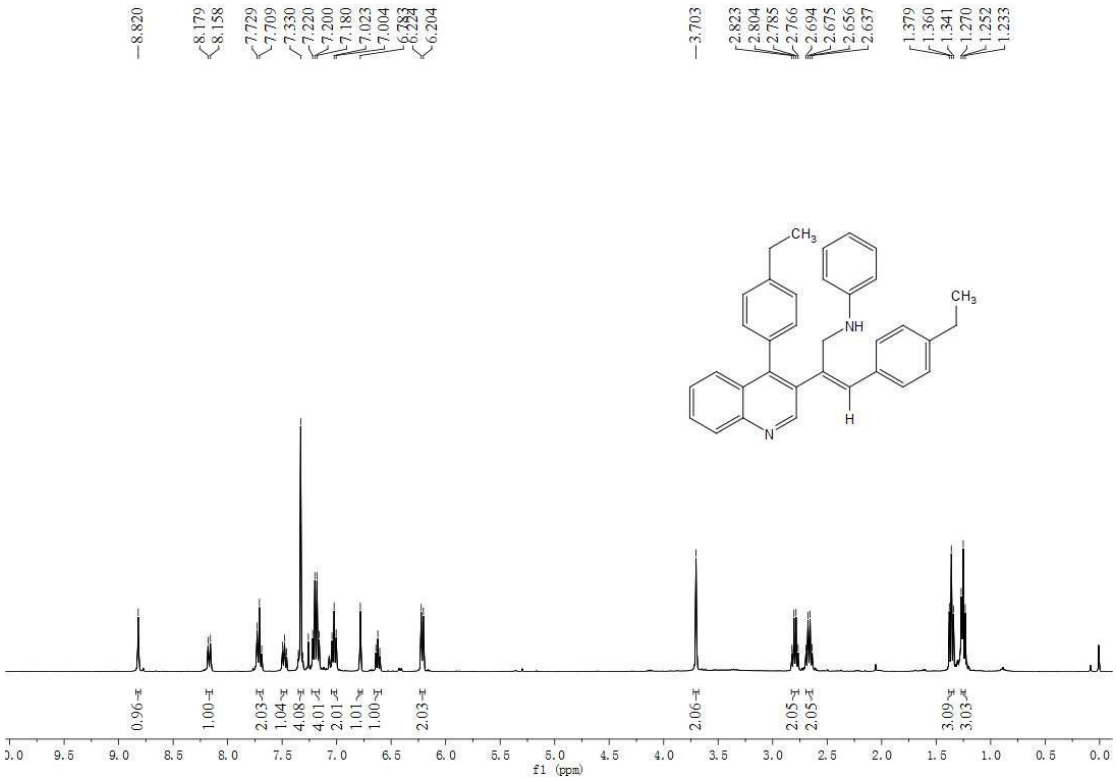
1. NMR Spectra for All Compounds.



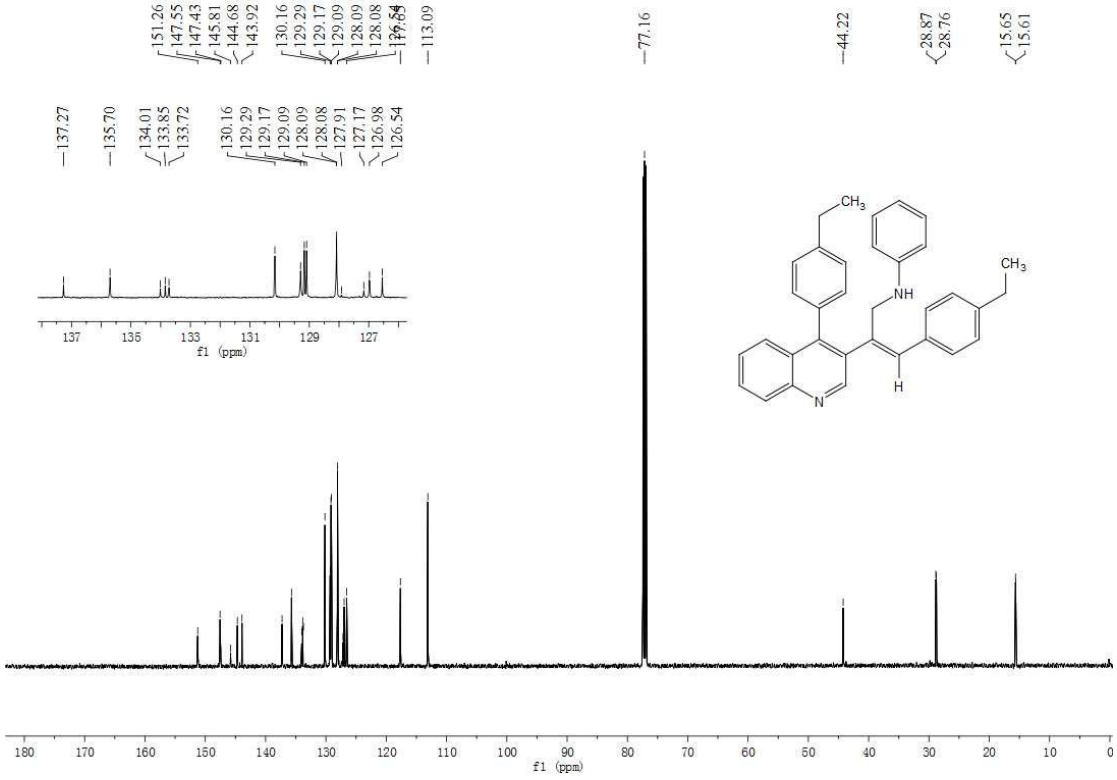
^{1}H NMR: (Z)-N-(3-(p-tolyl)-2-(4-(p-tolyl)quinolin-3-yl)allyl)aniline (2a)



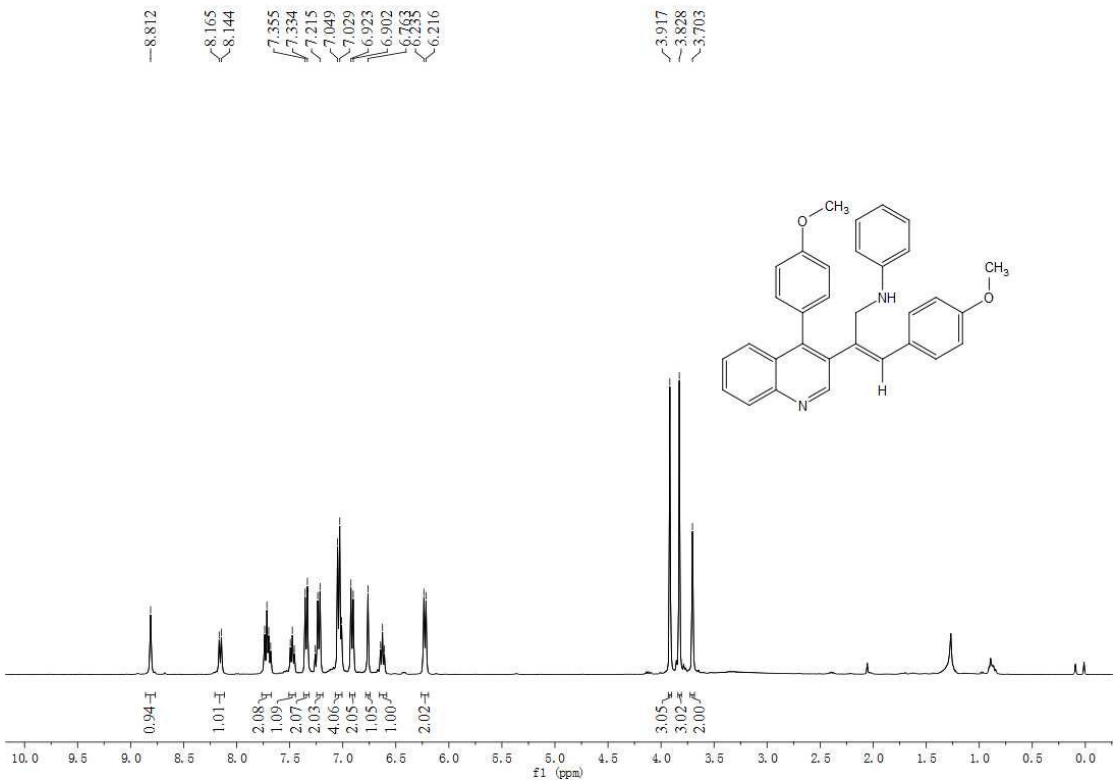
^{13}C NMR: (Z)-N-(3-(p-tolyl)-2-(4-(p-tolyl)quinolin-3-yl)allyl)aniline (2a)



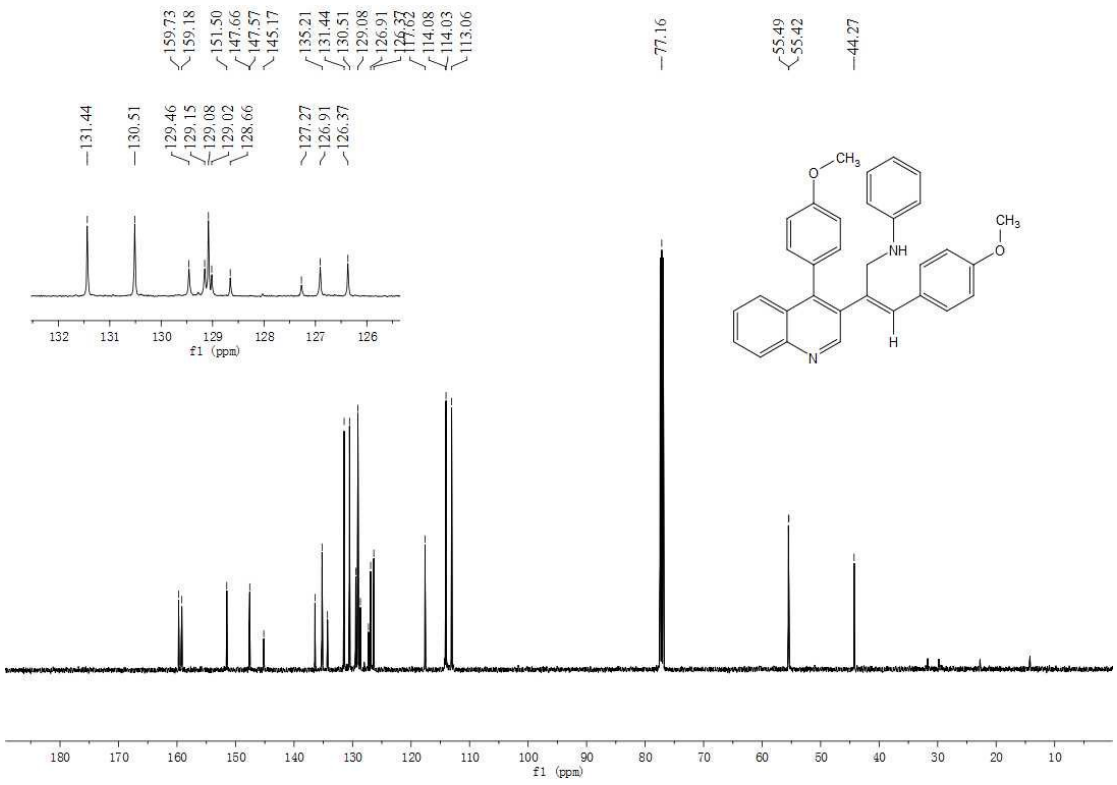
[1]H NMR:(Z)-N-(3-(4-ethylphenyl)-2-(4-(4-ethylphenyl)quinolin-3-yl)allyl)aniline (2b)



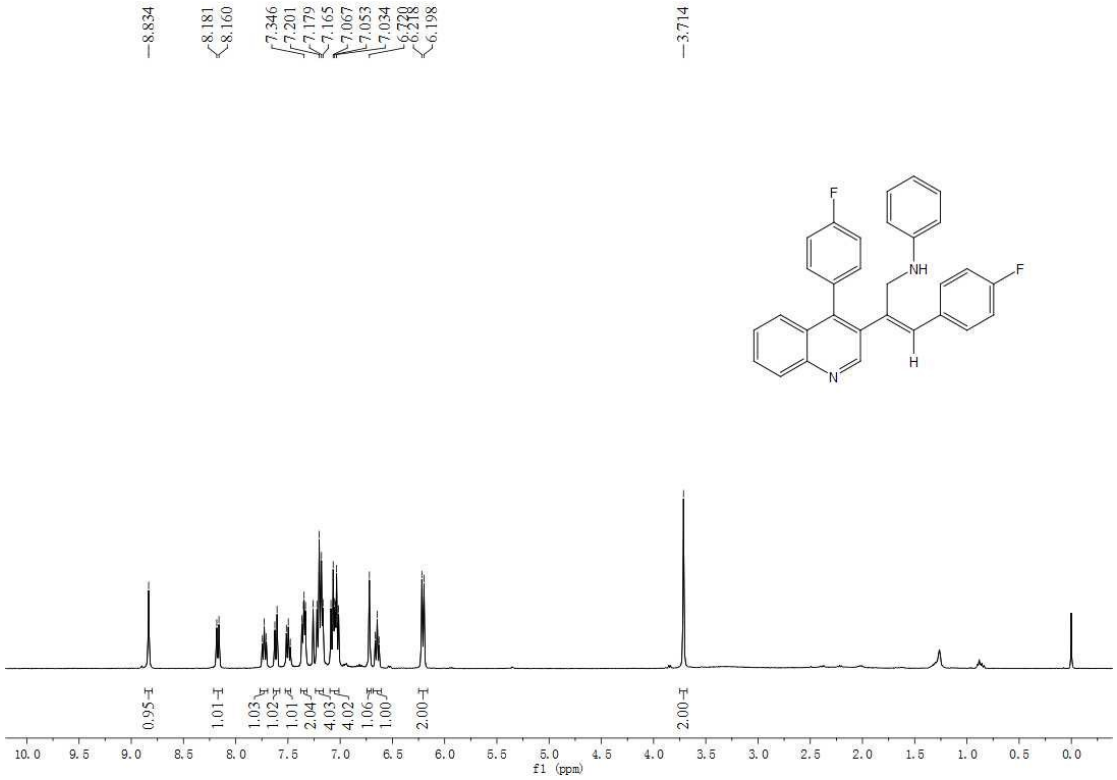
[13]C NMR:(Z)-N-(3-(4-ethylphenyl)-2-(4-(4-ethylphenyl)quinolin-3-yl)allyl)aniline (2b)



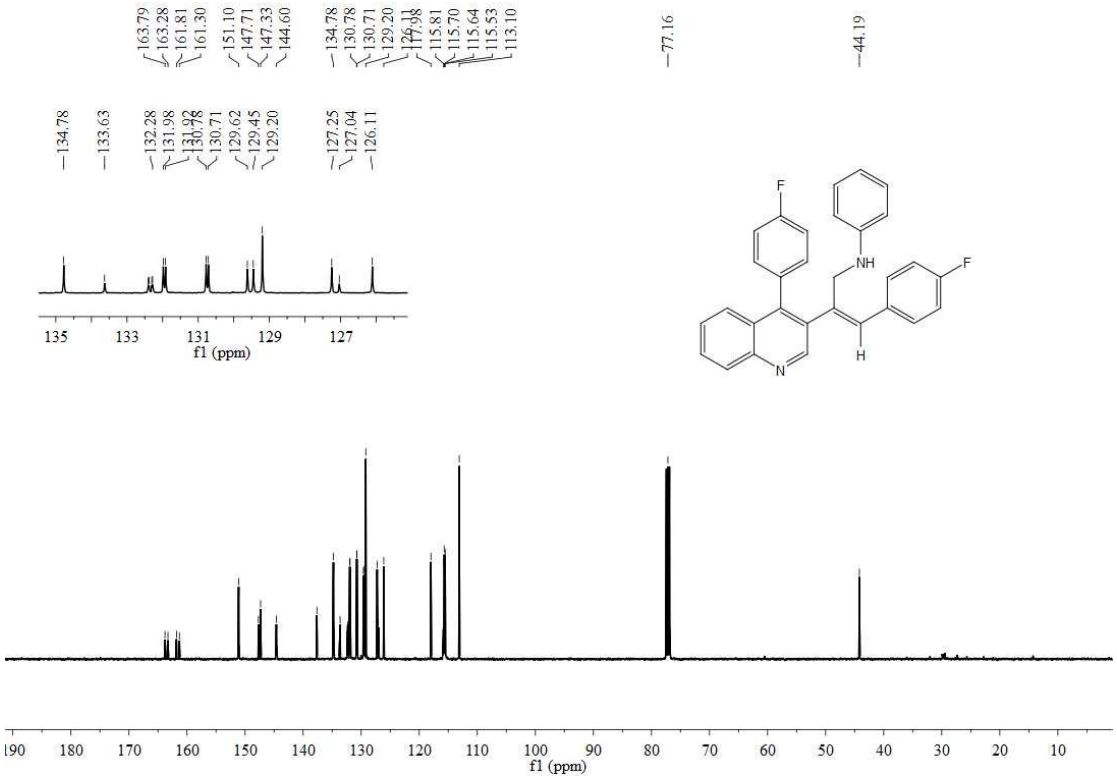
[1]H NMR:(Z)-N-(3-(4-methoxyphenyl)-2-(4-(4-methoxyphenyl)quinolin-3-yl)allyl)aniline (2c)



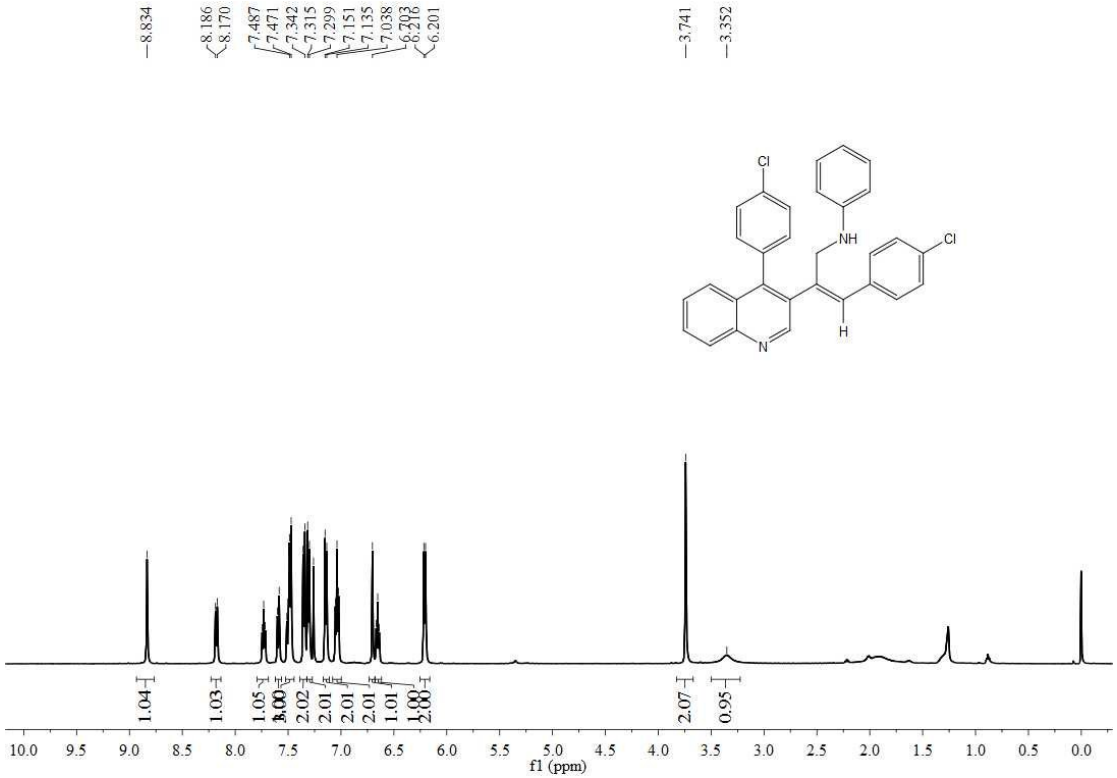
[13]C NMR: (Z)-N-(3-(4-methoxyphenyl)-2-(4-(4-methoxyphenyl)quinolin-3-yl)allyl)aniline (2c)



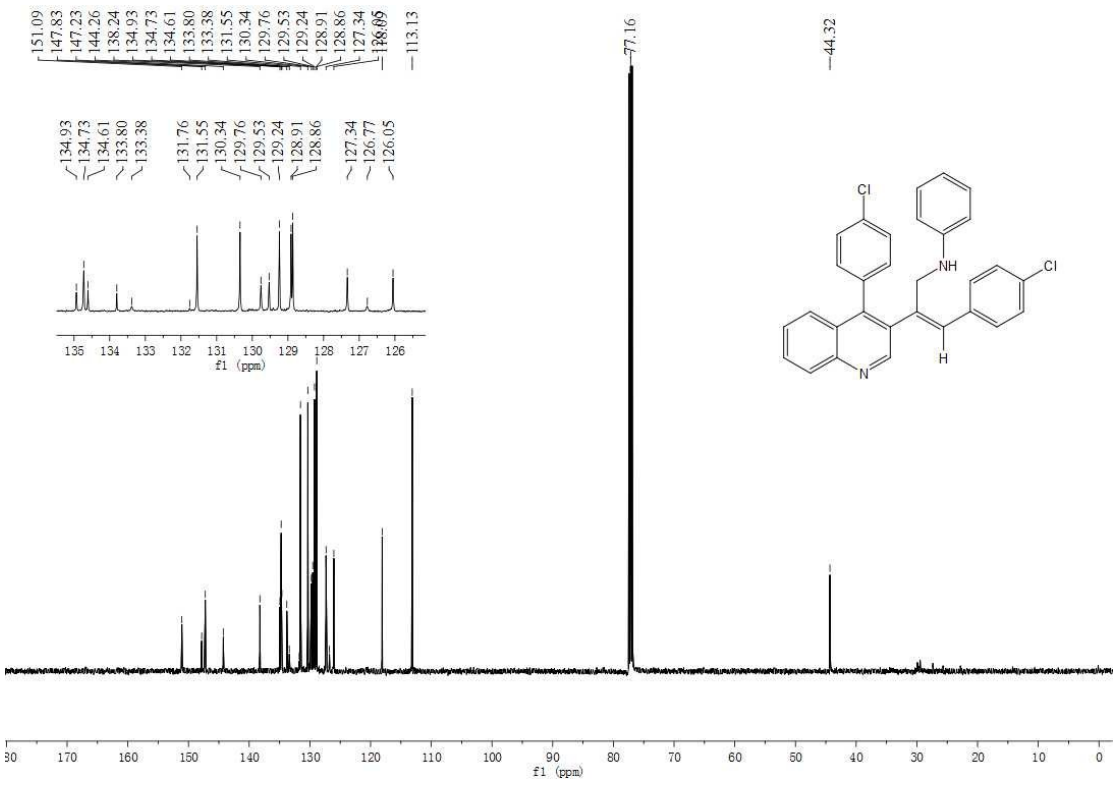
^{1}H NMR: (Z)-N-(3-(4-fluorophenyl)-2-(4-(4-fluorophenyl)quinolin-3-yl)allyl)aniline (2d)



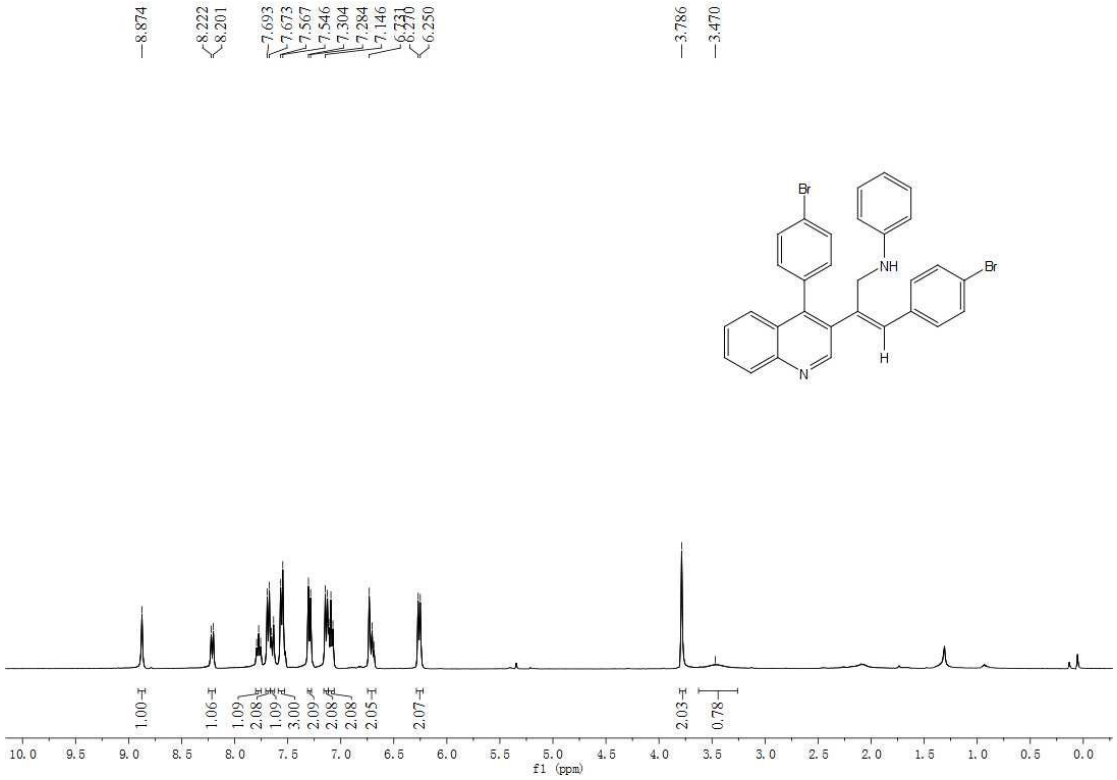
^{13}C NMR: (Z)-N-(3-(4-fluorophenyl)-2-(4-(4-fluorophenyl)quinolin-3-yl)allyl)aniline (2d)



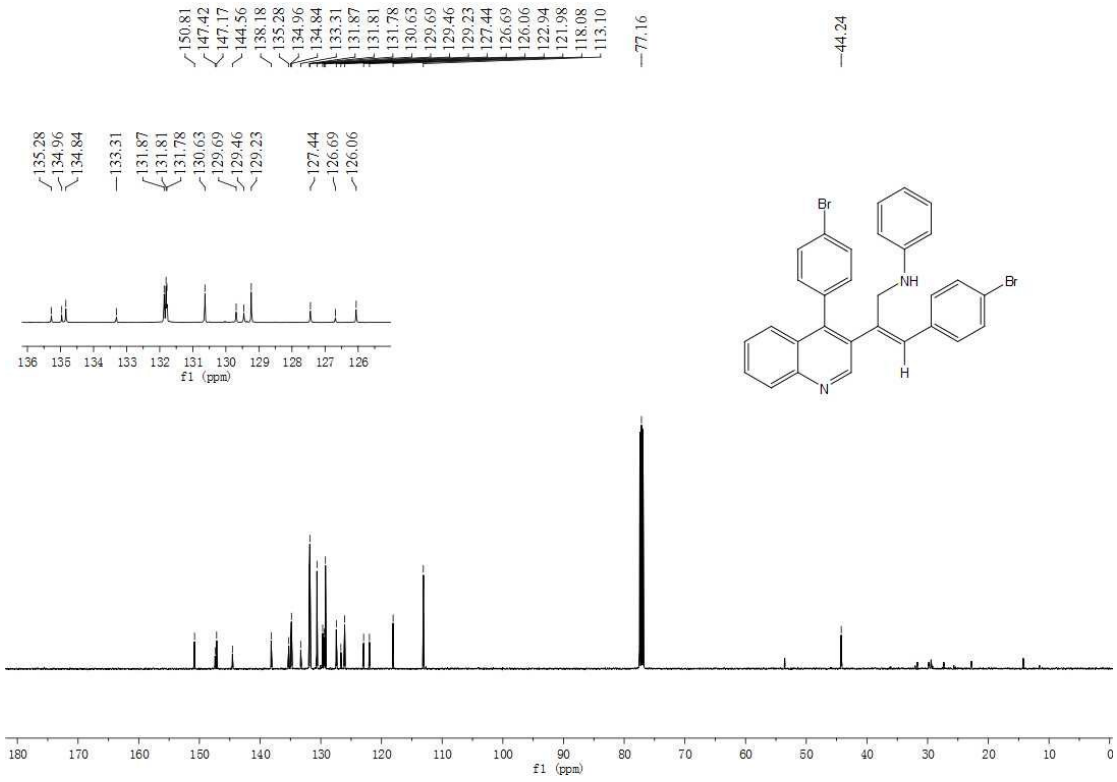
^{1}H NMR: (Z)-N-(3-(4-chlorophenyl)-2-(4-(4-chlorophenyl)quinolin-3-yl)allyl)aniline (2e)



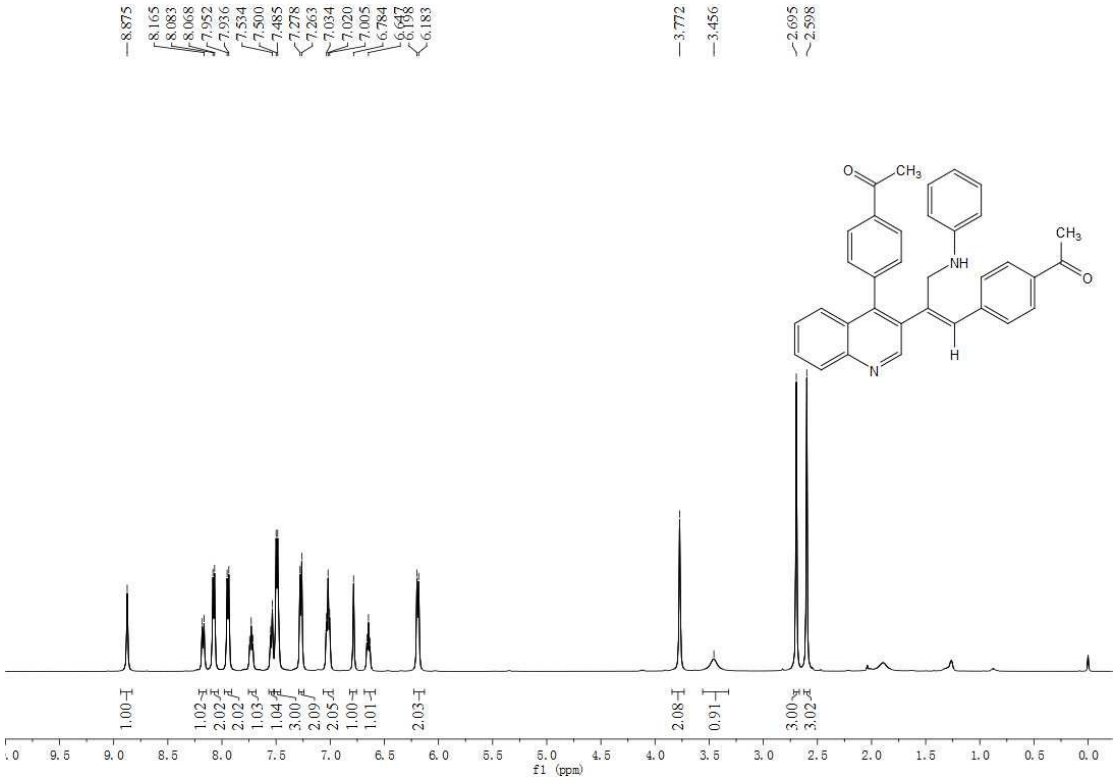
^{13}C NMR: (Z)-N-(3-(4-chlorophenyl)-2-(4-(4-chlorophenyl)quinolin-3-yl)allyl)aniline (2e)



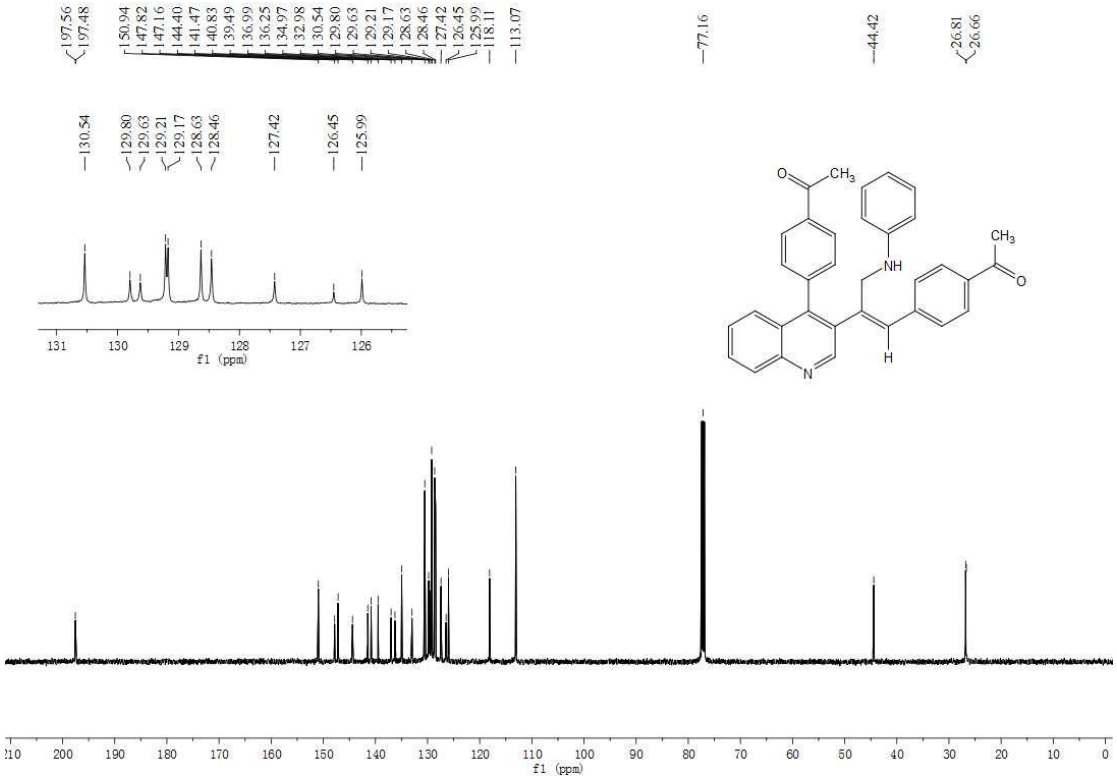
^{1}H NMR: (Z)-N-(3-(4-bromophenyl)-2-(4-(4-bromophenyl)quinolin-3-yl)allyl)aniline (2f)



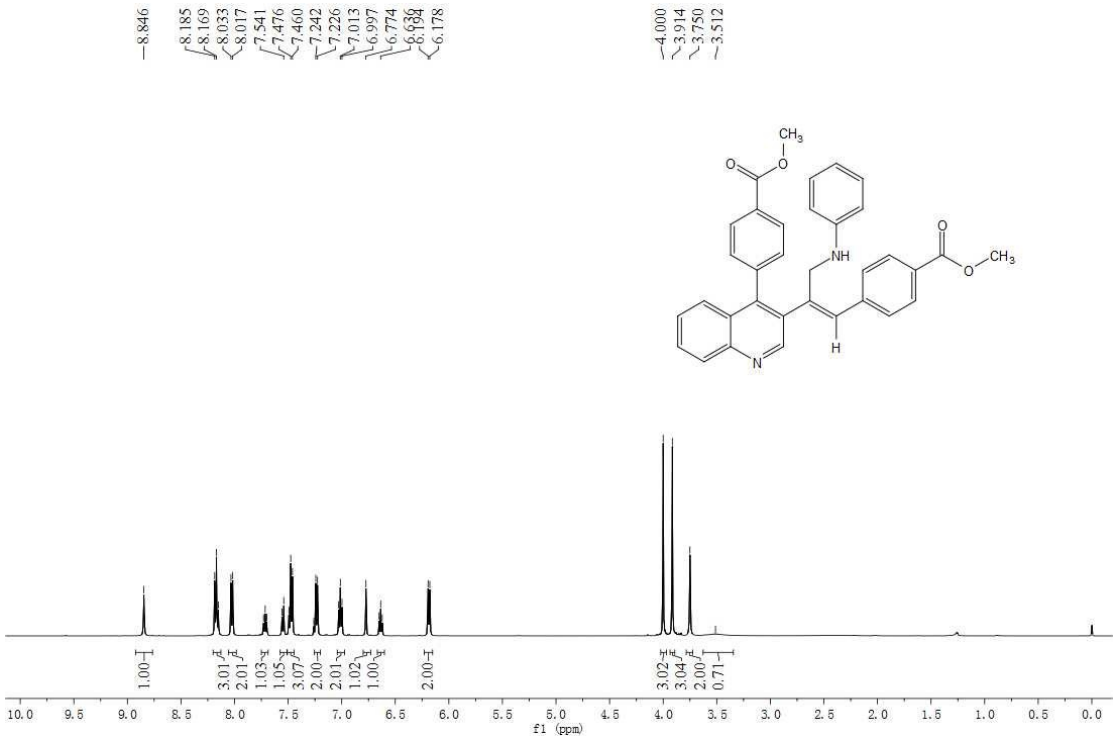
^{13}C NMR: (Z)-N-(3-(4-bromophenyl)-2-(4-(4-bromophenyl)quinolin-3-yl)allyl)aniline (2f)



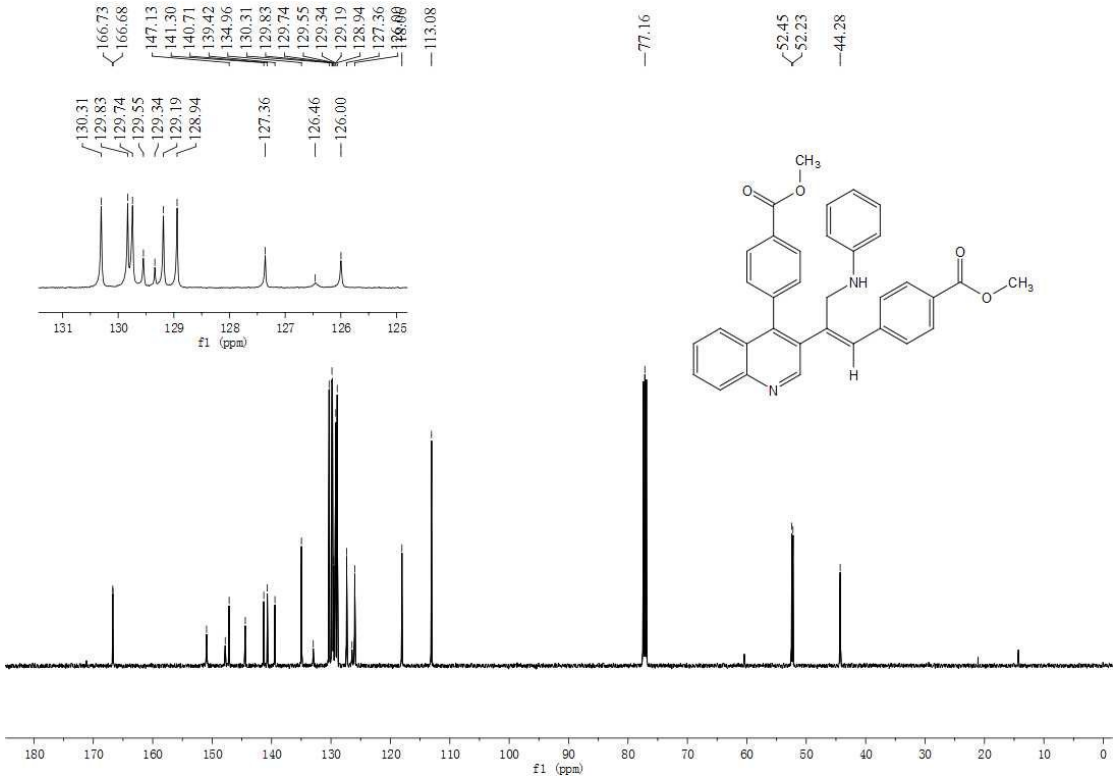
[1]H NMR: (Z)-1-(4-(3-(1-(4-acetylphenyl)-3-(phenylamino)prop-1-en-2-yl)quinolin-4-yl)phenyl)ethanone (2g)



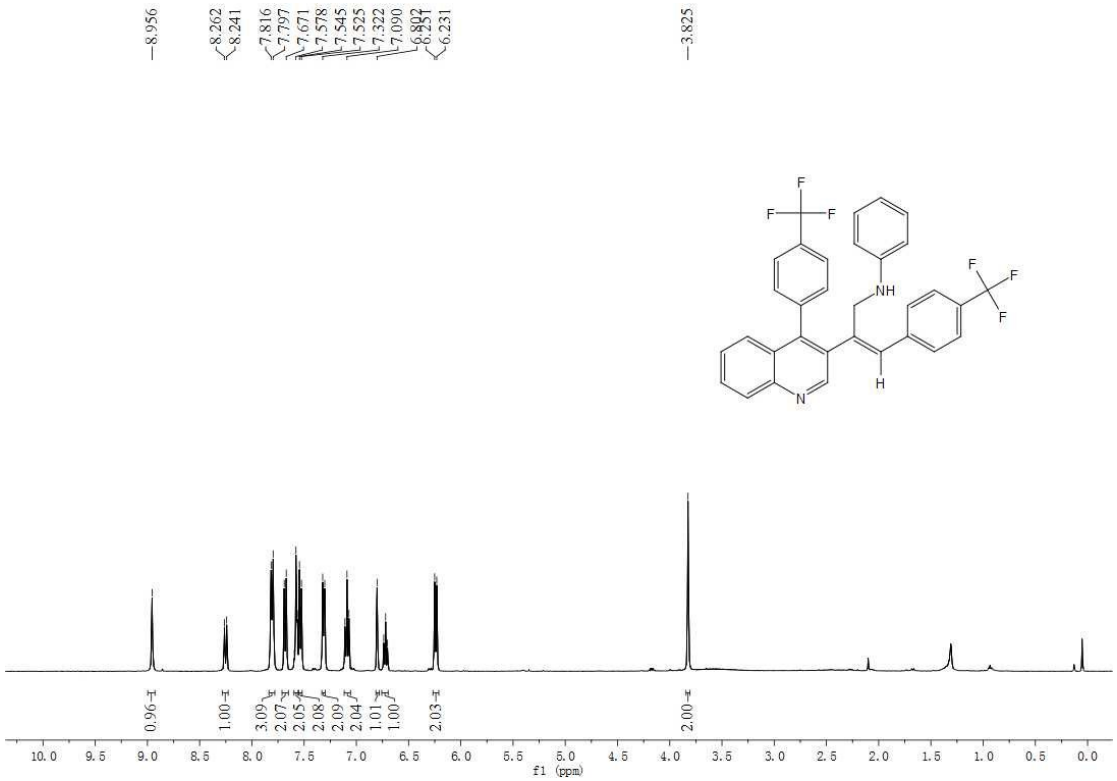
[13]C NMR: (Z)-1-(4-(3-(1-(4-acetylphenyl)-3-(phenylamino)prop-1-en-2-yl)quinolin-4-yl)phenyl)ethanone (2g)



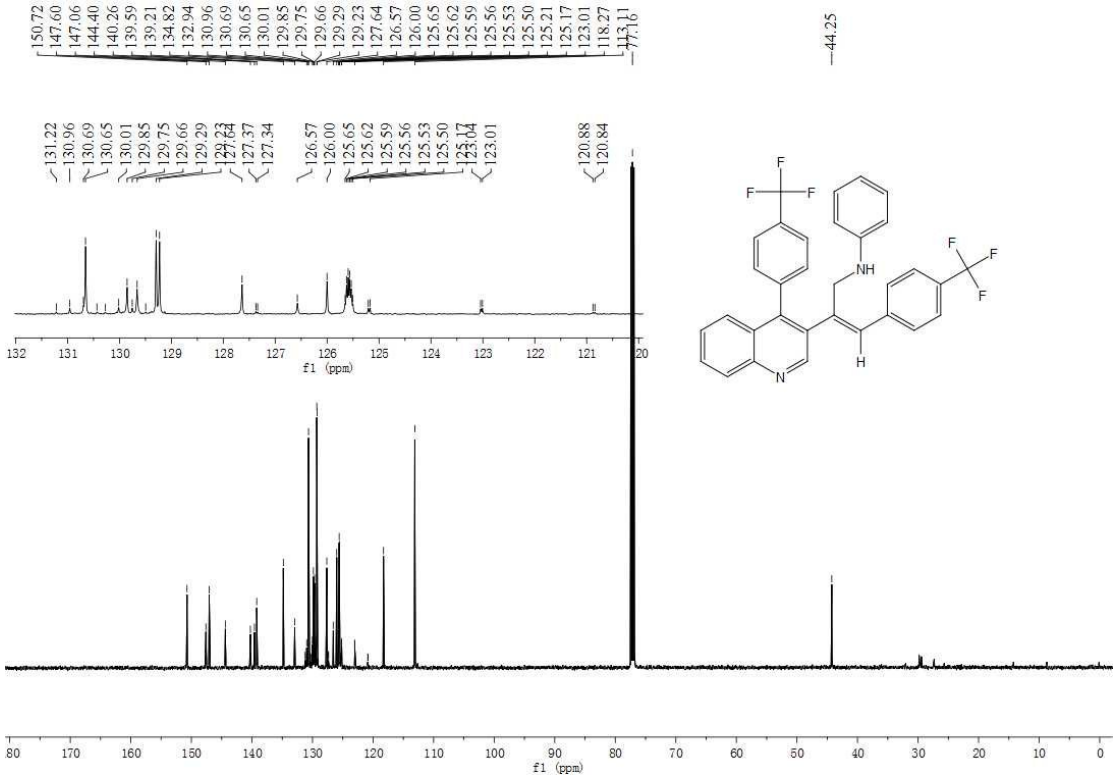
^{1}H NMR: (Z)-methyl4-(3-(1-(4-(methoxycarbonyl)phenyl)-3-(phenylamino)prop-1-en-2-yl)quinolin-4-yl)benzoate (2h)



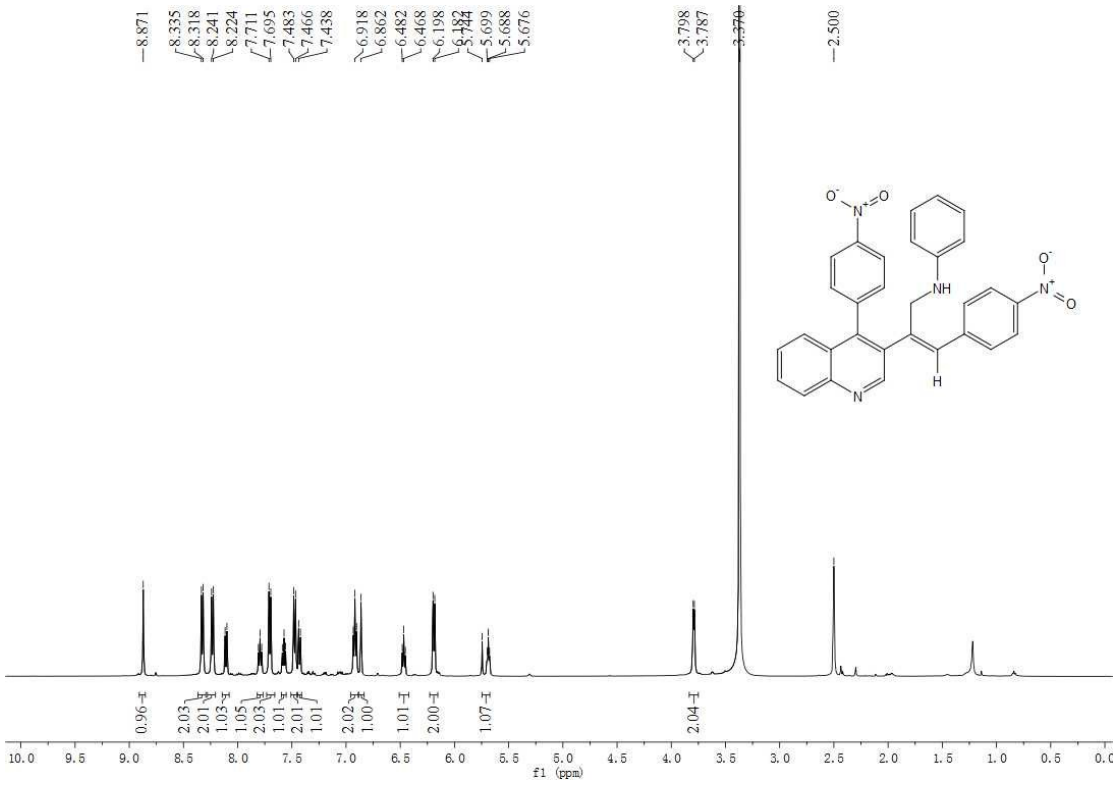
^{13}C NMR: (Z)-methyl4-(3-(1-(4-(methoxycarbonyl)phenyl)-3-(phenylamino)prop-1-en-2-yl)quinolin-4-yl)benzoate (2h)



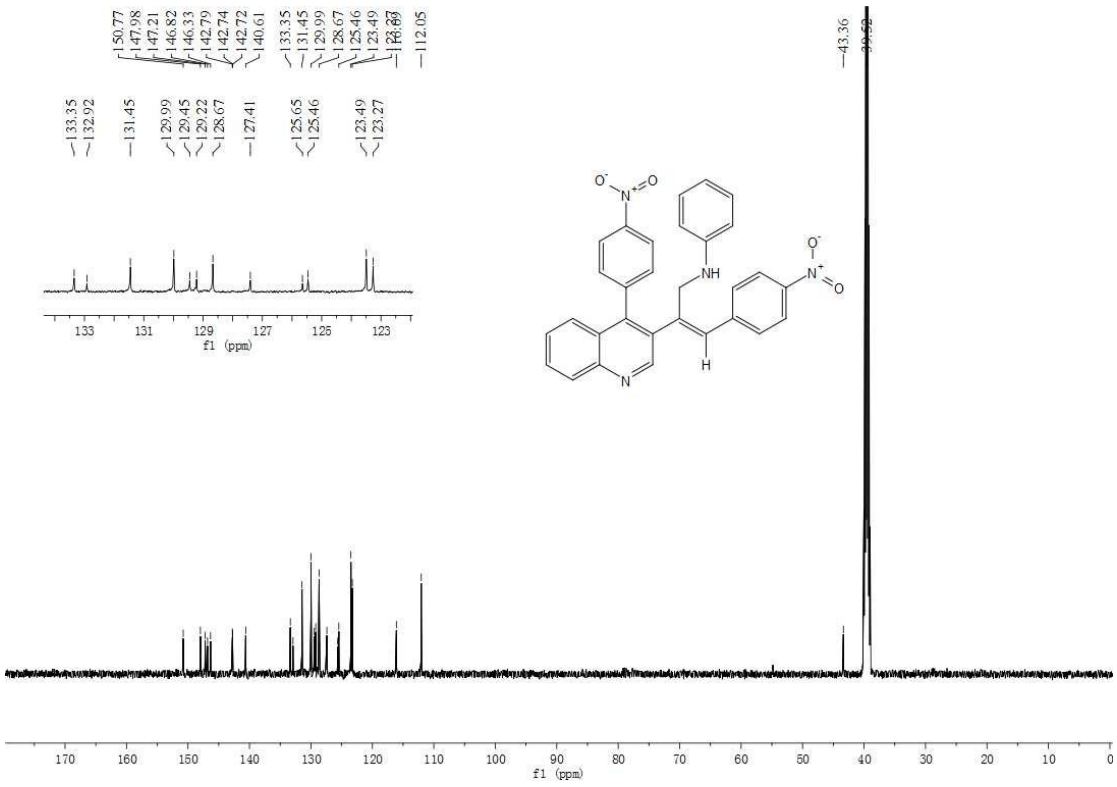
^{1}H NMR: (Z)-N-(3-(4-(trifluoromethyl)phenyl)-2-(4-(4-(trifluoromethyl)phenyl)quinolin-3-yl)allyl)aniline (2i)



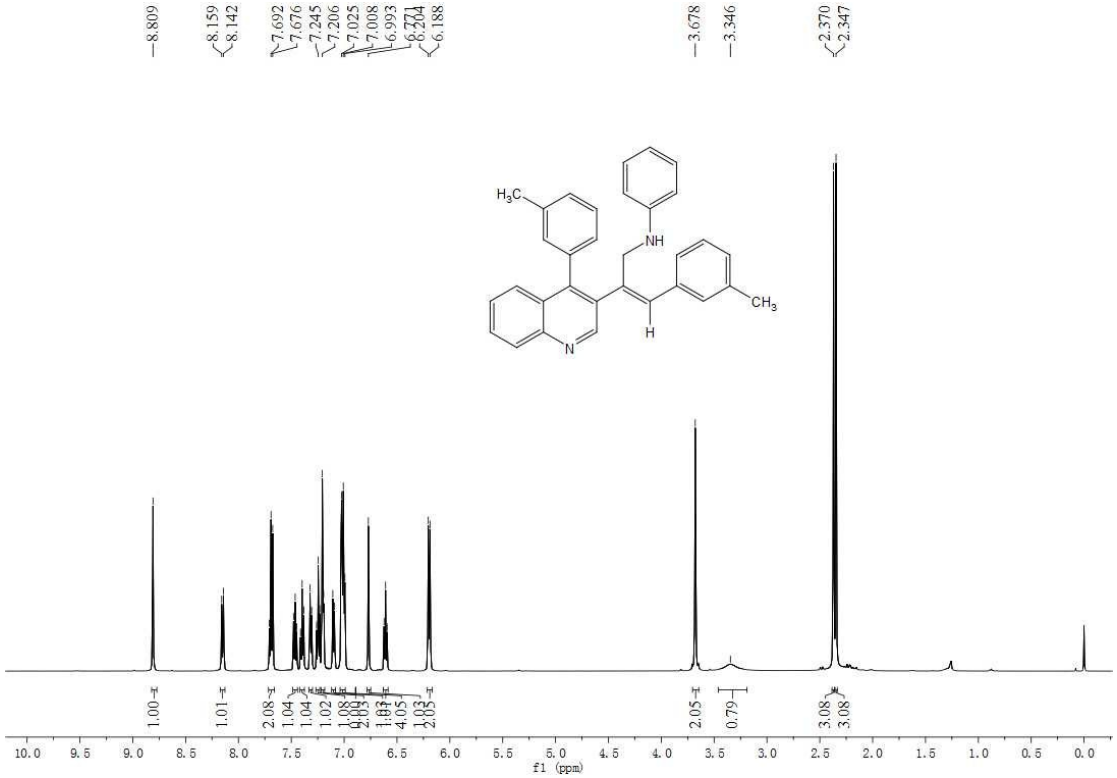
^{13}C NMR: (Z)-N-(3-(4-(trifluoromethyl)phenyl)-2-(4-(4-(trifluoromethyl)phenyl)quinolin-3-yl)allyl)aniline (2i)



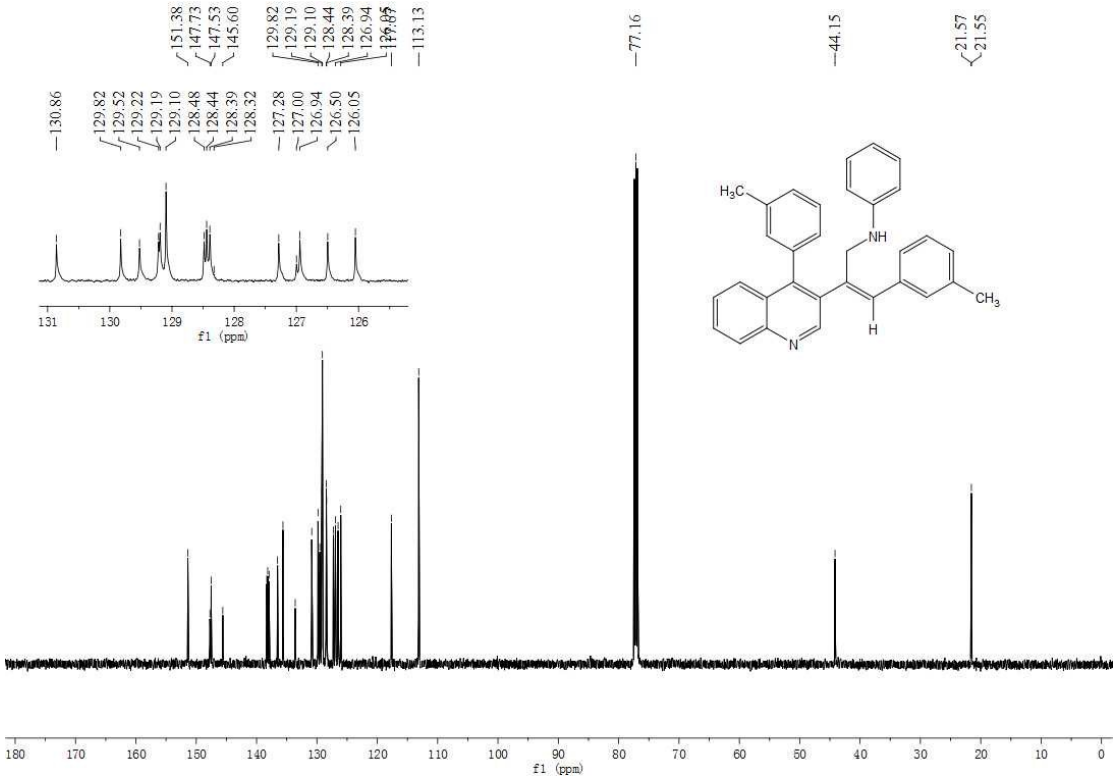
H NMR: (Z)-N-(3-(4-nitrophenyl)-2-(4-(4-nitrophenyl)quinolin-3-yl)allyl)aniline (2j)



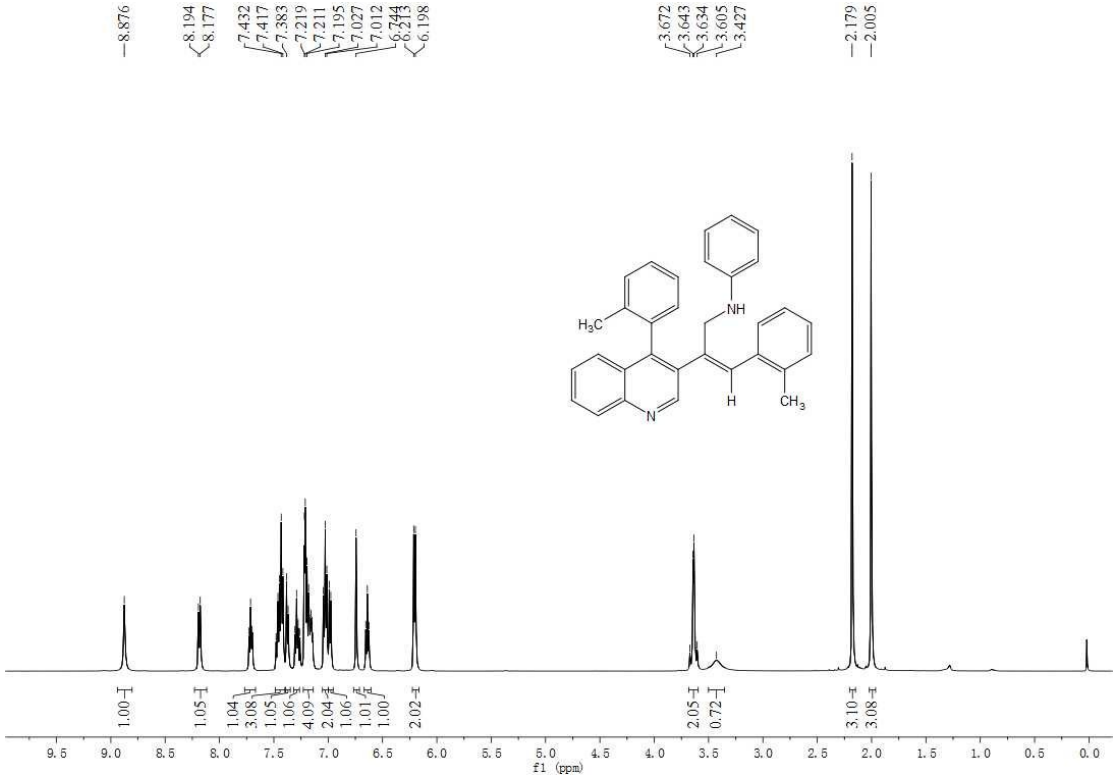
^{13}C NMR: (Z)-N-(3-(4-nitrophenyl)-2-(4-(4-nitrophenyl)quinolin-3-yl)allyl)aniline (2j)



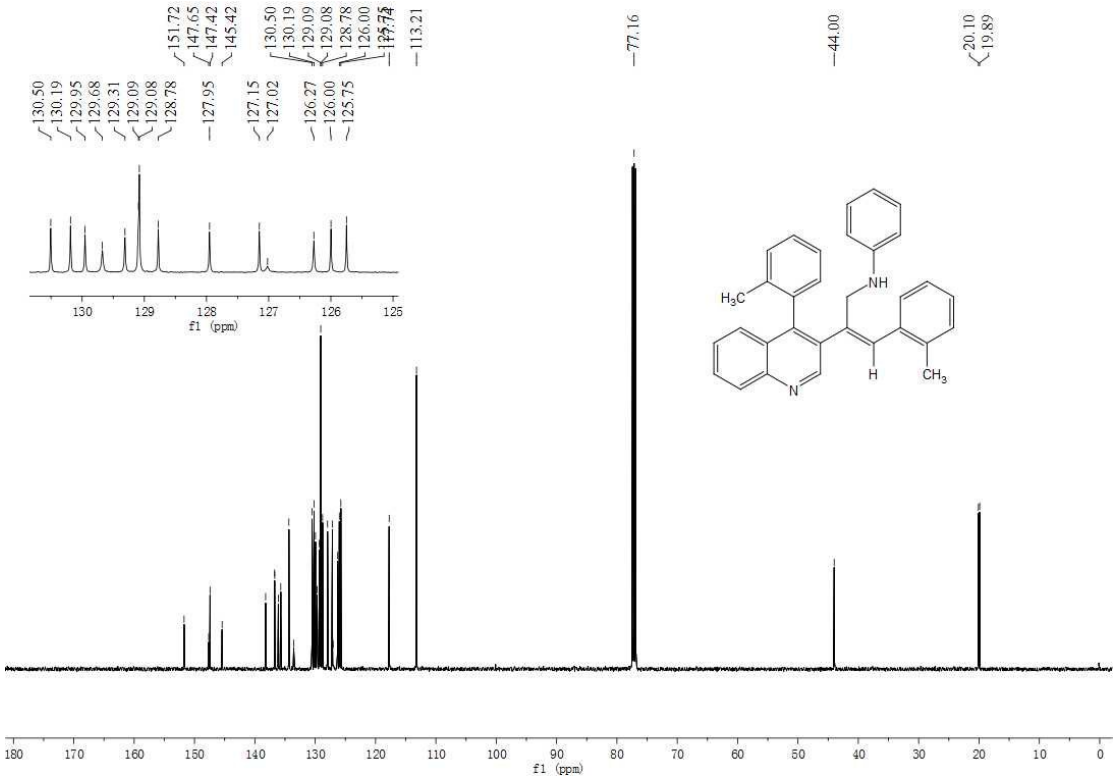
[1]H NMR: (Z)-N-(3-(m-tolyl)-2-(4-(m-tolyl)quinolin-3-yl)allyl)aniline (2k)



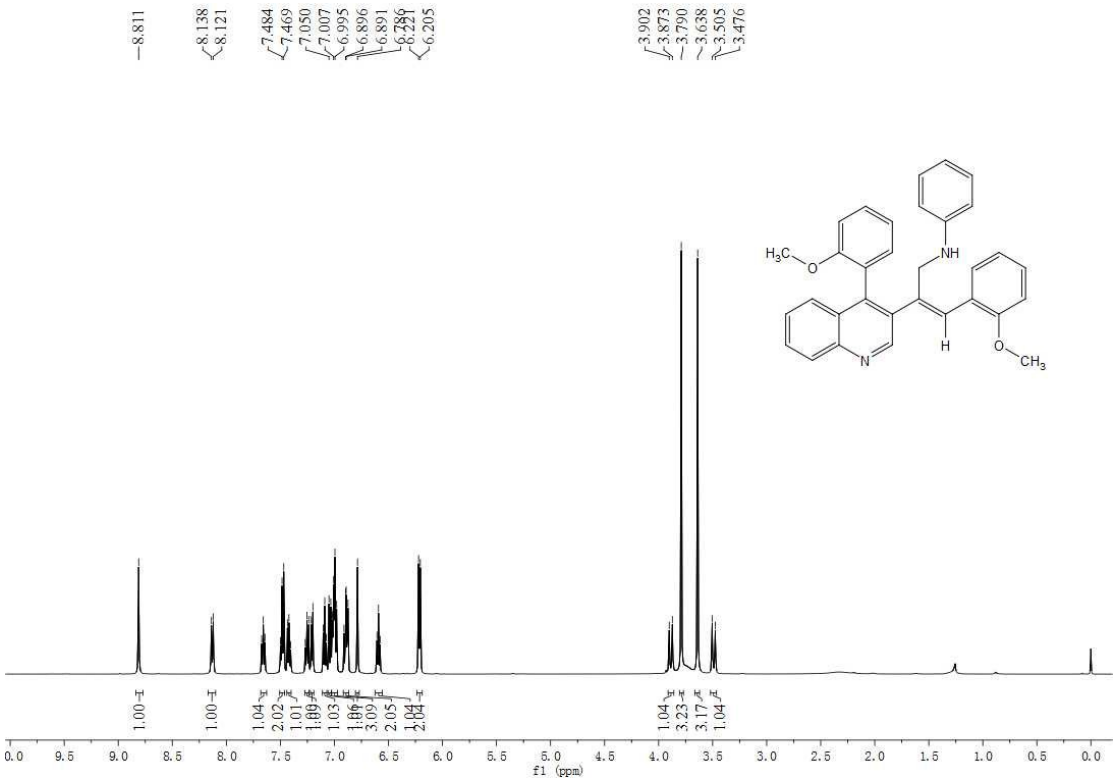
[13]C NMR: (Z)-N-(3-(m-tolyl)-2-(4-(m-tolyl)quinolin-3-yl)allyl)aniline (2k)



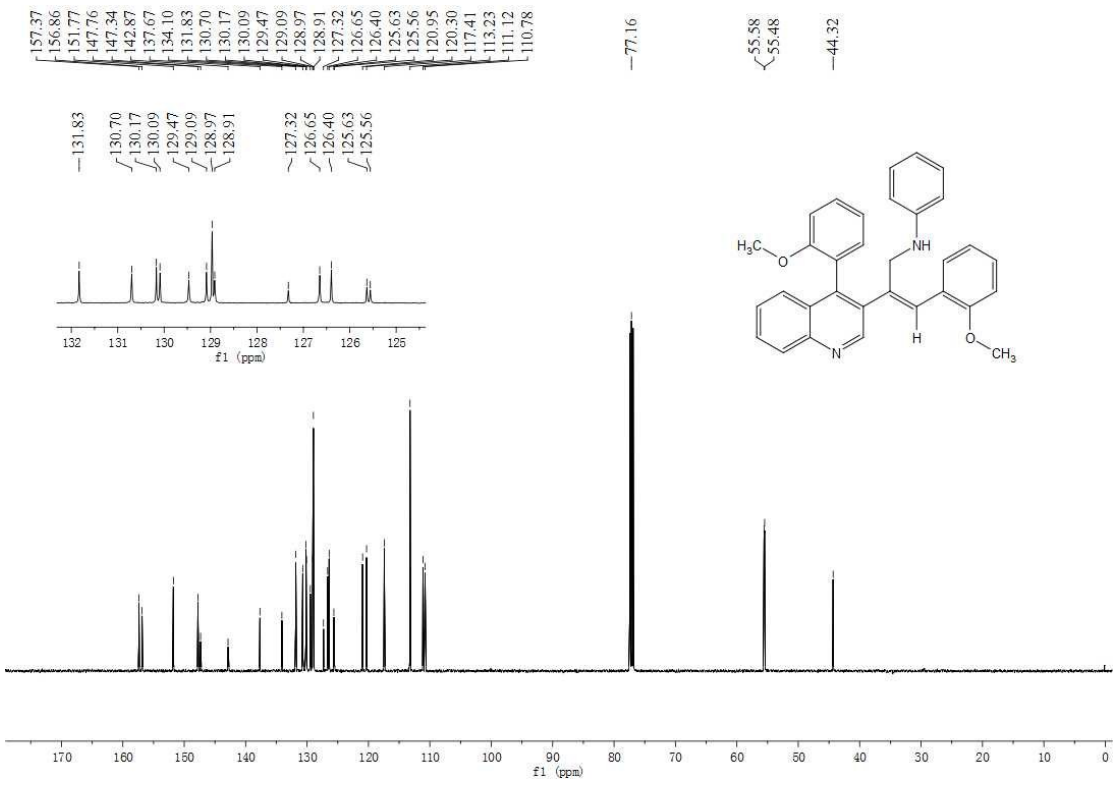
[1]H NMR: (Z)-N-(3-(o-tolyl)-2-(4-(o-tolyl)quinolin-3-yl)allyl)aniline (2l)



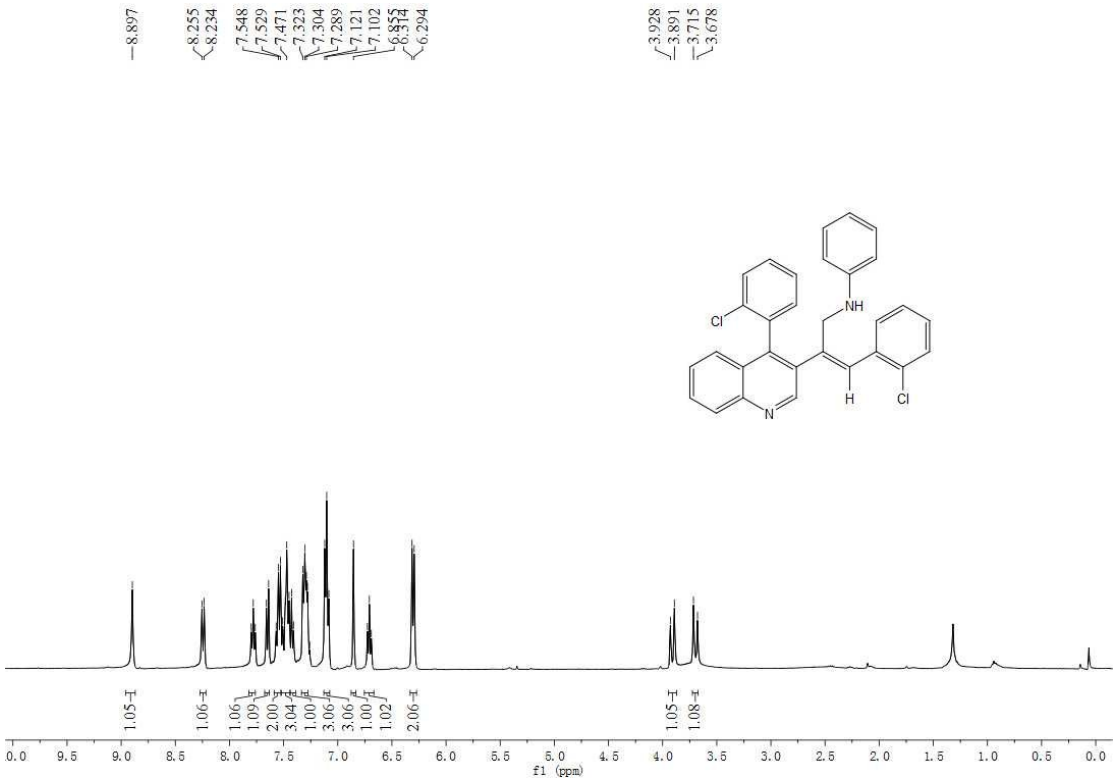
[13]C NMR: (Z)-N-(3-(o-tolyl)-2-(4-(o-tolyl)quinolin-3-yl)allyl)aniline (2l)



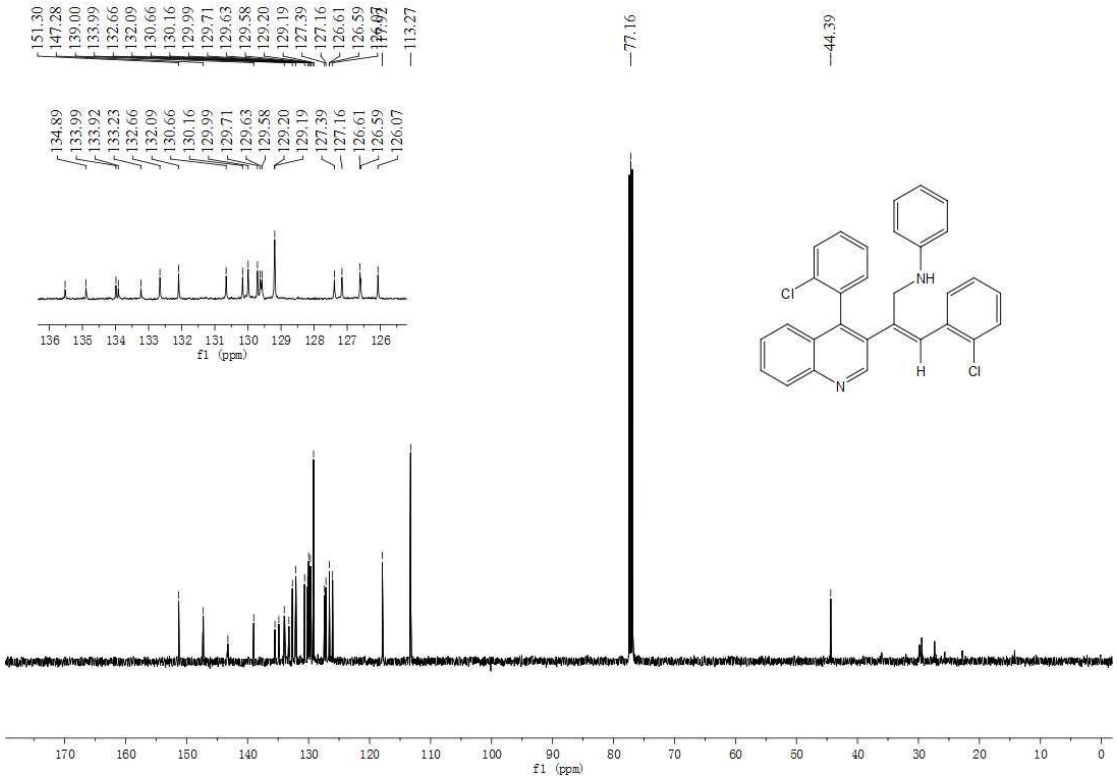
^{1}H NMR: (Z)-N-(3-(2-methoxyphenyl)-2-(4-(2-methoxyphenyl)quinolin-3-yl)allyl)aniline (2m)



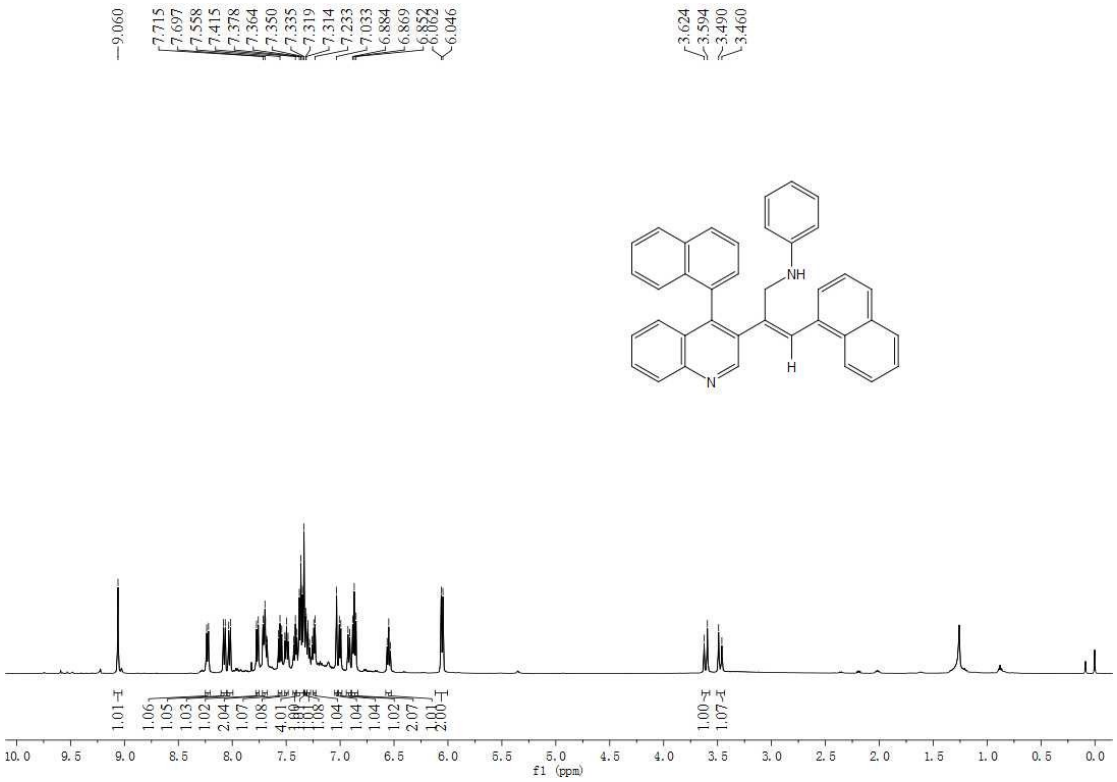
^{13}C NMR: (Z)-N-(3-(2-methoxyphenyl)-2-(4-(2-methoxyphenyl)quinolin-3-yl)allyl)aniline (2m)



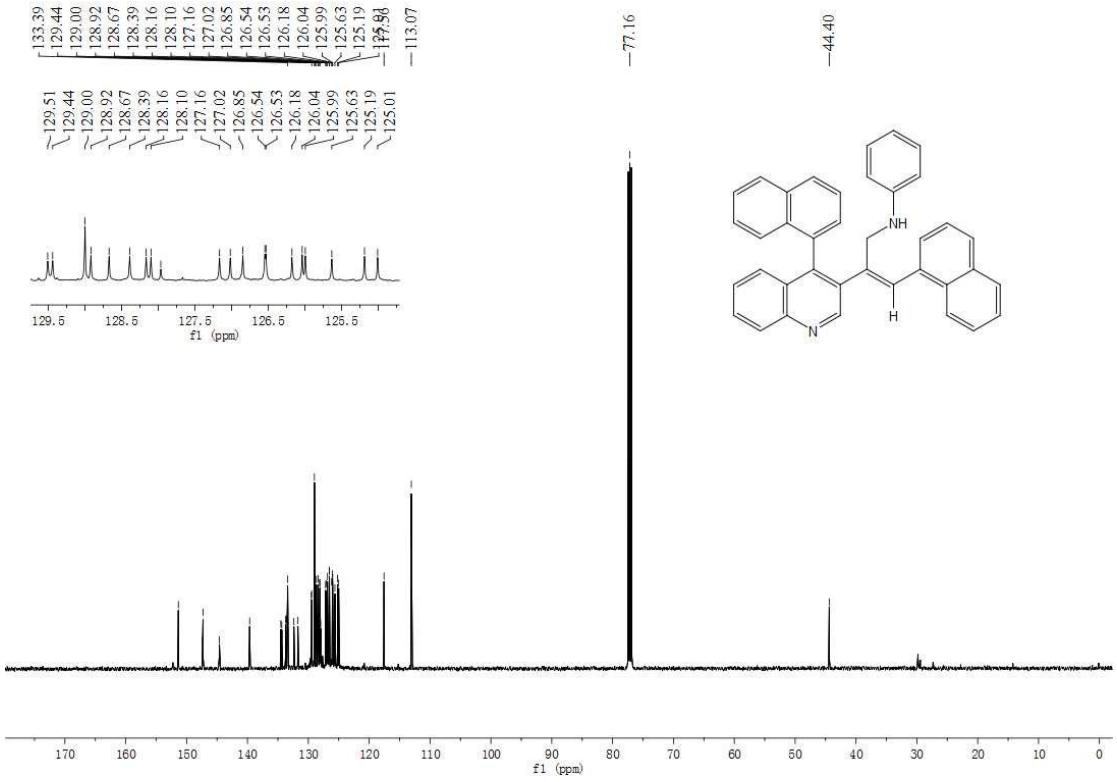
^{1}H NMR: (Z)-N-(3-(2-chlorophenyl)-2-(4-(2-chlorophenyl)quinolin-3-yl)allyl)aniline (2n)



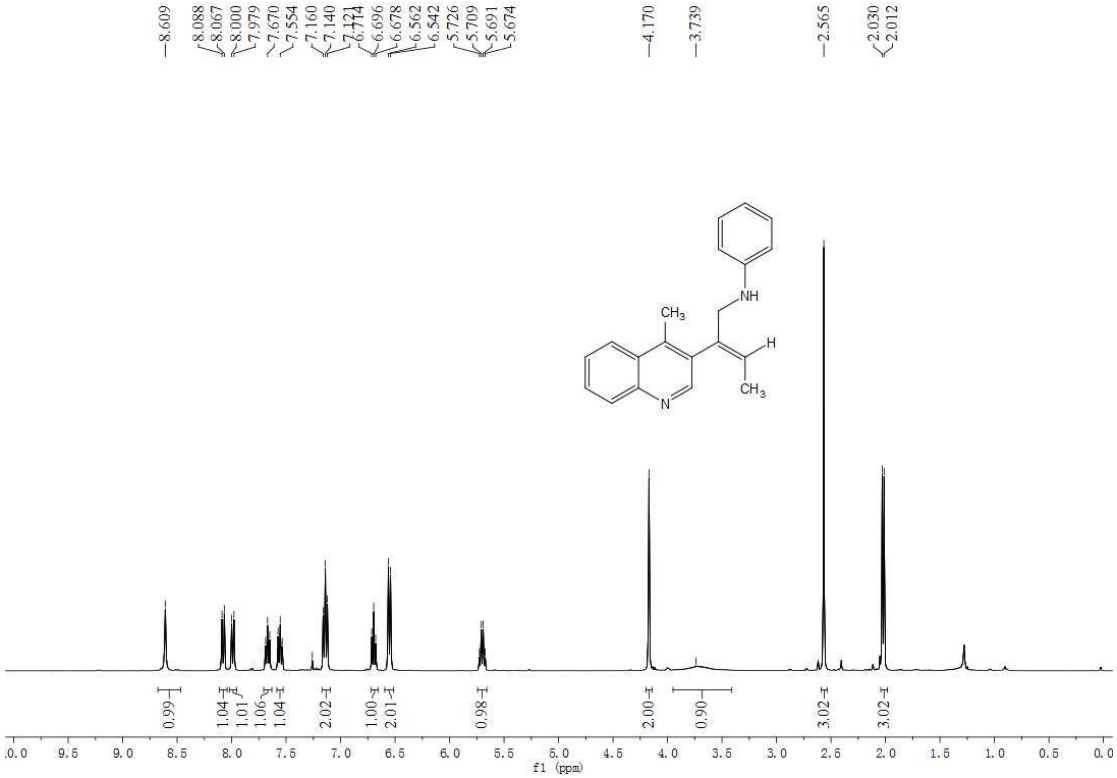
^{13}C NMR: (Z)-N-(3-(2-chlorophenyl)-2-(4-(2-chlorophenyl)quinolin-3-yl)allyl)aniline (2n)



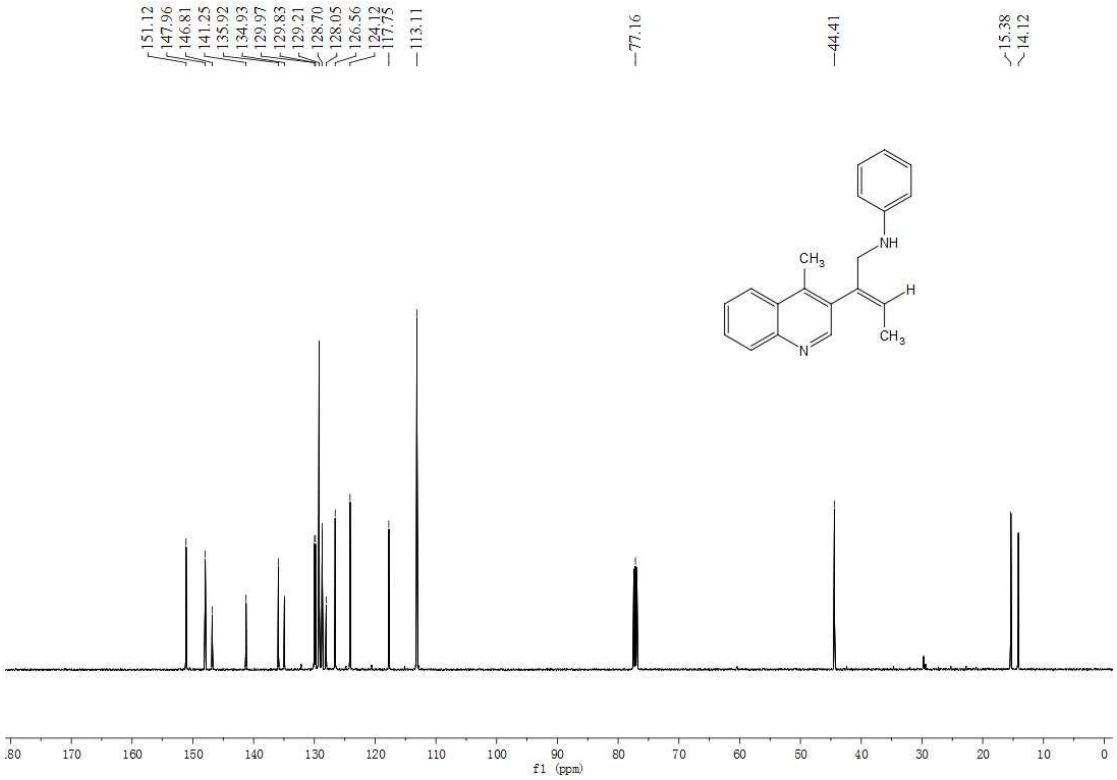
[1]H NMR: (Z)-N-(3-(naphthalen-1-yl)-2-(4-(naphthalen-1-yl)quinolin-3-yl)allyl)aniline (2o)



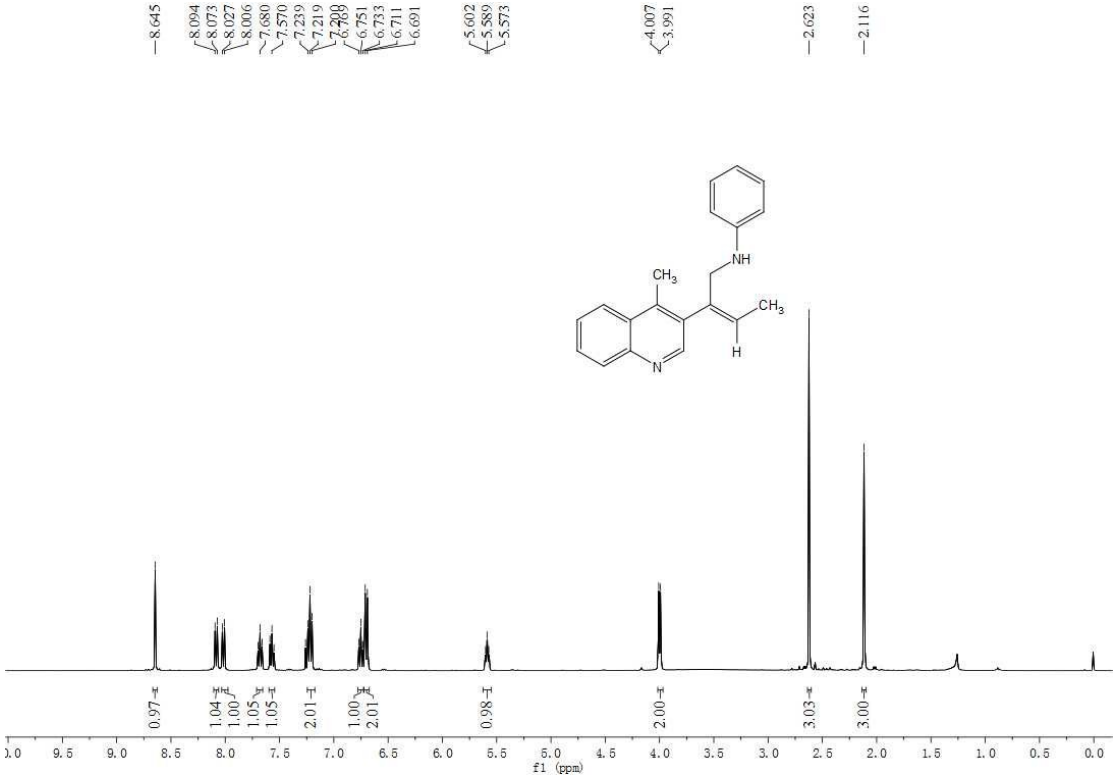
[13]C NMR: (Z)-N-(3-(naphthalen-1-yl)-2-(4-(naphthalen-1-yl)quinolin-3-yl)allyl)aniline (2o)



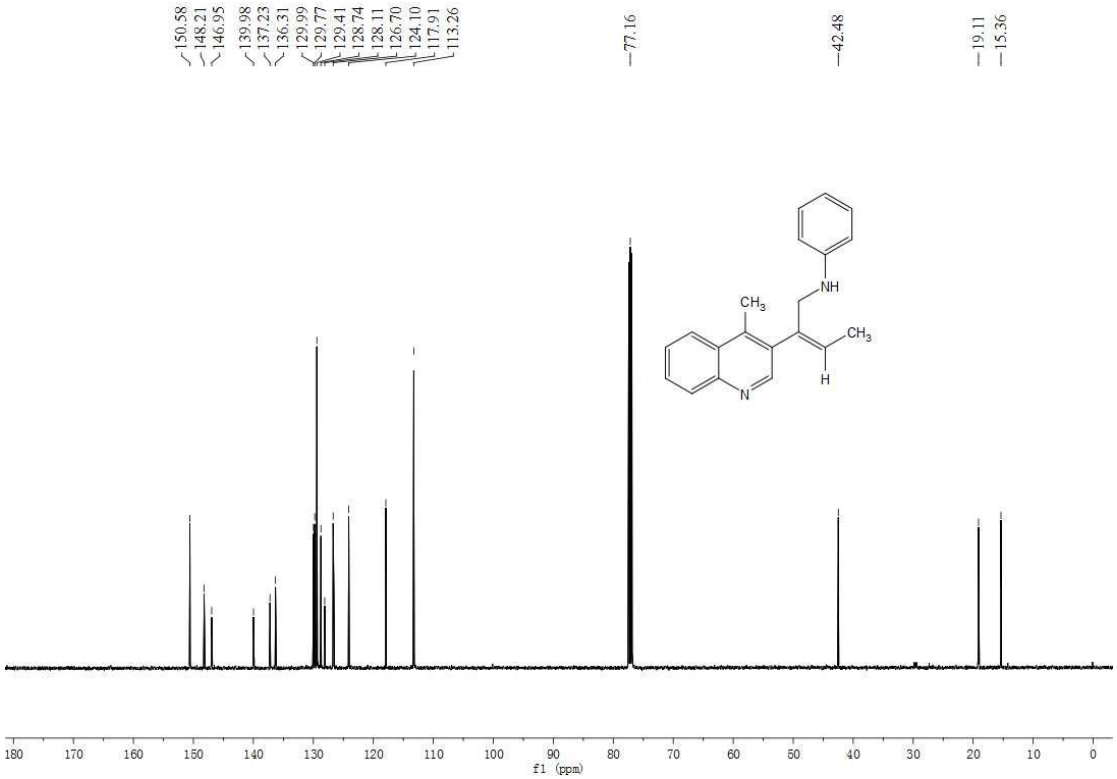
^{1}H NMR: (E)-N-(2-(4-methylquinolin-3-yl)but-2-en-1-yl)aniline (2p)



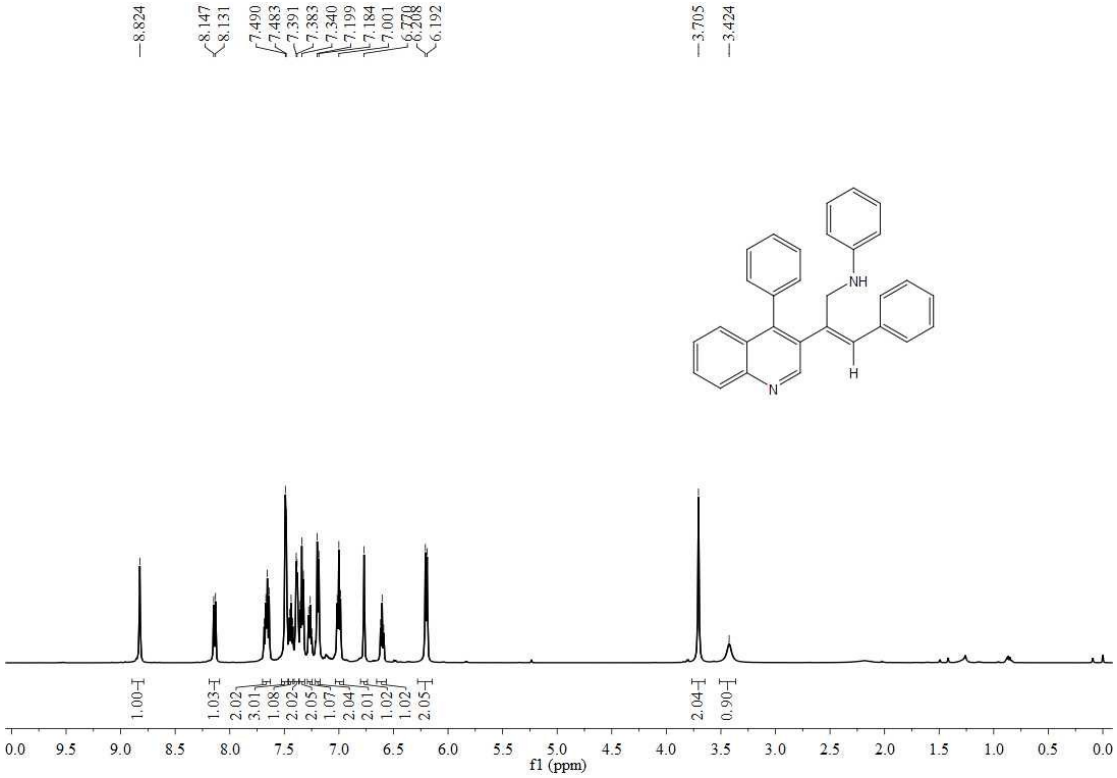
^{13}C NMR: (E)-N-(2-(4-methylquinolin-3-yl)but-2-en-1-yl)aniline (2p)



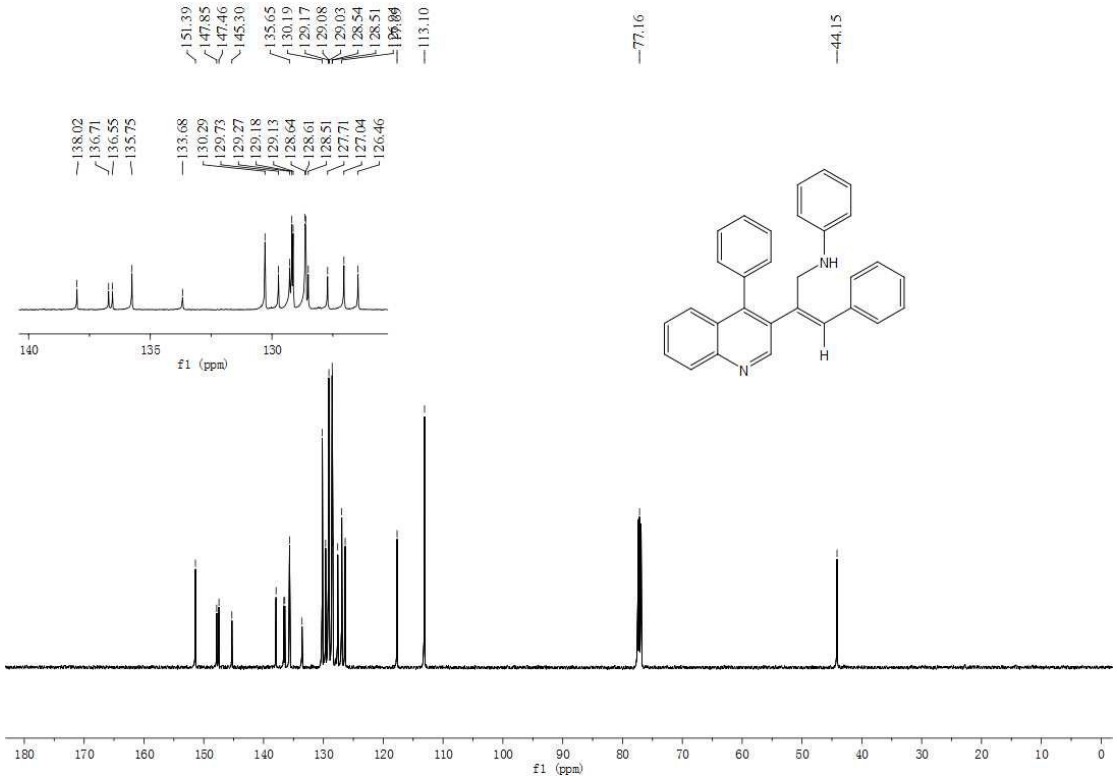
^{1}H NMR: (Z)-N-(2-(4-methylquinolin-3-yl)but-2-en-1-yl)aniline (2p)



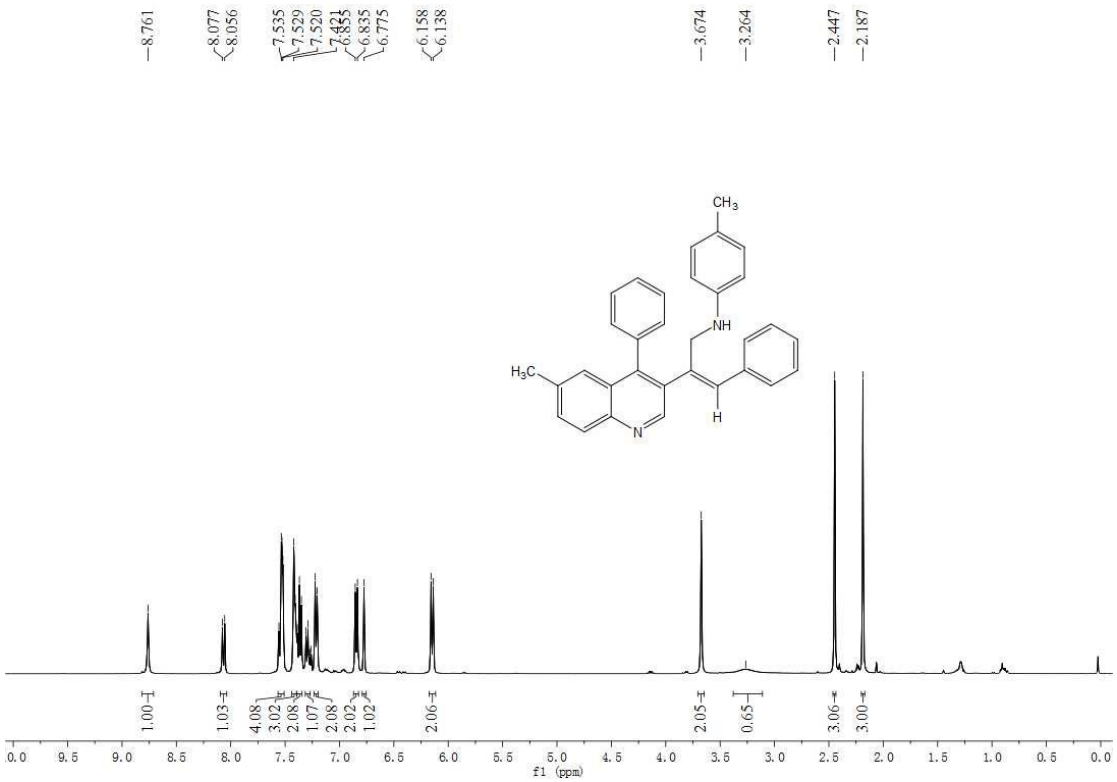
^{13}C NMR: (Z)-N-(2-(4-methylquinolin-3-yl)but-2-en-1-yl)aniline (2p)



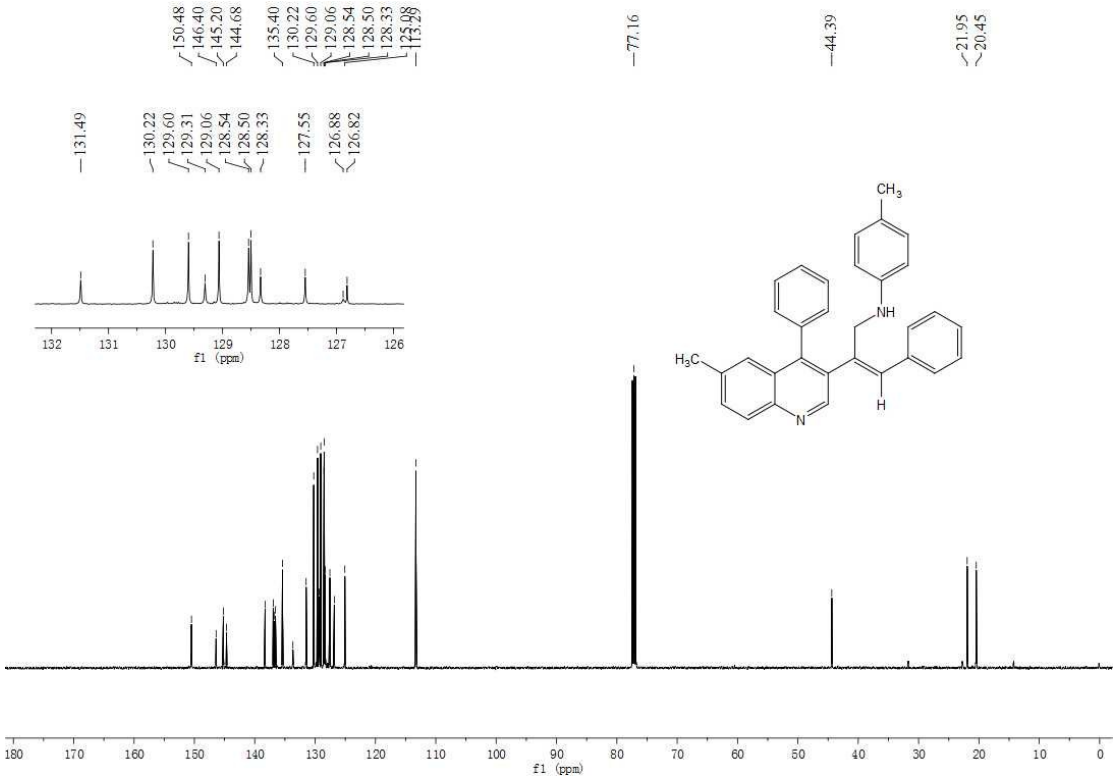
^{1}H NMR: (Z)-N-(3-phenyl-2-(4-phenylquinolin-3-yl)allyl)aniline (2q)



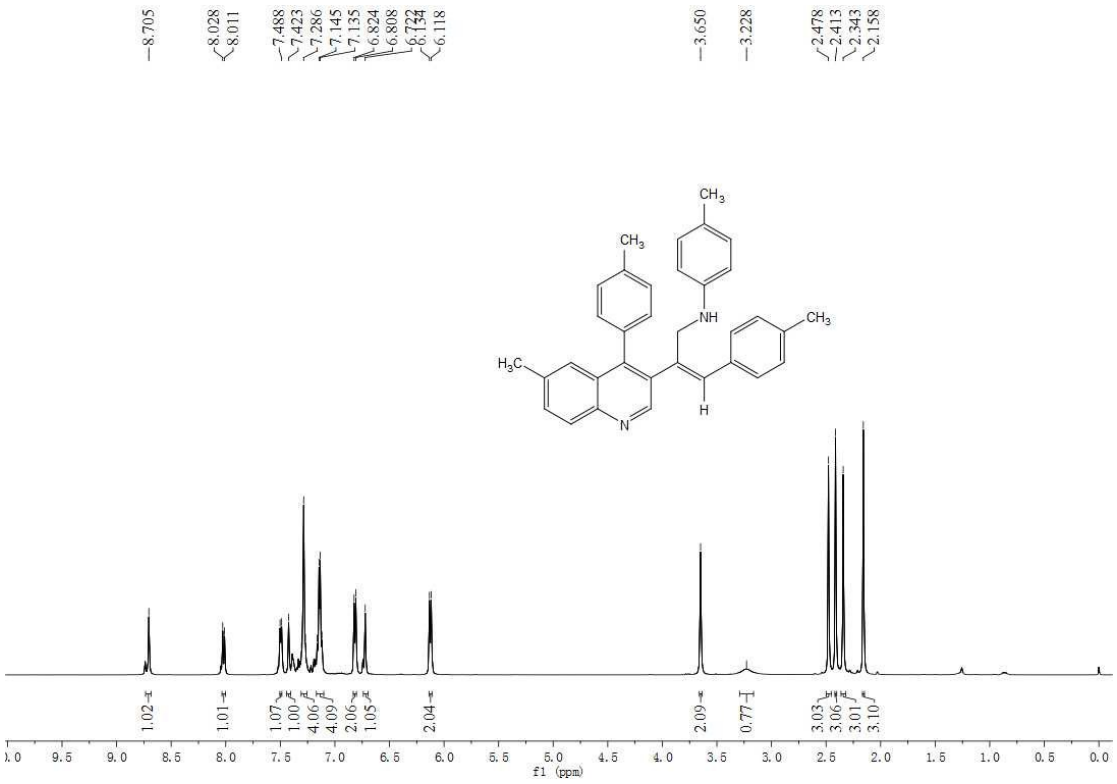
^{13}C NMR: (Z)-N-(3-phenyl-2-(4-phenylquinolin-3-yl)allyl)aniline (2q)



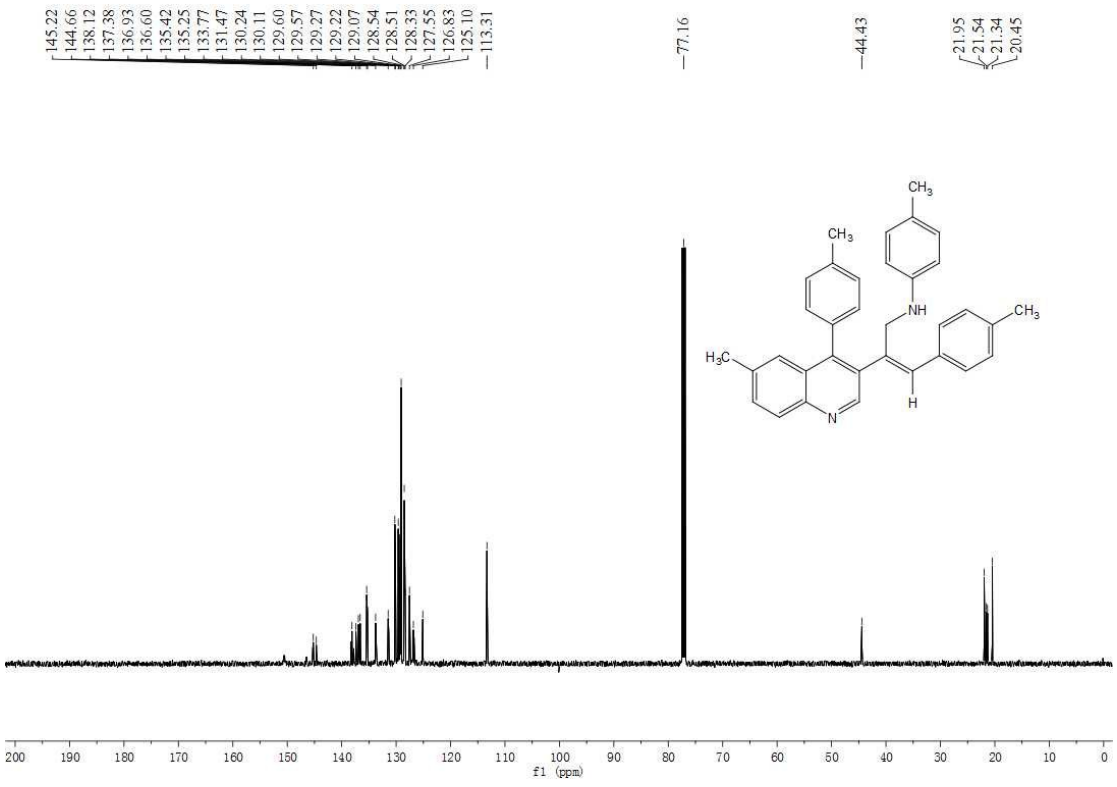
^{1}H NMR: (Z)-4-methyl-N-(2-(6-methyl-4-phenylquinolin-3-yl)-3-phenylallyl)aniline (2r)



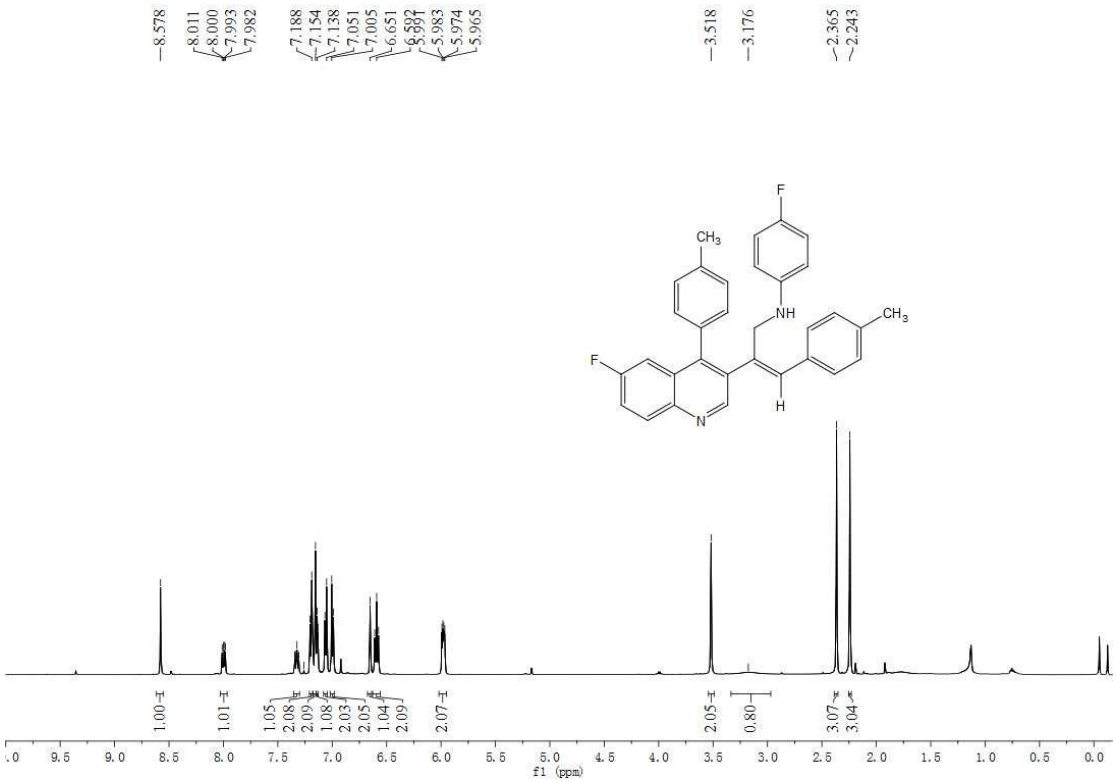
^{13}C NMR: (Z)-4-methyl-N-(2-(6-methyl-4-phenylquinolin-3-yl)-3-phenylallyl)aniline (2r)



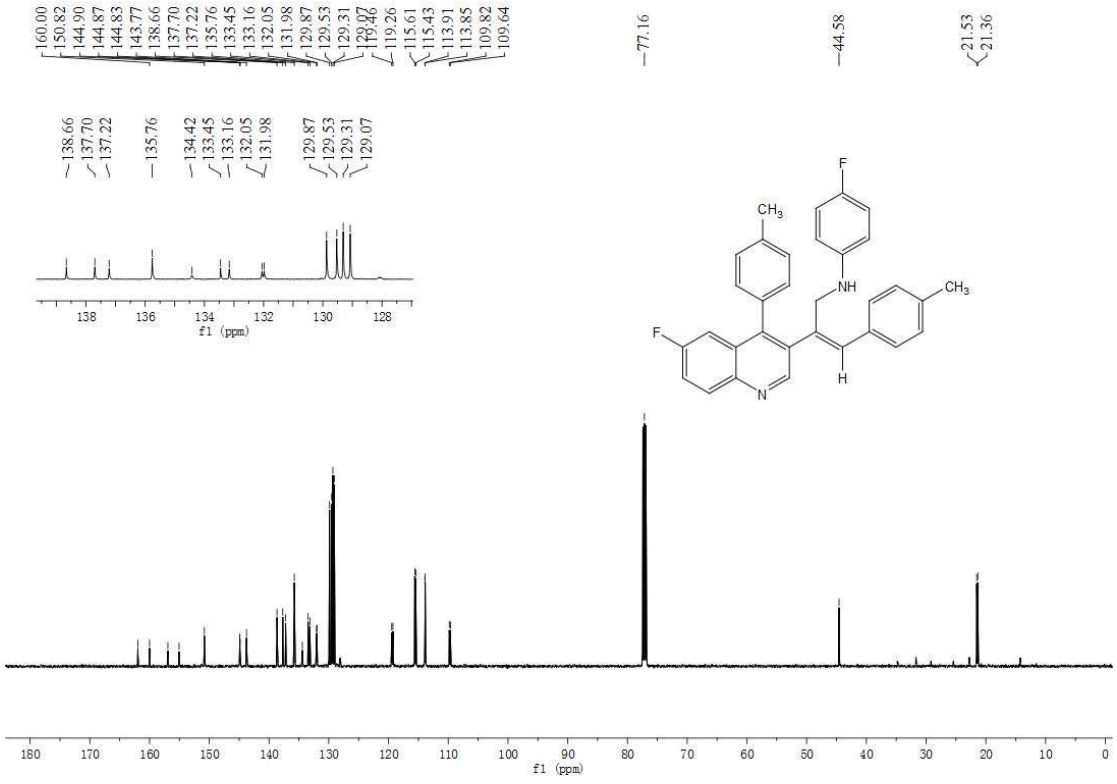
[1]H NMR: (Z)-4-methyl-N-(2-(6-methyl-4-(p-tolyl)quinolin-3-yl)-3-(p-tolyl)allyl)aniline (2s)



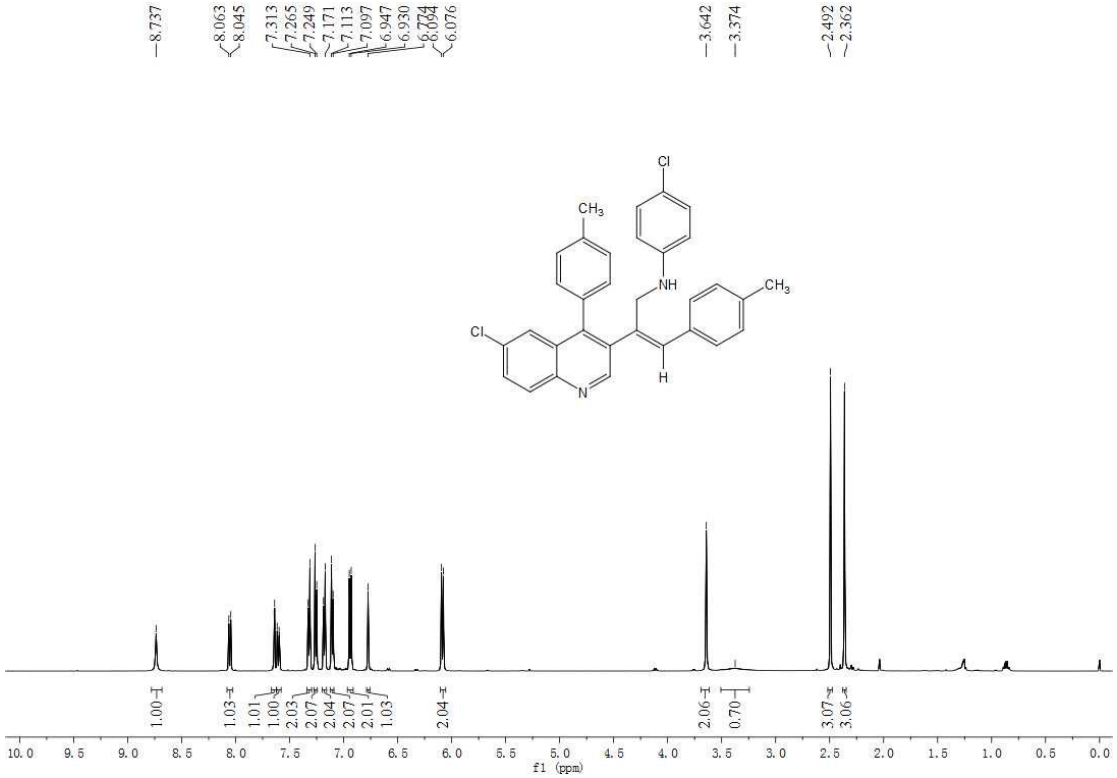
[13]C NMR: (Z)-4-methyl-N-(2-(6-methyl-4-(p-tolyl)quinolin-3-yl)-3-(p-tolyl)allyl)aniline (2s)



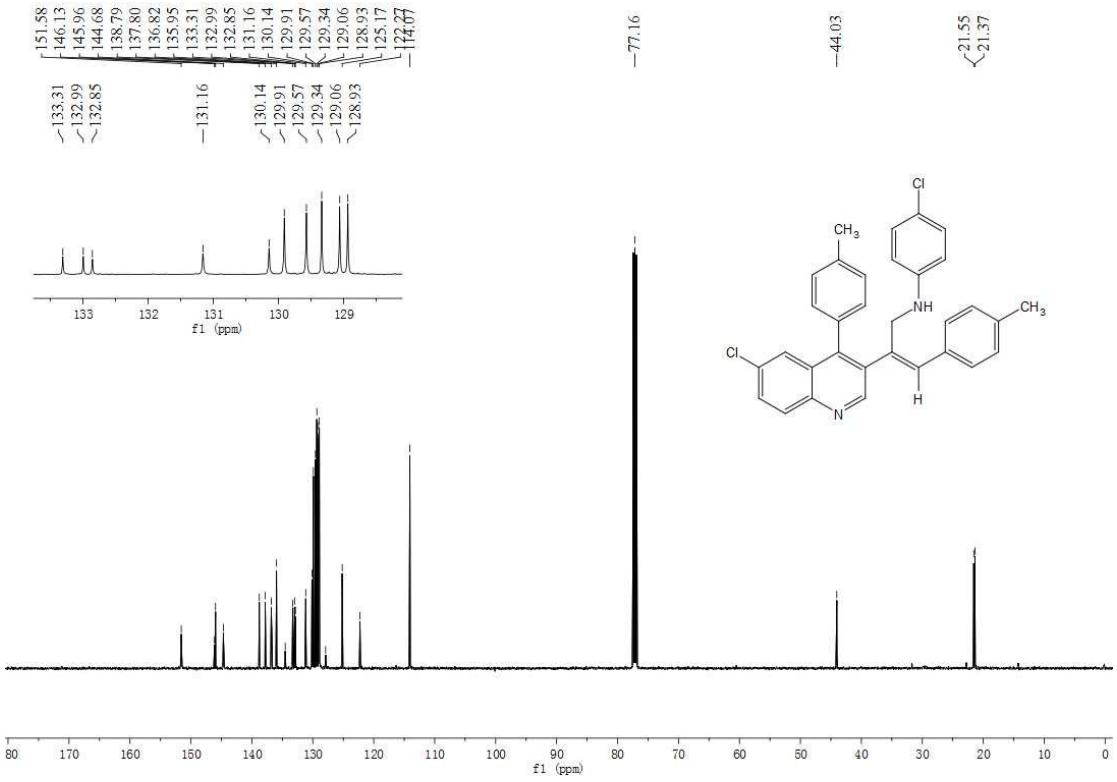
[1]H NMR: (Z)-4-fluoro-N-(2-(6-fluoro-4-(p-tolyl)quinolin-3-yl)-3-(p-tolyl)allyl)aniline (2t)



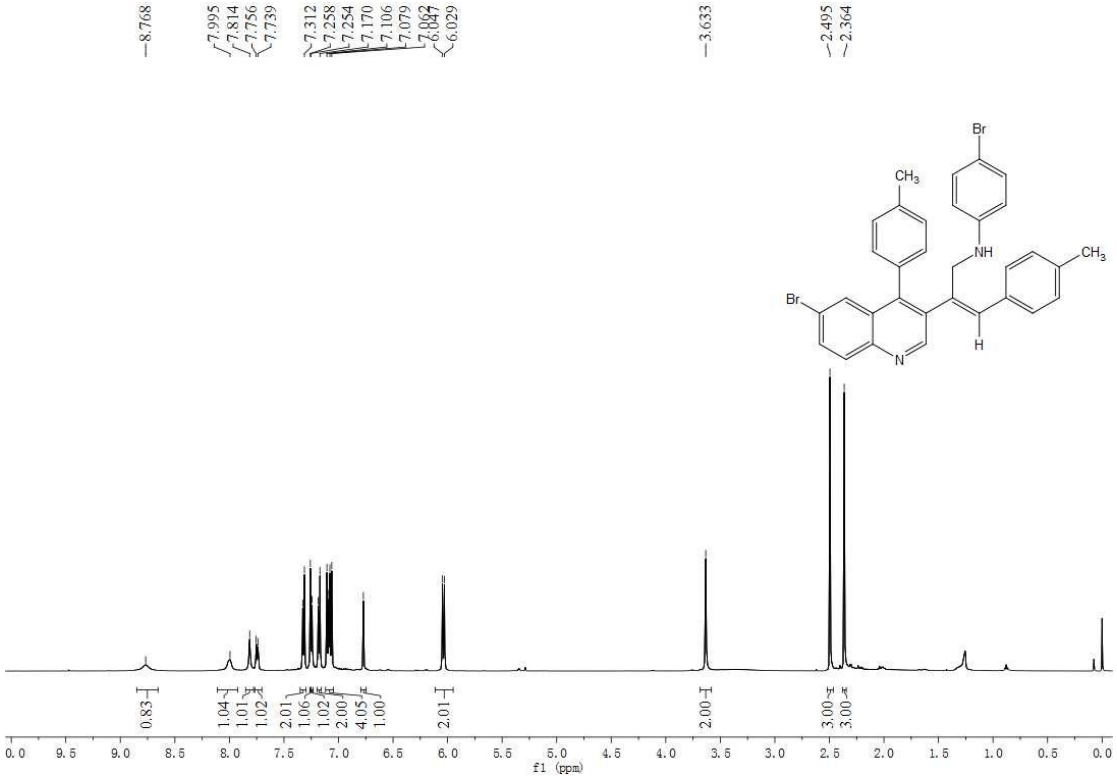
[13]C NMR: (Z)-4-fluoro-N-(2-(6-fluoro-4-(p-tolyl)quinolin-3-yl)-3-(p-tolyl)allyl)aniline (2t)



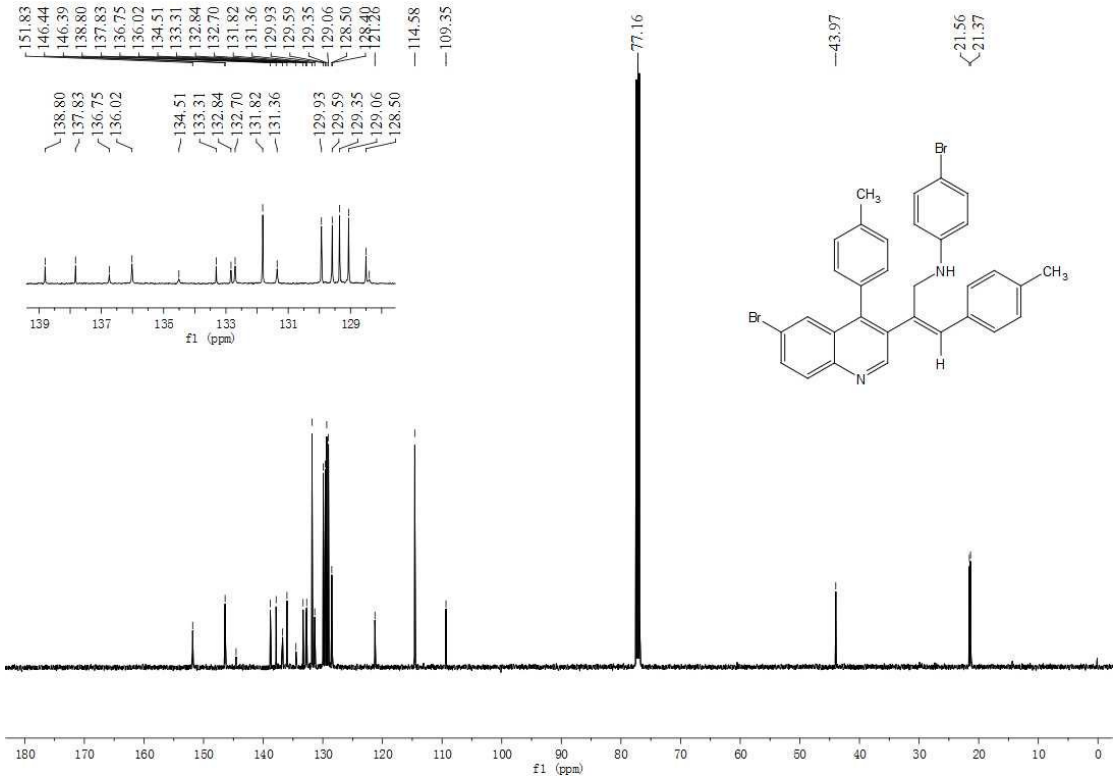
[1]H NMR: (Z)-4-chloro-N-(2-(6-chloro-4-(p-tolyl)quinolin-3-yl)-3-(p-tolyl)allyl)aniline (2u)



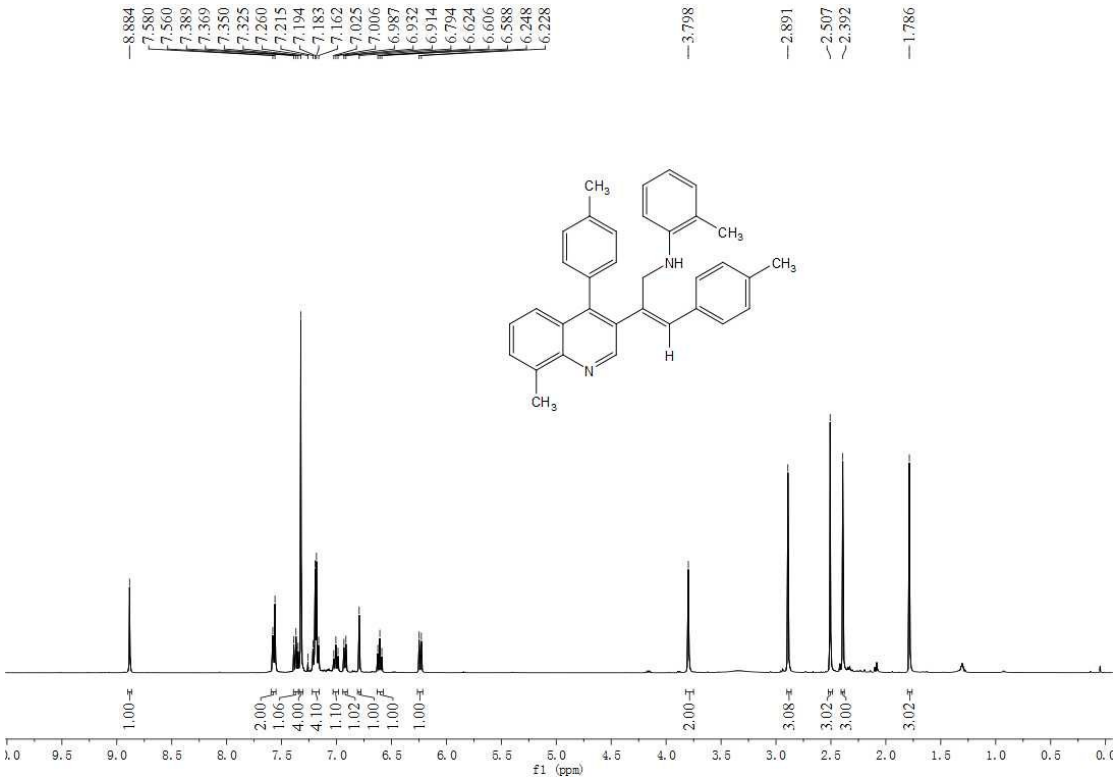
[13]C NMR: (Z)-4-chloro-N-(2-(6-chloro-4-(p-tolyl)quinolin-3-yl)-3-(p-tolyl)allyl)aniline (2u)



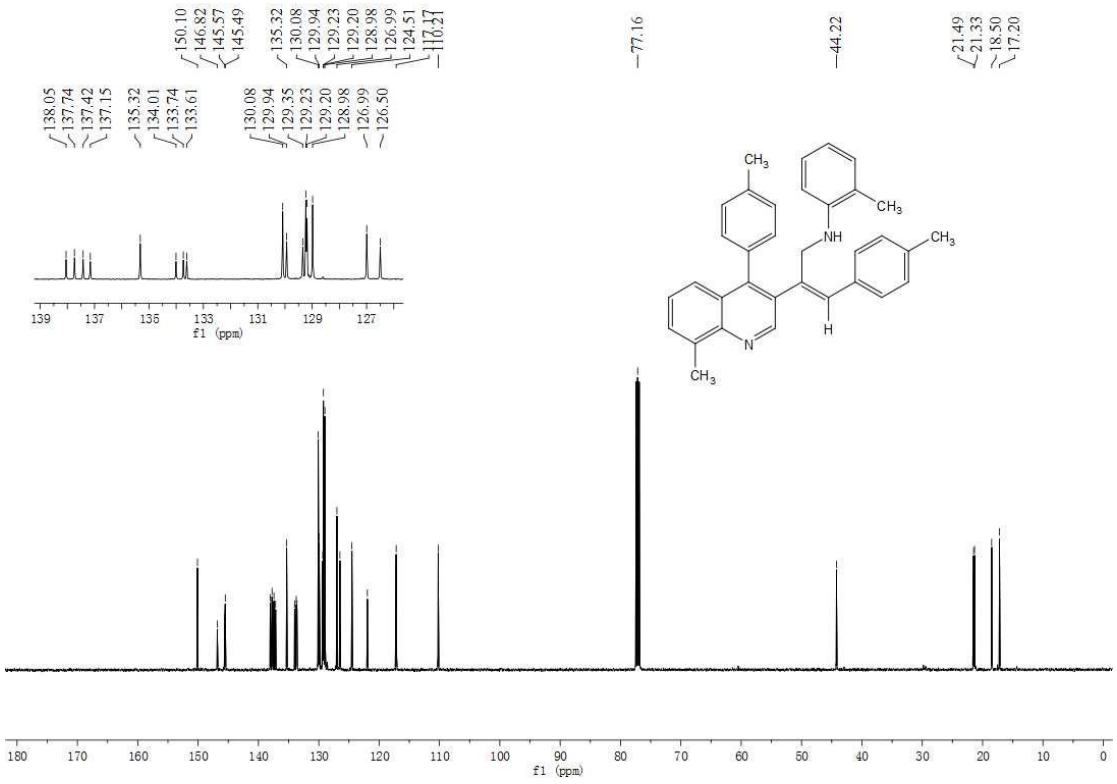
[1]H NMR: (Z)-4-bromo-N-(2-(6-bromo-4-(p-tolyl)quinolin-3-yl)-3-(p-tolyl)allyl)aniline (2v)



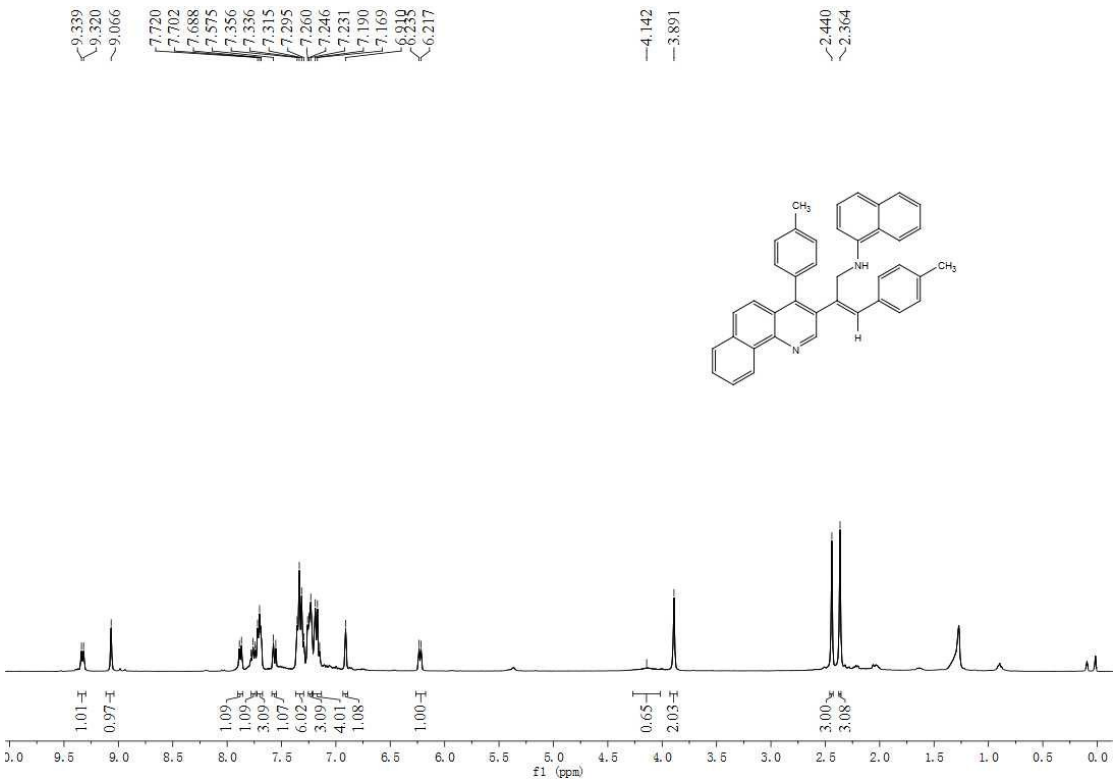
[13]C NMR: (Z)-4-bromo-N-(2-(6-bromo-4-(p-tolyl)quinolin-3-yl)-3-(p-tolyl)allyl)aniline (2v)



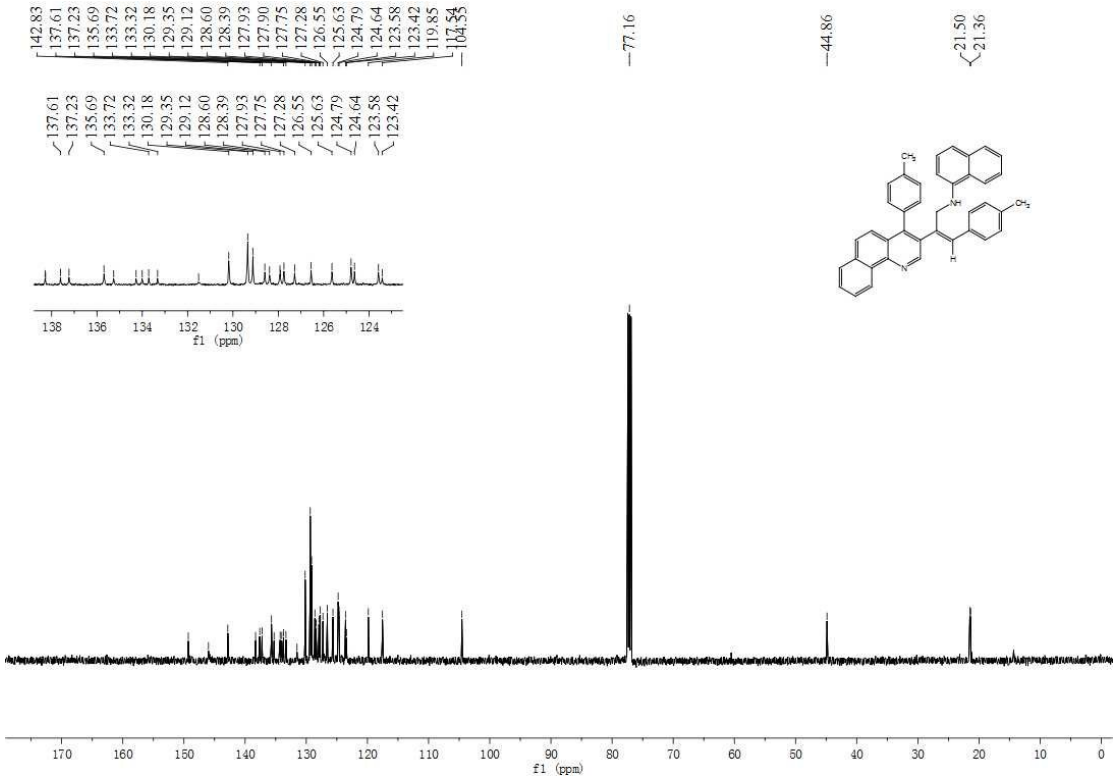
[1]H NMR: (Z)-2-methyl-N-(2-(8-methyl-4-(p-tolyl)quinolin-3-yl)-3-(p-tolyl)allyl)aniline (2w)



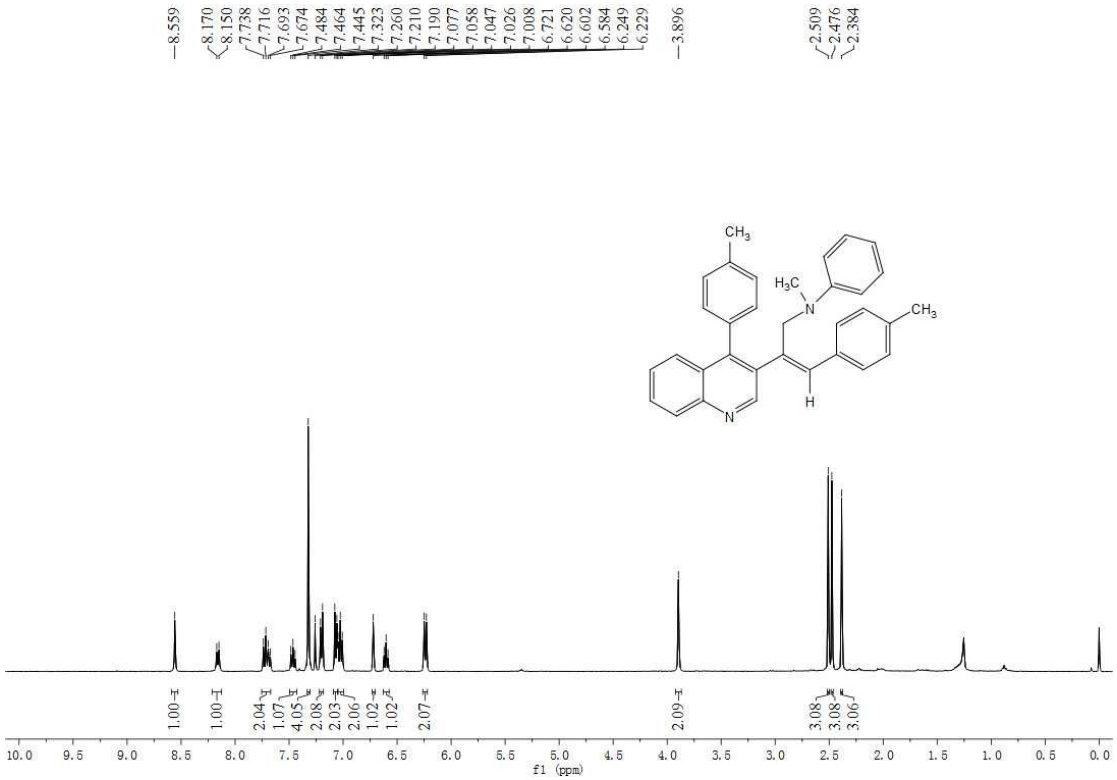
[13]C NMR: (Z)-2-methyl-N-(2-(8-methyl-4-(p-tolyl)quinolin-3-yl)-3-(p-tolyl)allyl)aniline (2w)



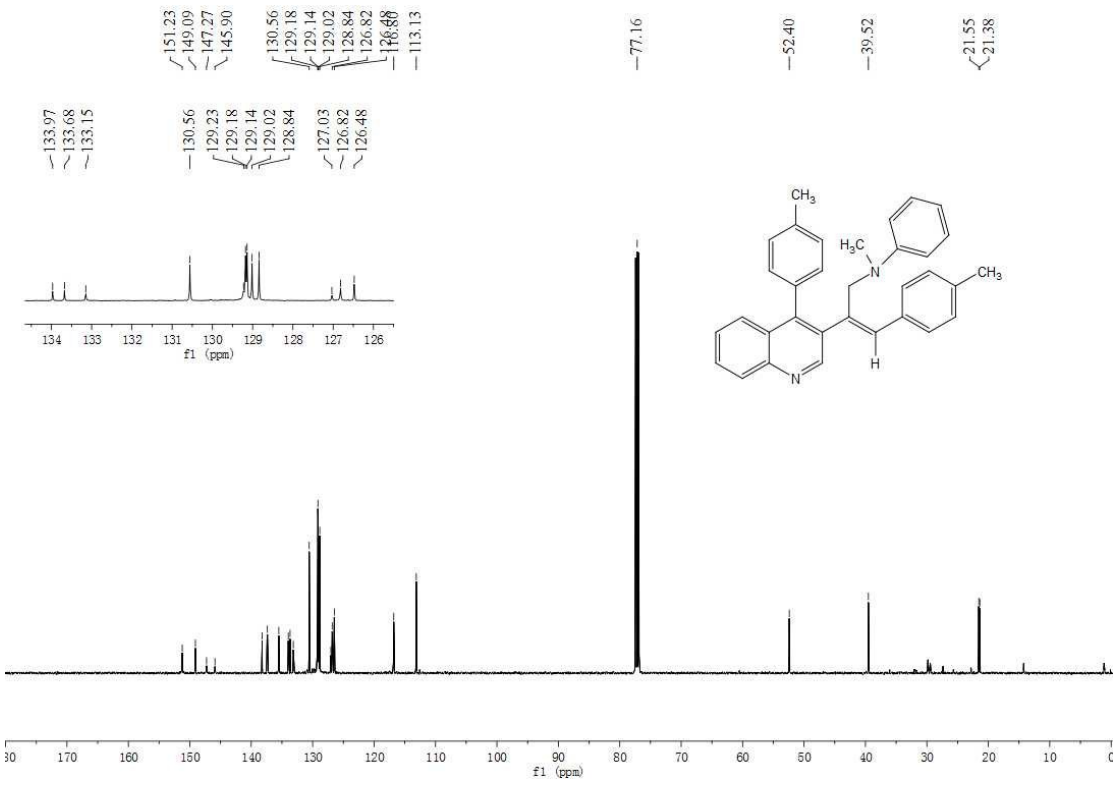
^{1}H NMR: (Z)-N-(3-(p-tolyl)-2-(4-(p-tolyl)benzo[h]quinolin-3-yl)allyl)naphthalen-1-amine (2x)



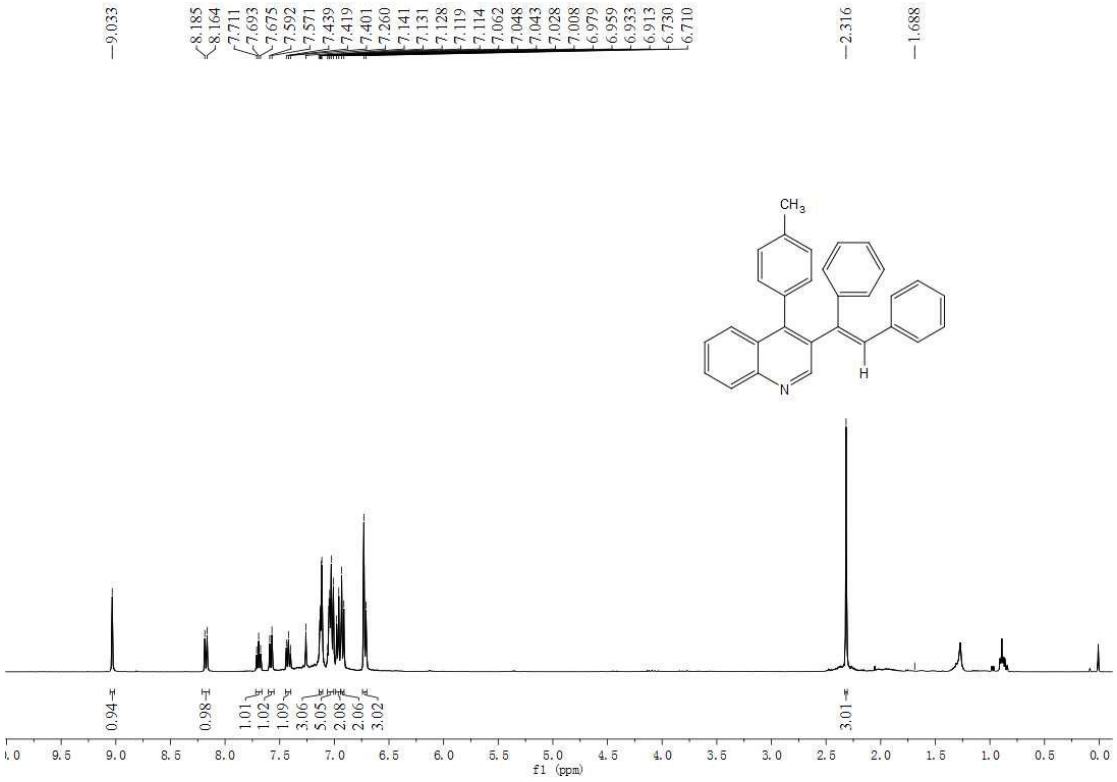
^{13}C NMR: (Z)-N-(3-(p-tolyl)-2-(4-(p-tolyl)benzo[h]quinolin-3-yl)allyl)naphthalen-1-amine (2x)



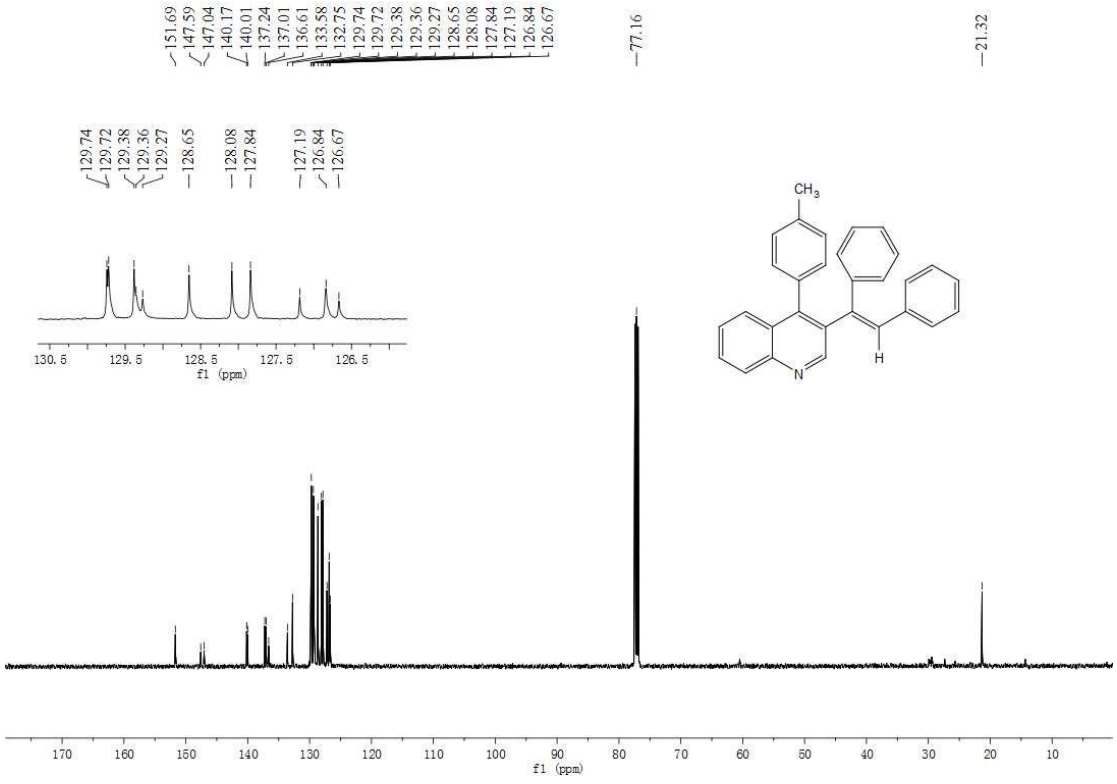
[1]H NMR: (Z)-N-methyl-N-(2-(1-methyl-4-phenyl-1,2-dihydroquinolin-3-yl)-3-phenylallyl)aniline (2y)



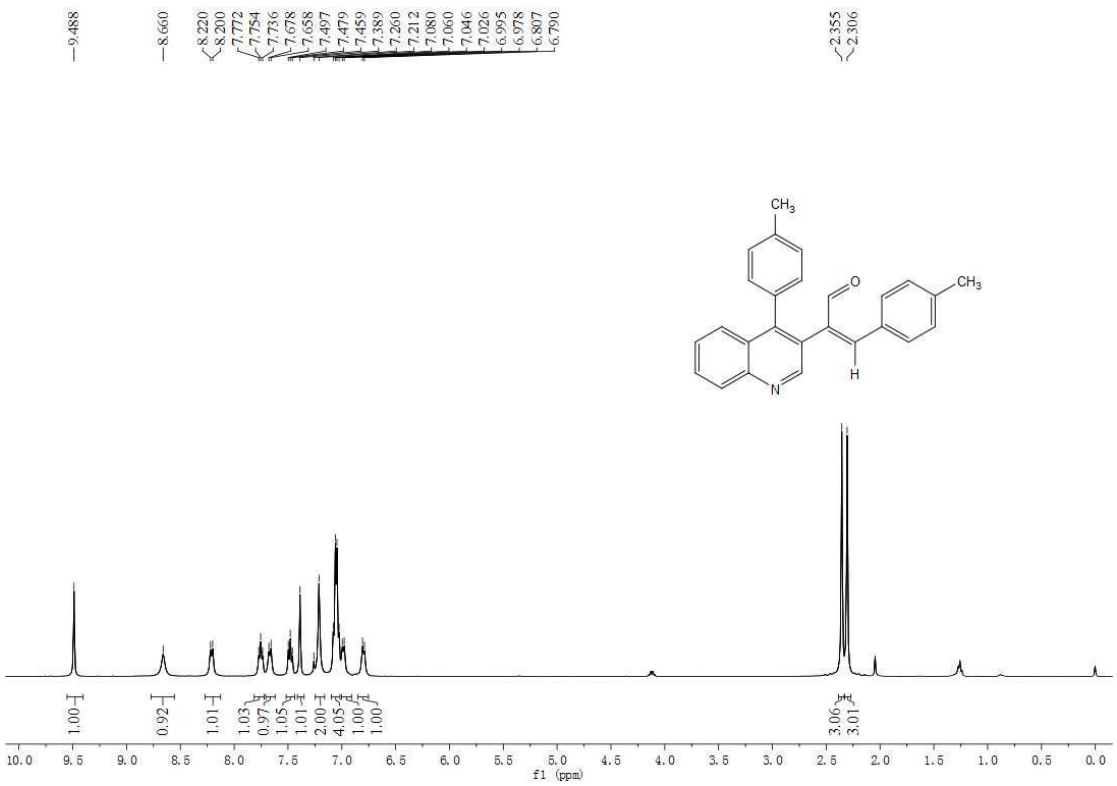
[13]C NMR: (Z)-N-methyl-N-(2-(1-methyl-4-phenyl-1,2-dihydroquinolin-3-yl)-3-phenylallyl)aniline (2y)



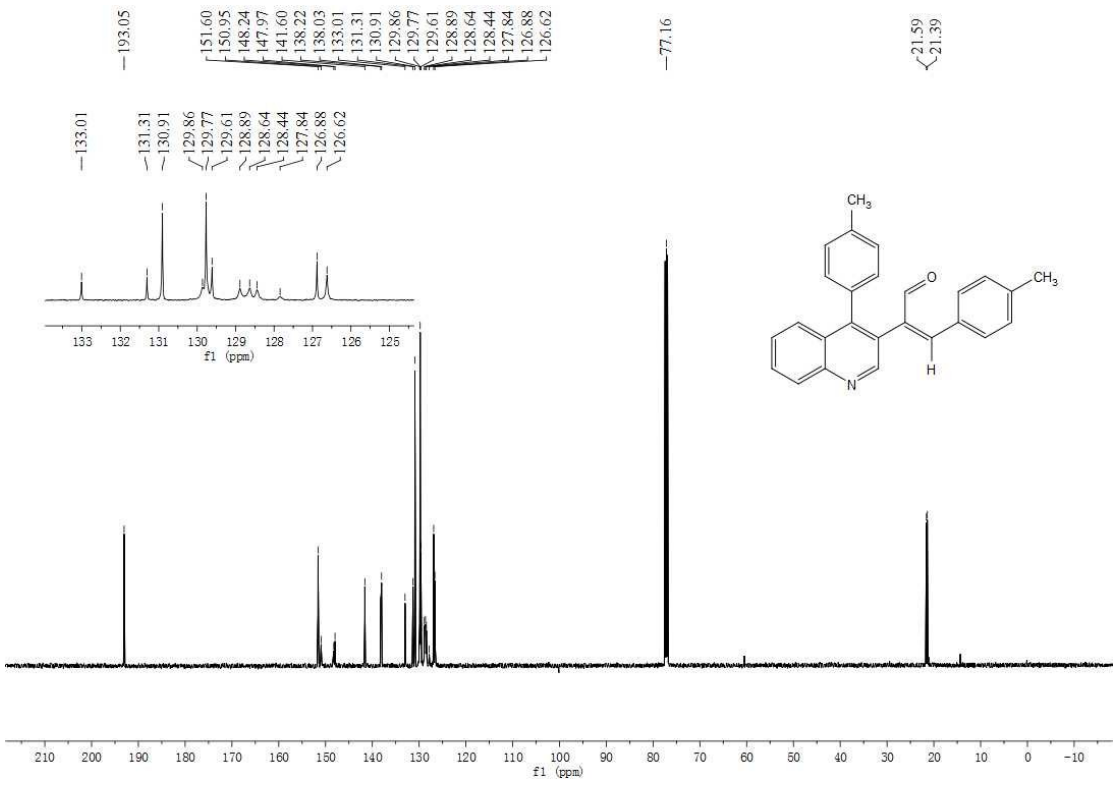
^{1}H NMR: 2-(1,2-diphenylvinyl)-1-(p-tolyl)naphthalene (6)



^{13}C NMR: 2-(1,2-diphenylvinyl)-1-(p-tolyl)naphthalene (6)



^{1}H NMR: (Z)-3-(p-tolyl)-2-(4-(p-tolyl)quinolin-3-yl)acrylaldehyde (7)



^{13}C NMR: (Z)-3-(p-tolyl)-2-(4-(p-tolyl)quinolin-3-yl)acrylaldehyde (7)

2. X-ray crystal structure of compounds 2a and 7

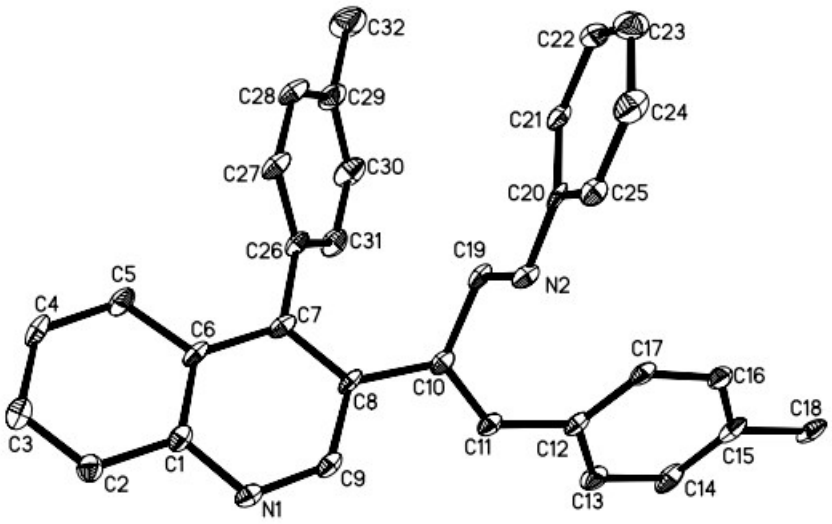


Figure of compound **2a**, CCDC number: CCDC1586350.

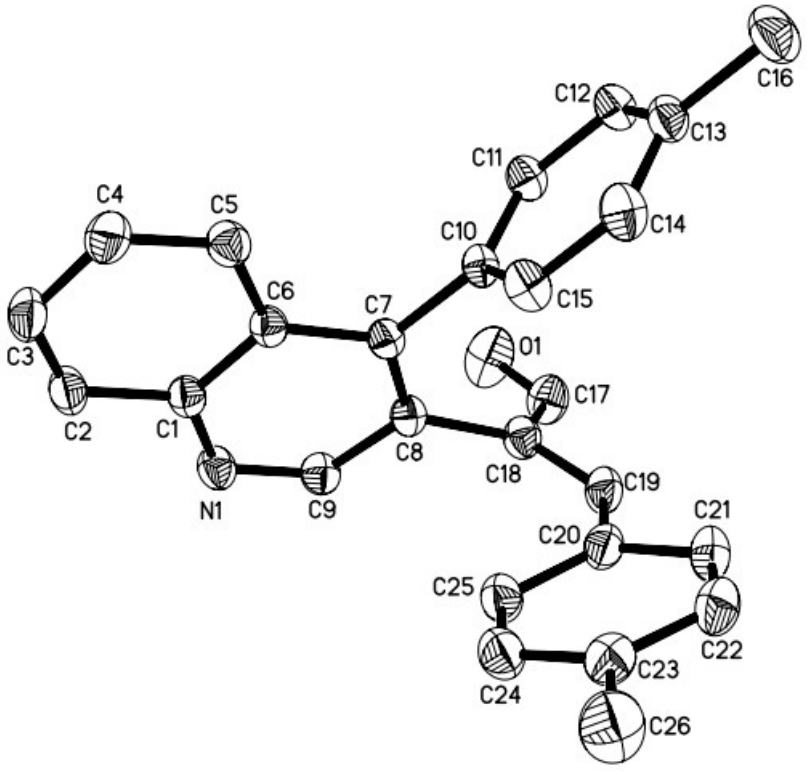


Figure of compound **7** CCDC number: CCDC1586351.