

Supporting information

The cross-coupling reaction of organoalane reagents with 2-methylthiobenzo[d]thiazoles *via* C-S bond cleavage catalyzed by nickel

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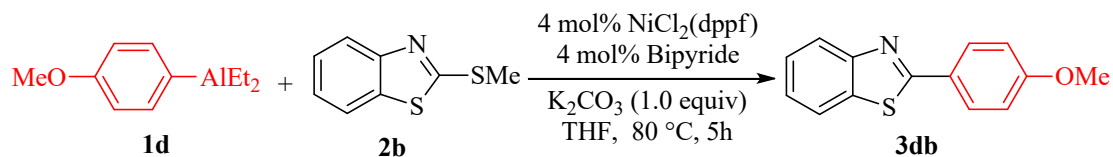
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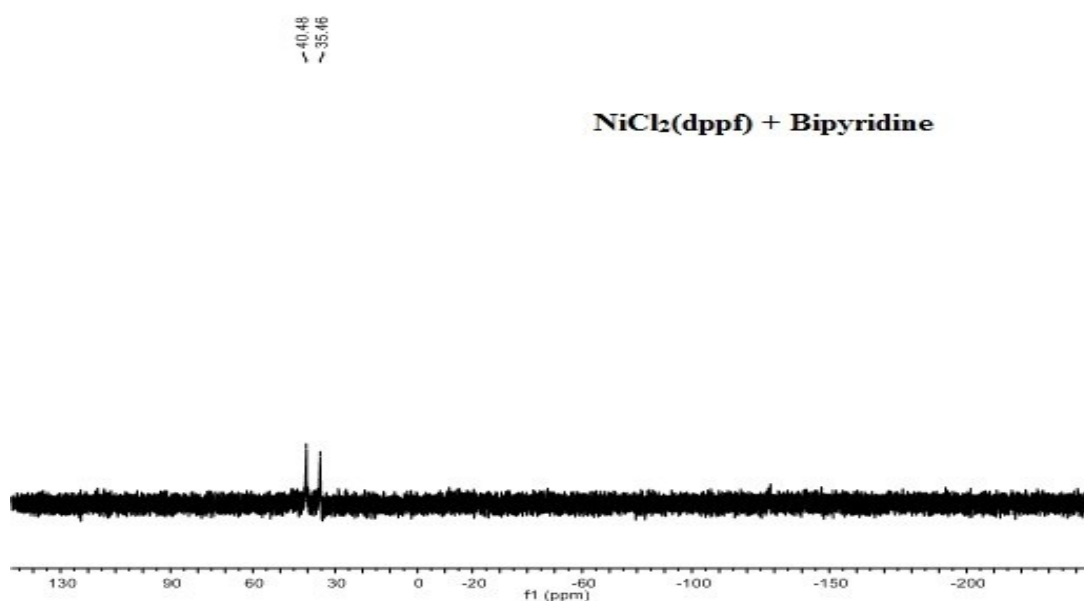
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I. Control experiments

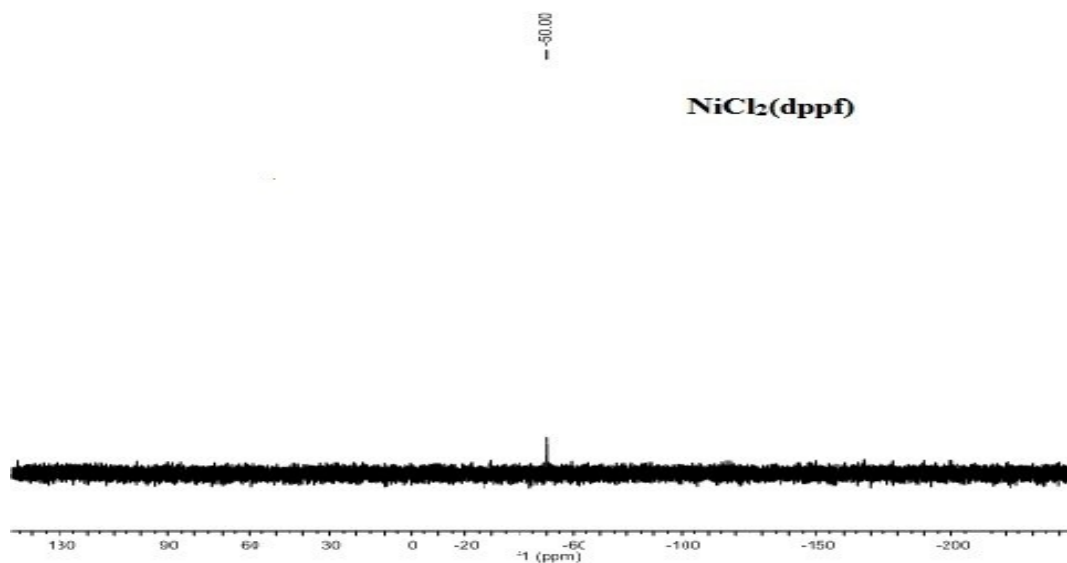
Under a dry nitrogen atmosphere, a mixture of $\text{NiCl}_2(\text{dppf})$ (0.0136 g, 0.02 mmol), Bipyridine (3.1 mg, 0.02 mmol) and K_2CO_3 (69.0 mg, 0.5 mmol) in a reaction vessel was added an diethyl(4-methoxyphenyl)aluminum (4-MeOC₆H₄AlEt₂) (**1d**, 1.0 mmol) in 1 mL THF followed by an addition of 2-methylthiobenzo[*d*]thiazole (**2b**, 0.5 mmol). The resulted solution was stirred at 80°C for 5 h. After completion the reaction, the reaction mixture was analyzed by ^{31}P NMR.



^{31}P NMR spectrum of $\text{NiCl}_2(\text{dppf})$ –Bipyridine complex

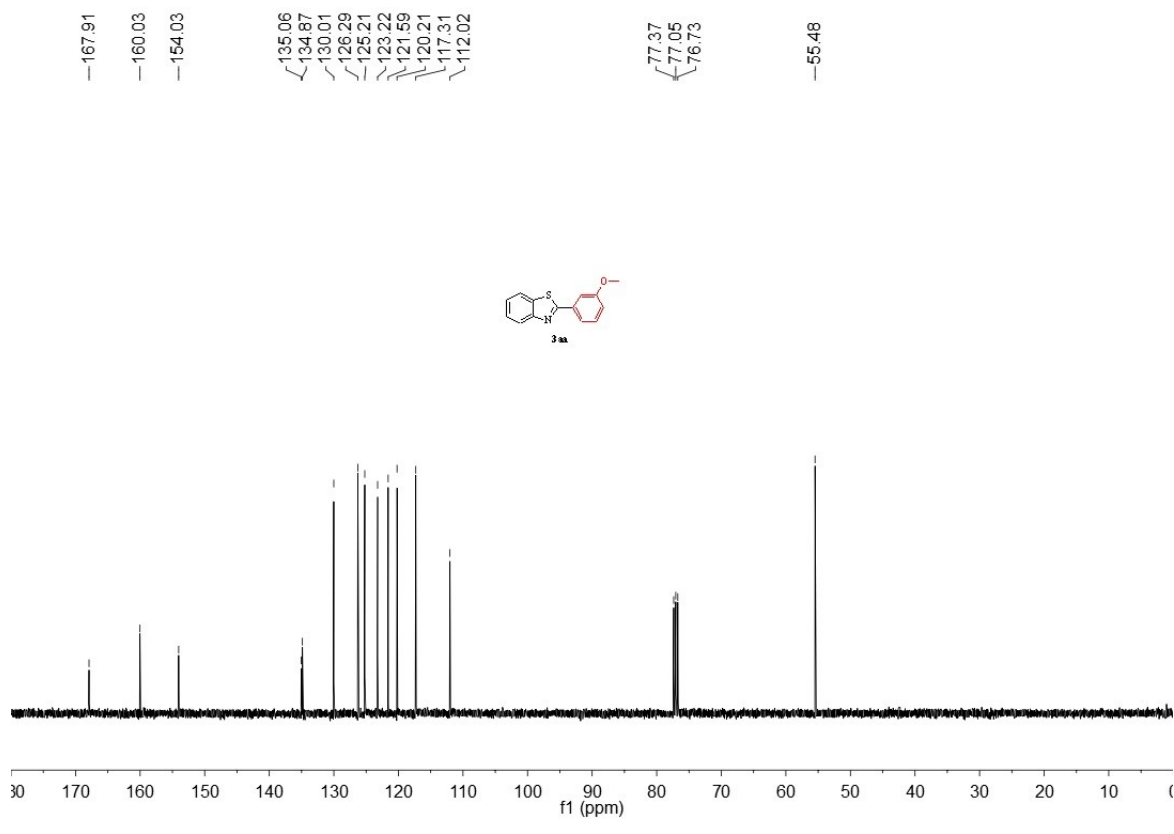
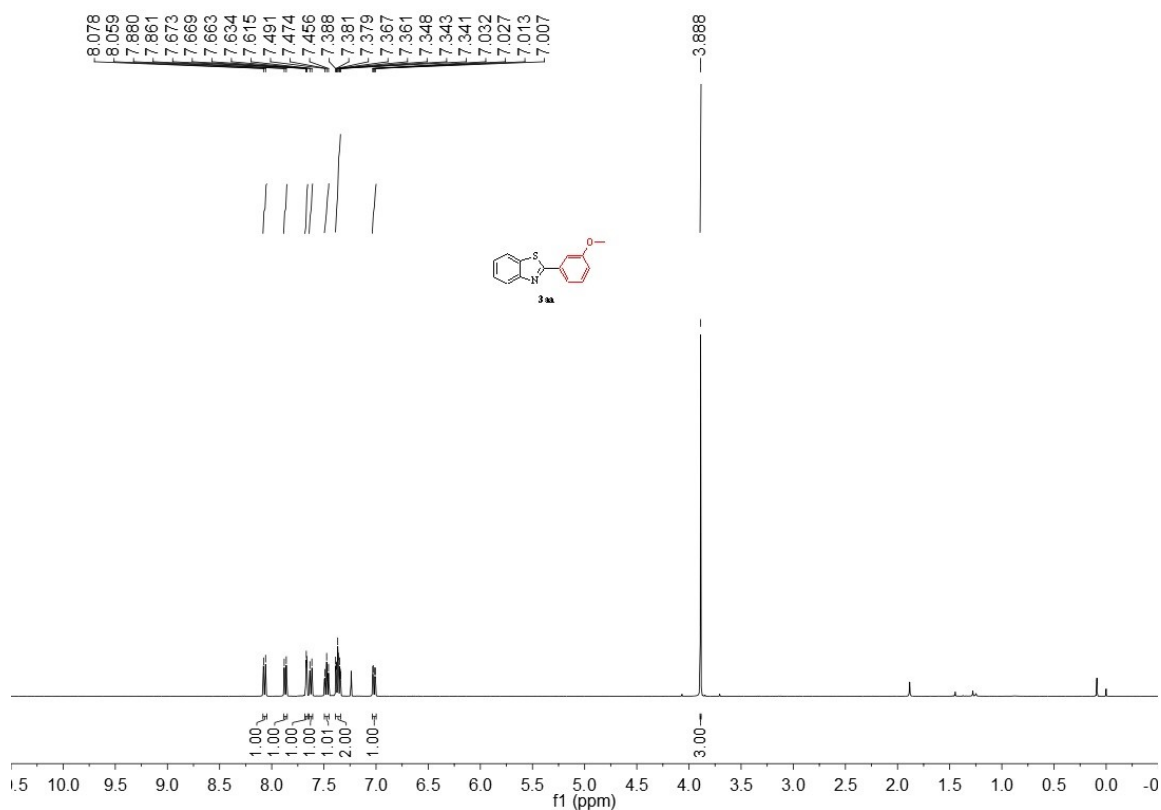


^{31}P NMR spectrum of $\text{NiCl}_2(\text{dppf})$

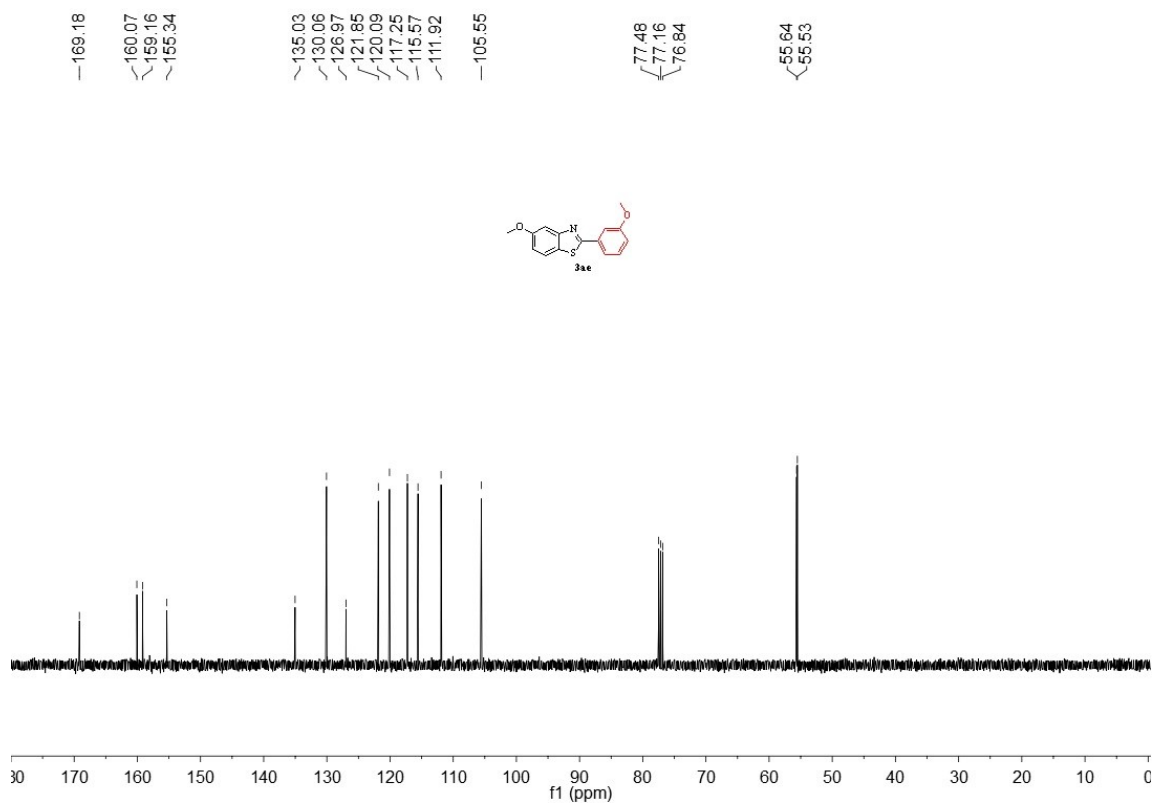
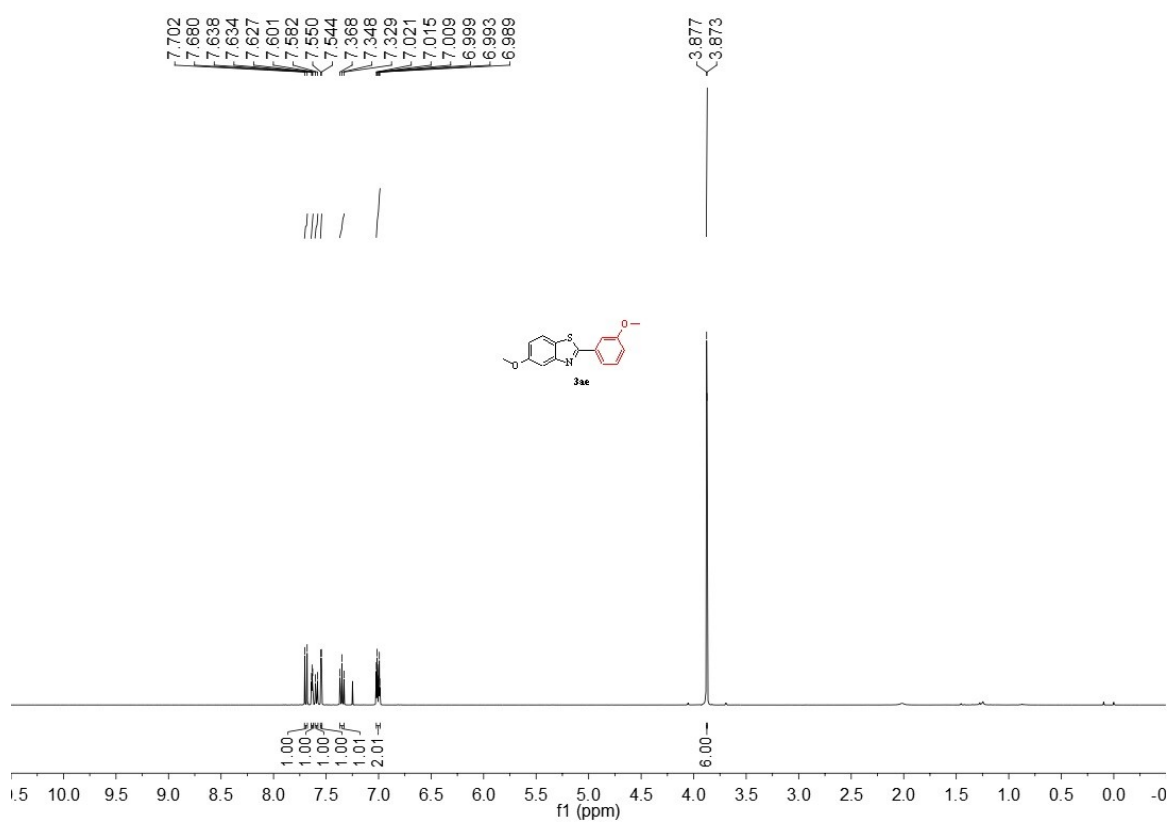


II. ^1H and ^{13}C NMR and High-Resolution Mass Spectra of Coupling Products

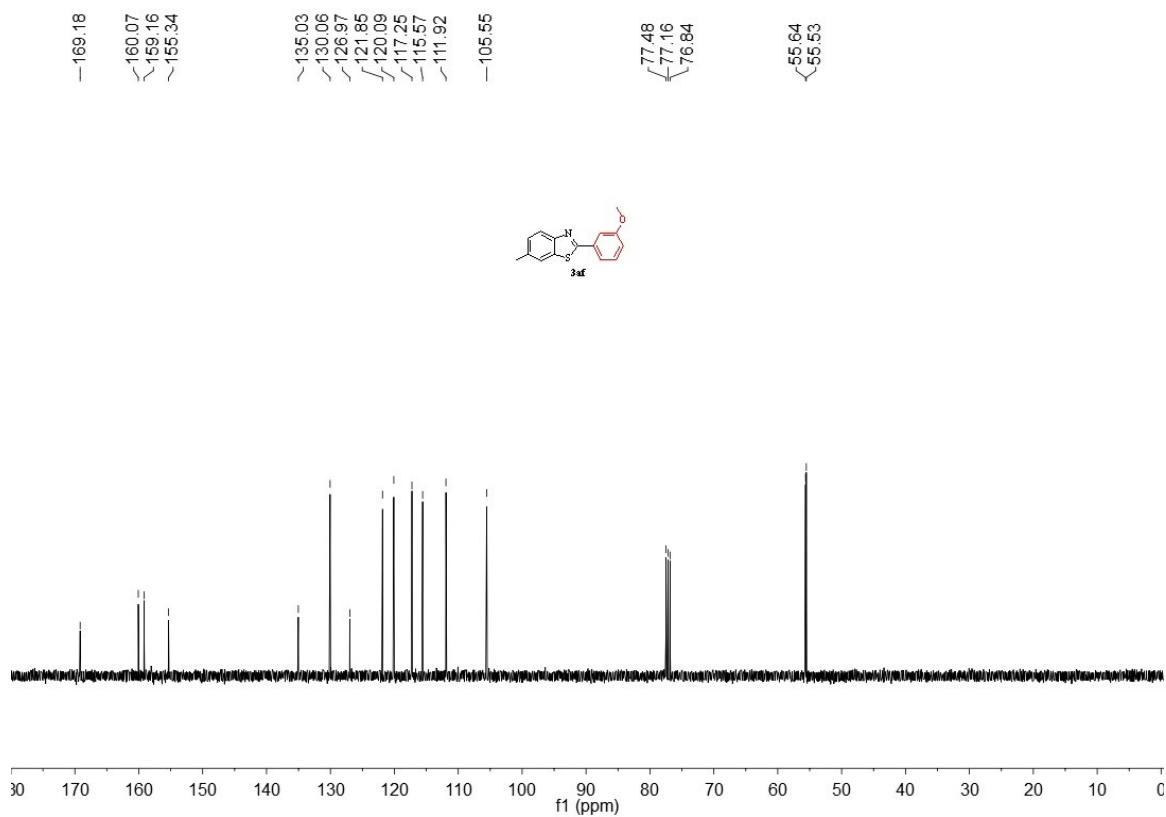
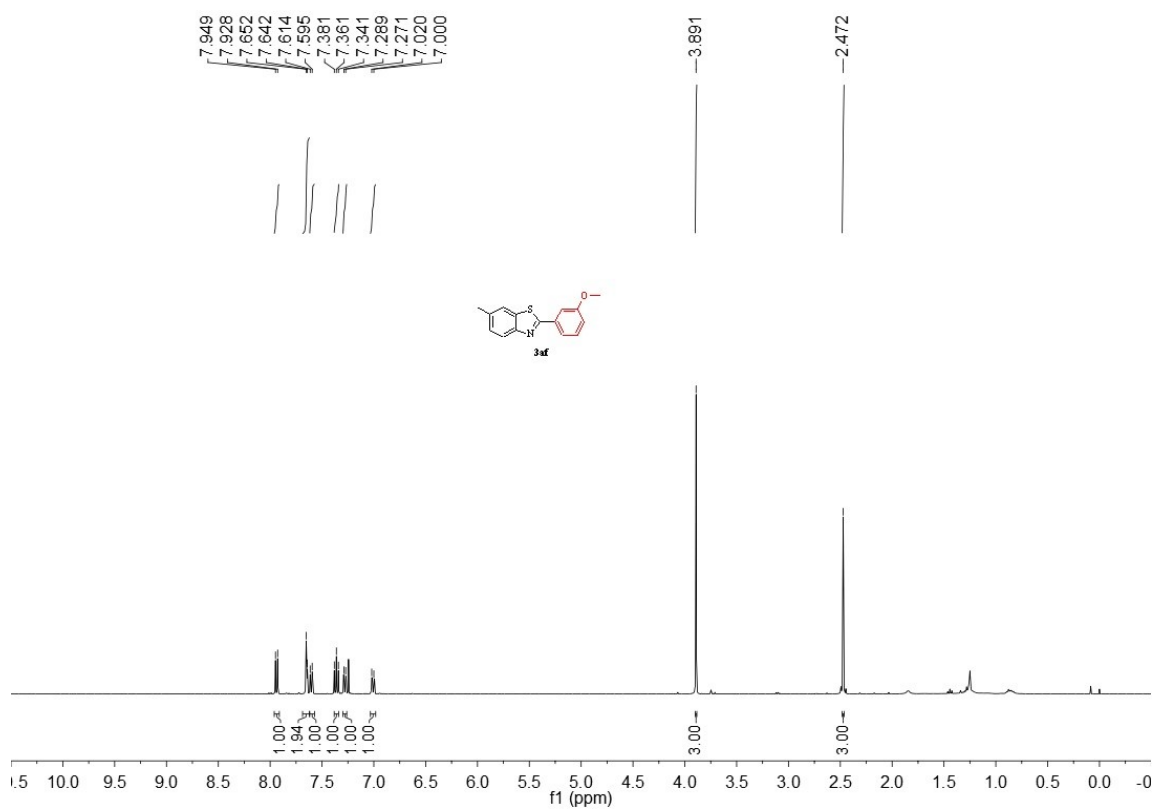
^1H and ^{13}C NMR Spectra of 2-(3-methoxyphenyl)benzo[d]thiazole (**3aa**)



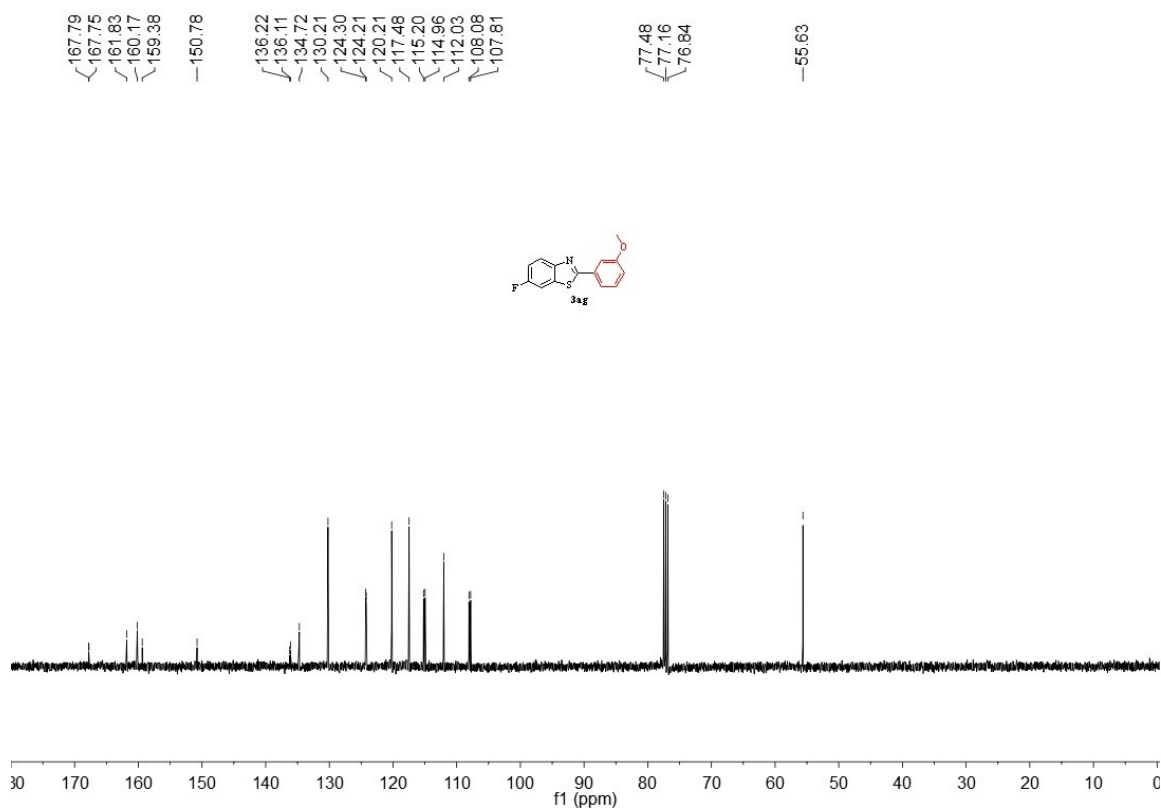
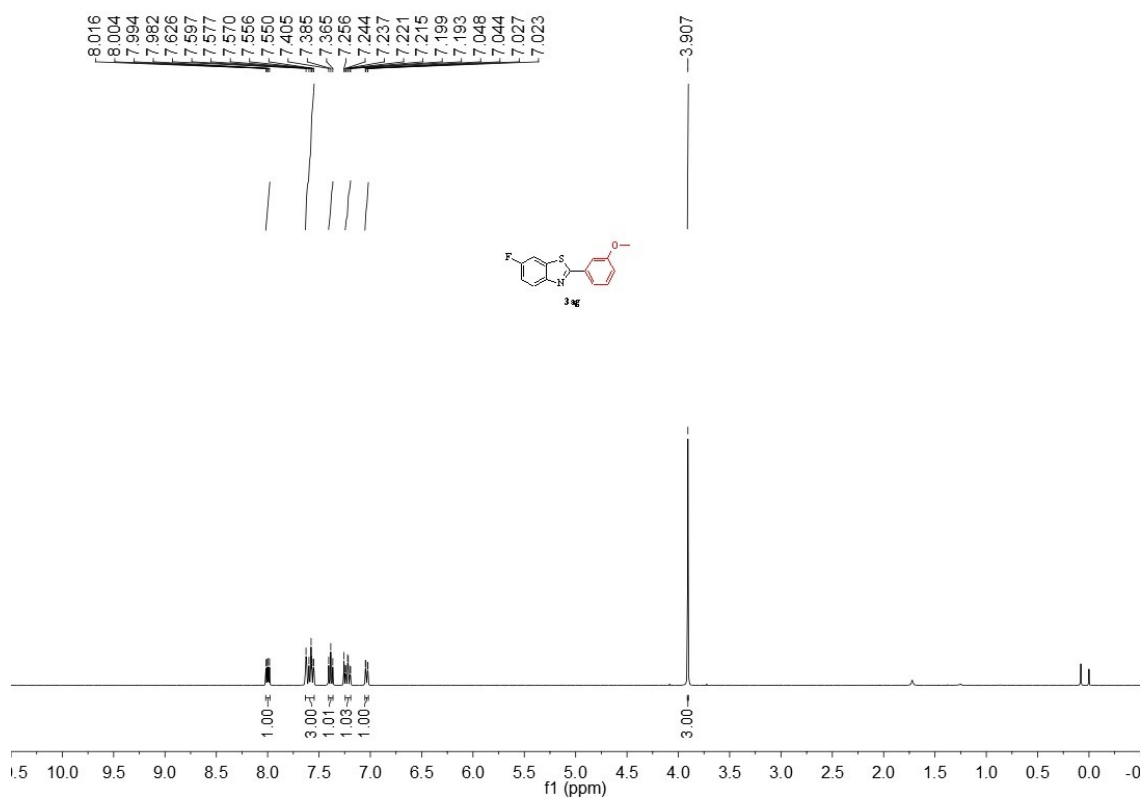
¹H and ¹³C NMR Spectra of 5-methoxy-2-(3-methoxyphenyl)benzo[d]thiazole (**3ae**)



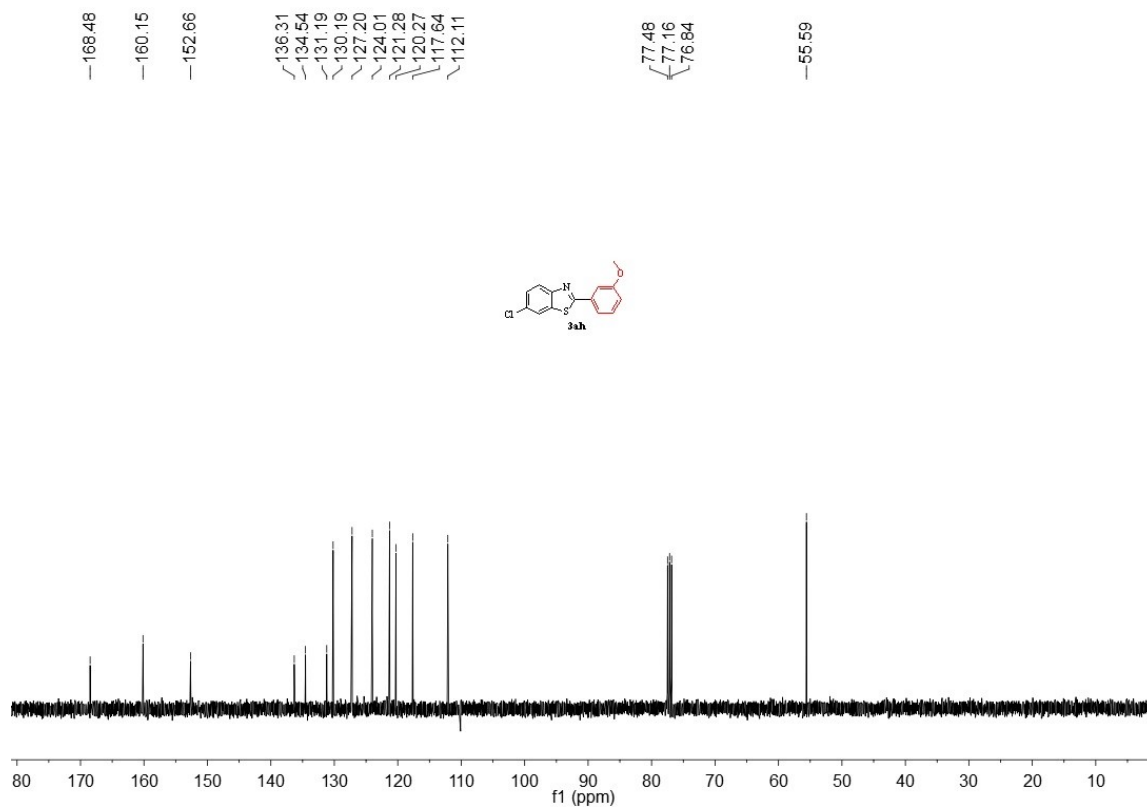
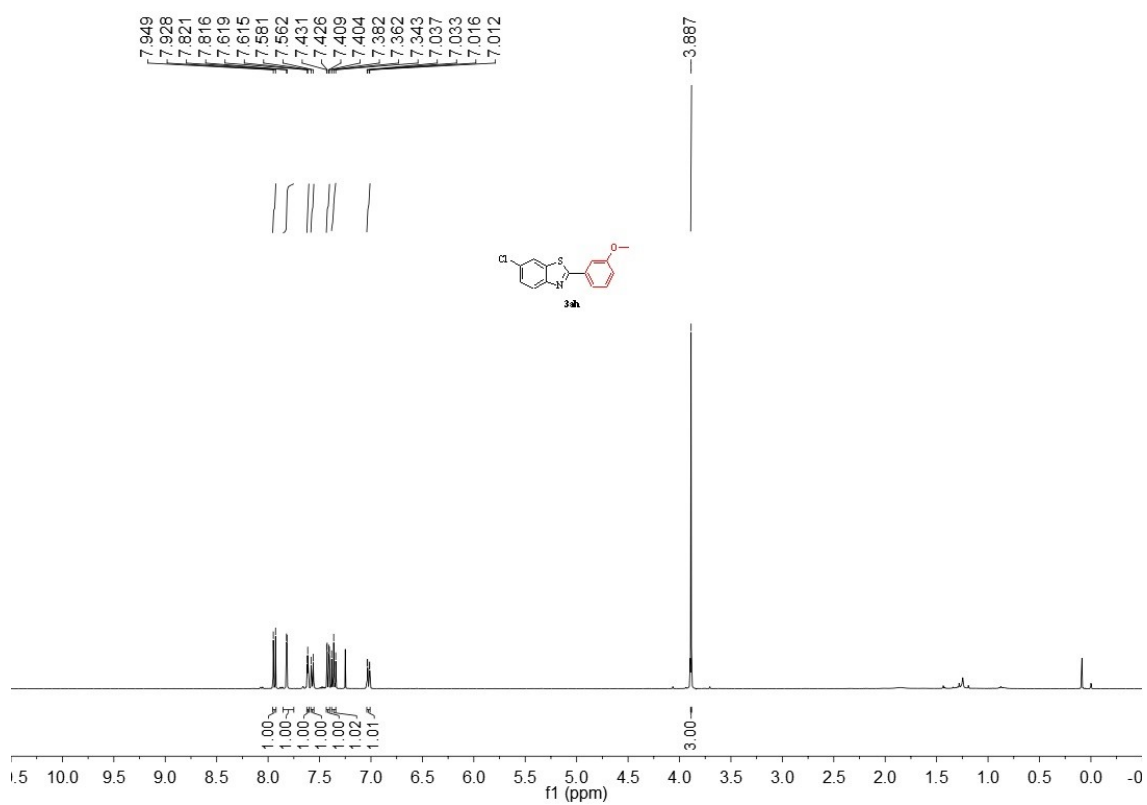
^1H and ^{13}C NMR Spectra of 2-(3-methoxyphenyl)-6-methylbenzo[d]thiazole (**3af**)



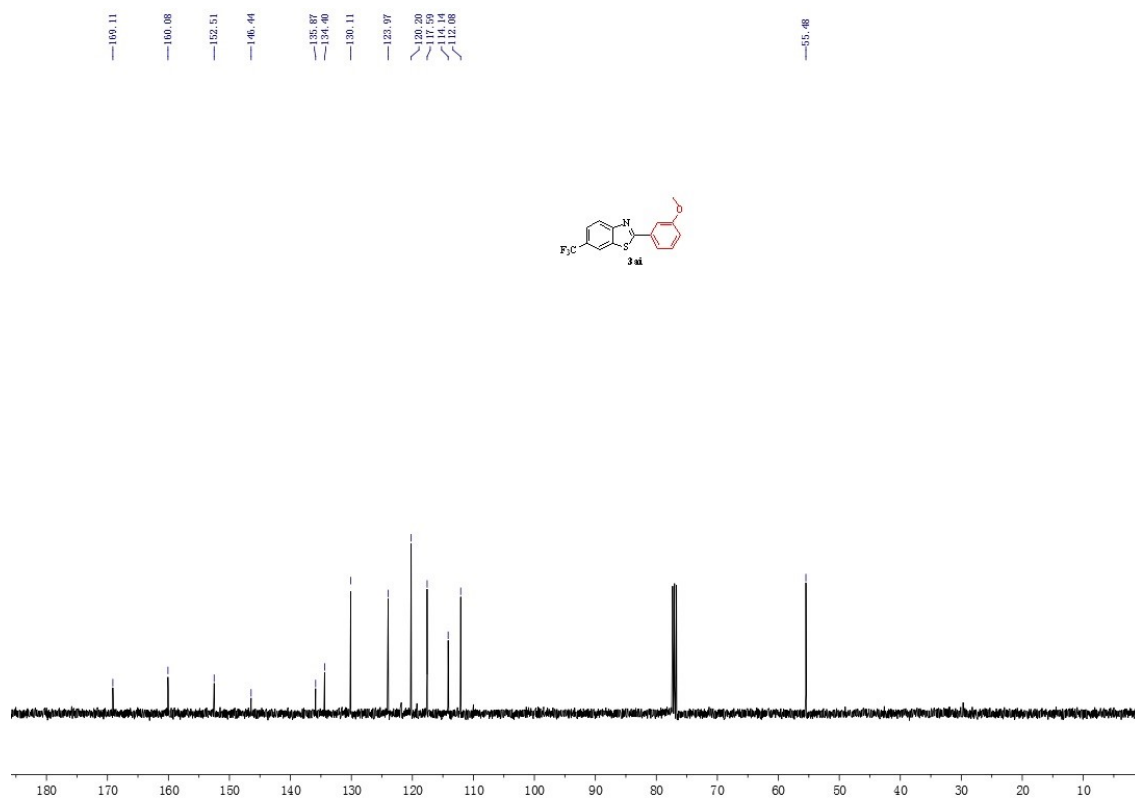
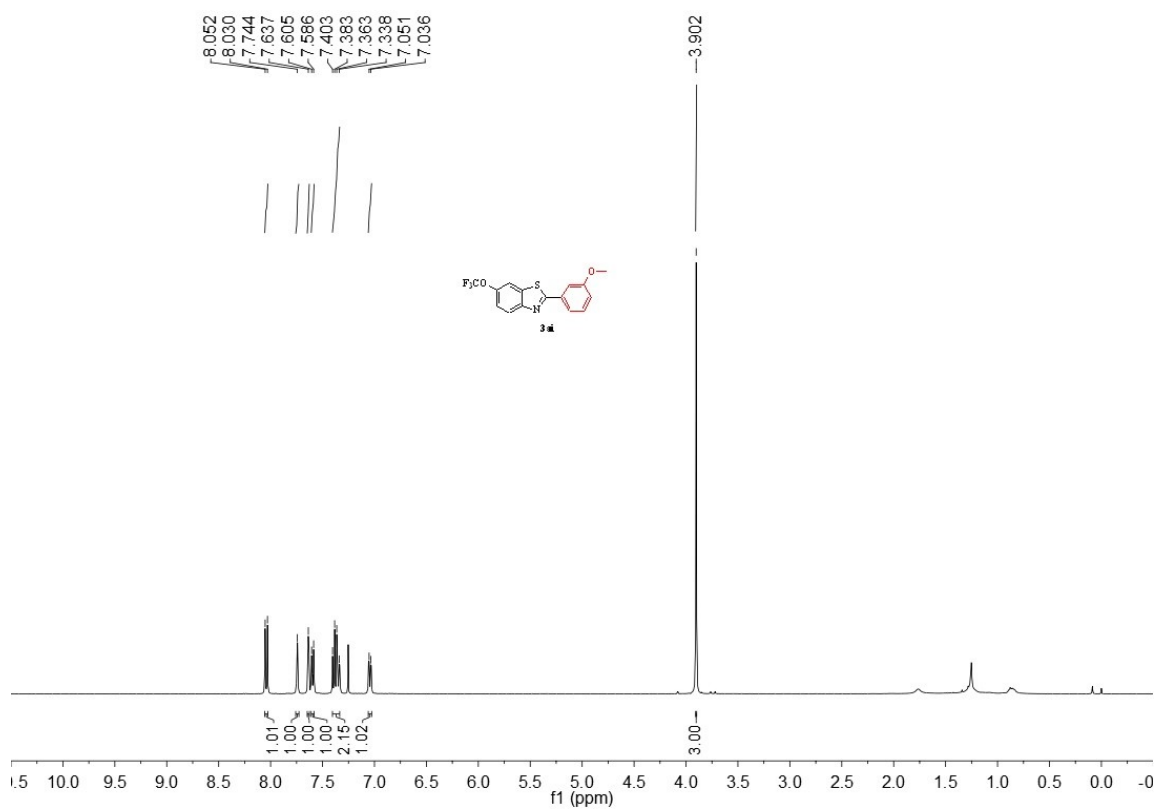
¹H and ¹³C NMR Spectra of 6-fluoro-2-(3-methoxyphenyl)benzo[d]thiazole (**3ag**)



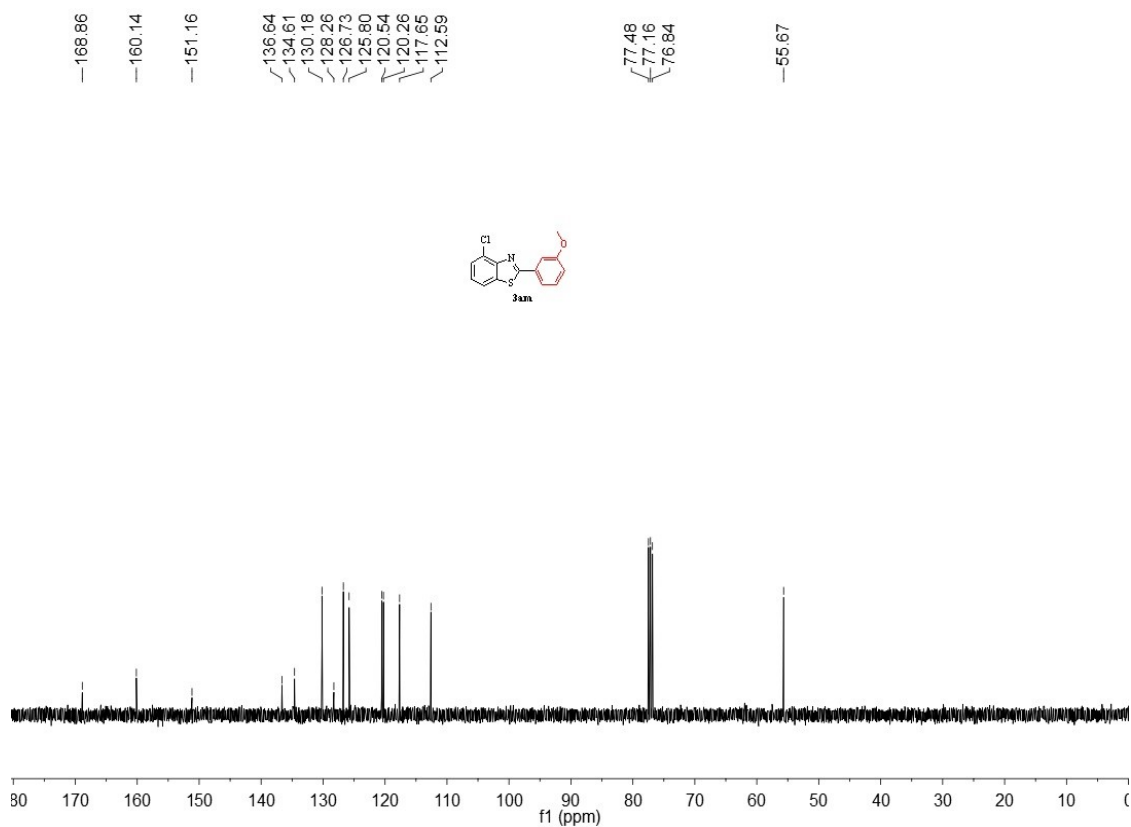
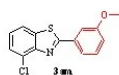
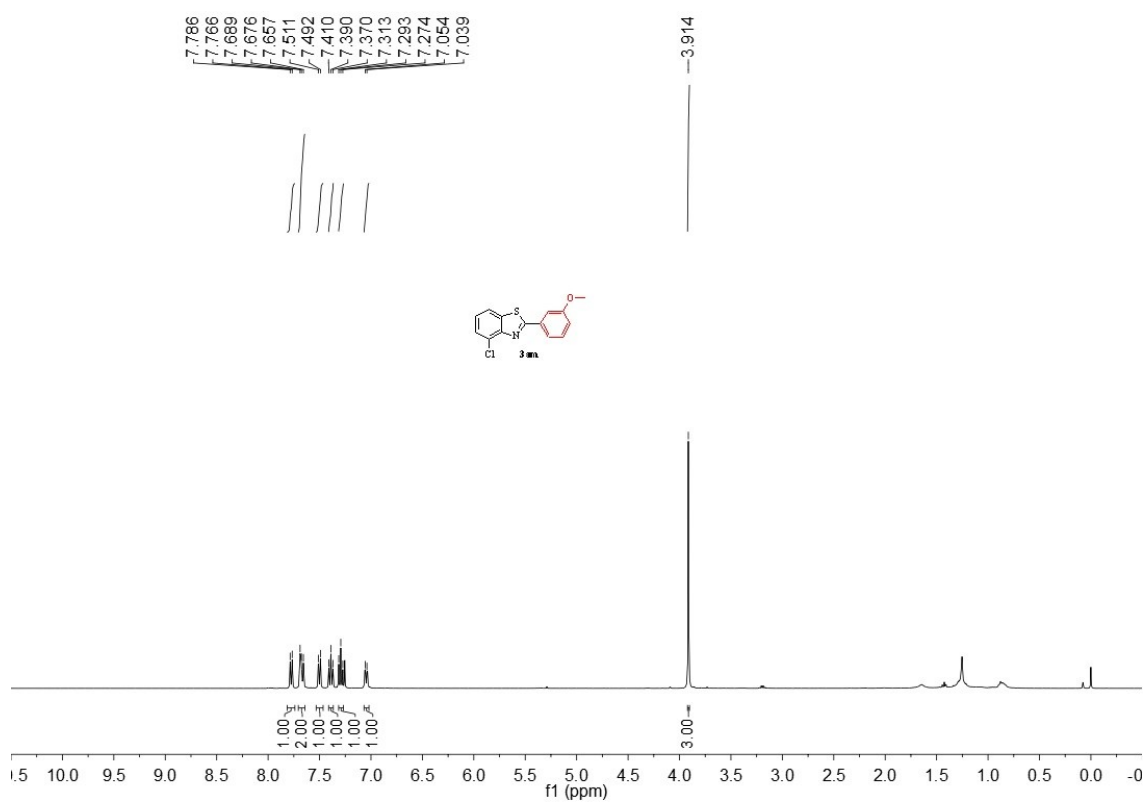
¹H and ¹³C NMR Spectra of 6-chloro-2-(3-methoxyphenyl)benzo[d]thiazole (**3ah**)



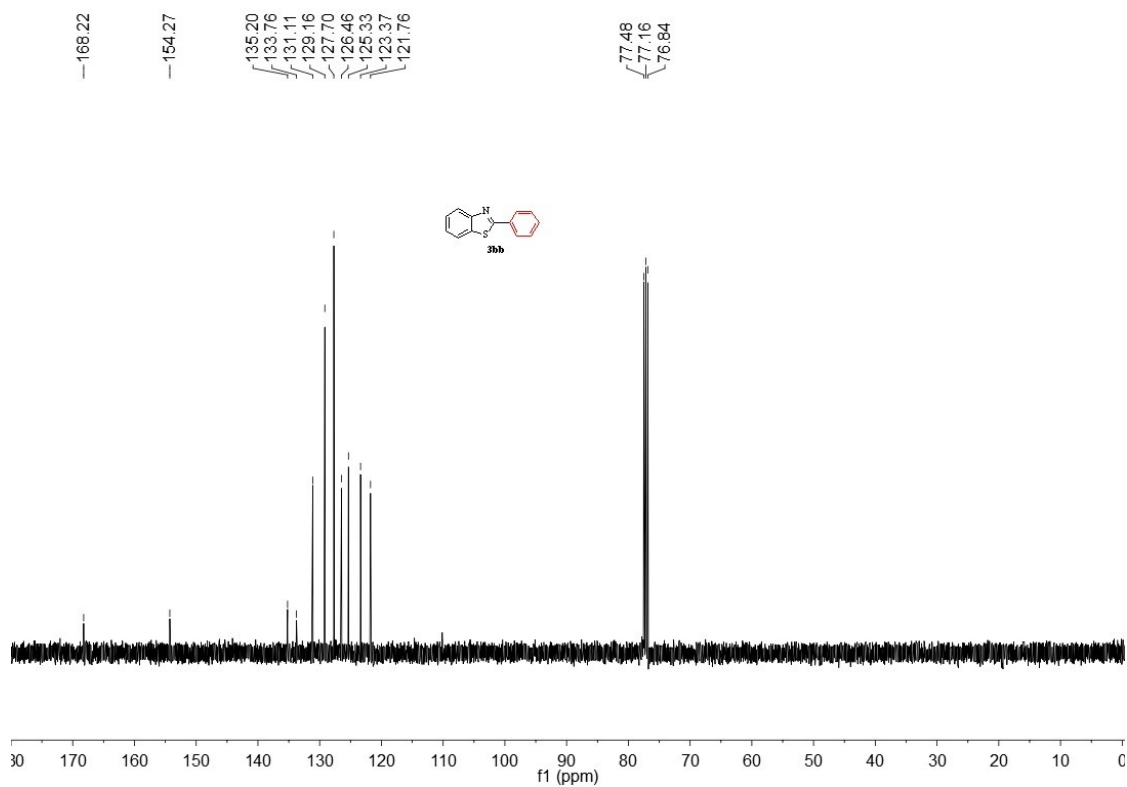
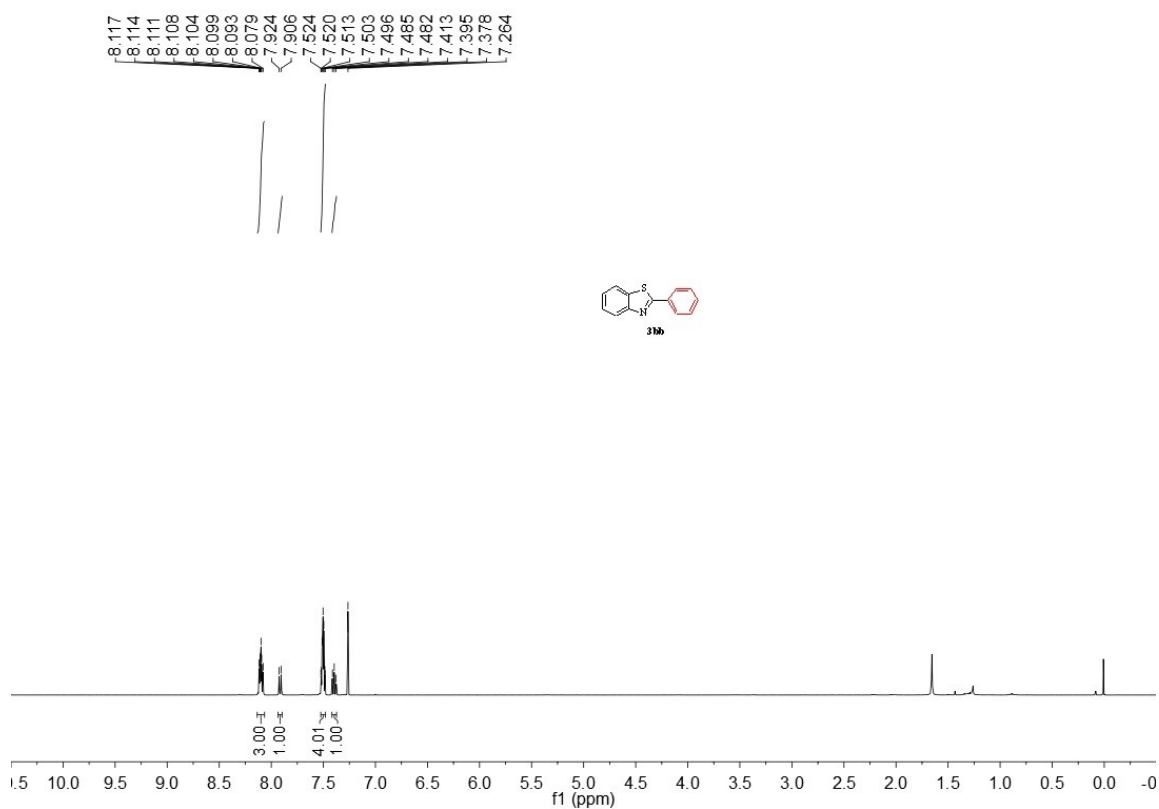
¹H and ¹³C NMR Spectra of 2-(3-methoxyphenyl)-6-(trifluoromethoxy)benzo[d]thiazole (**3ai**)



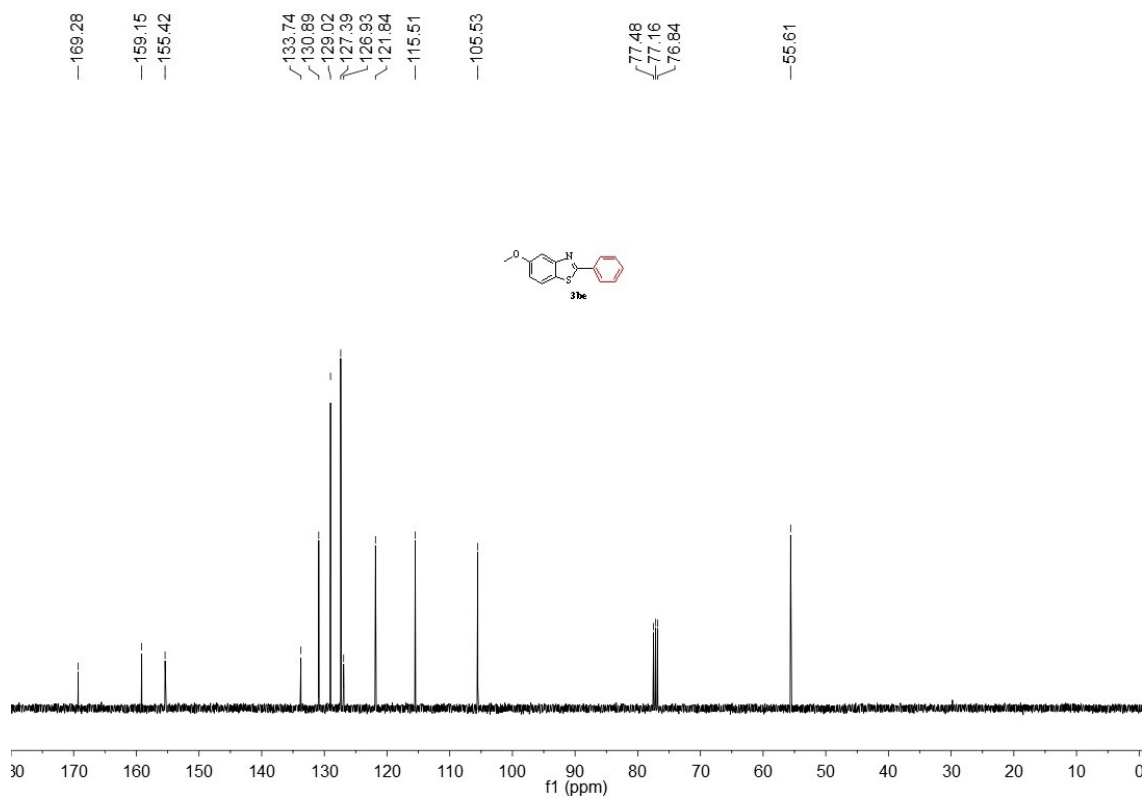
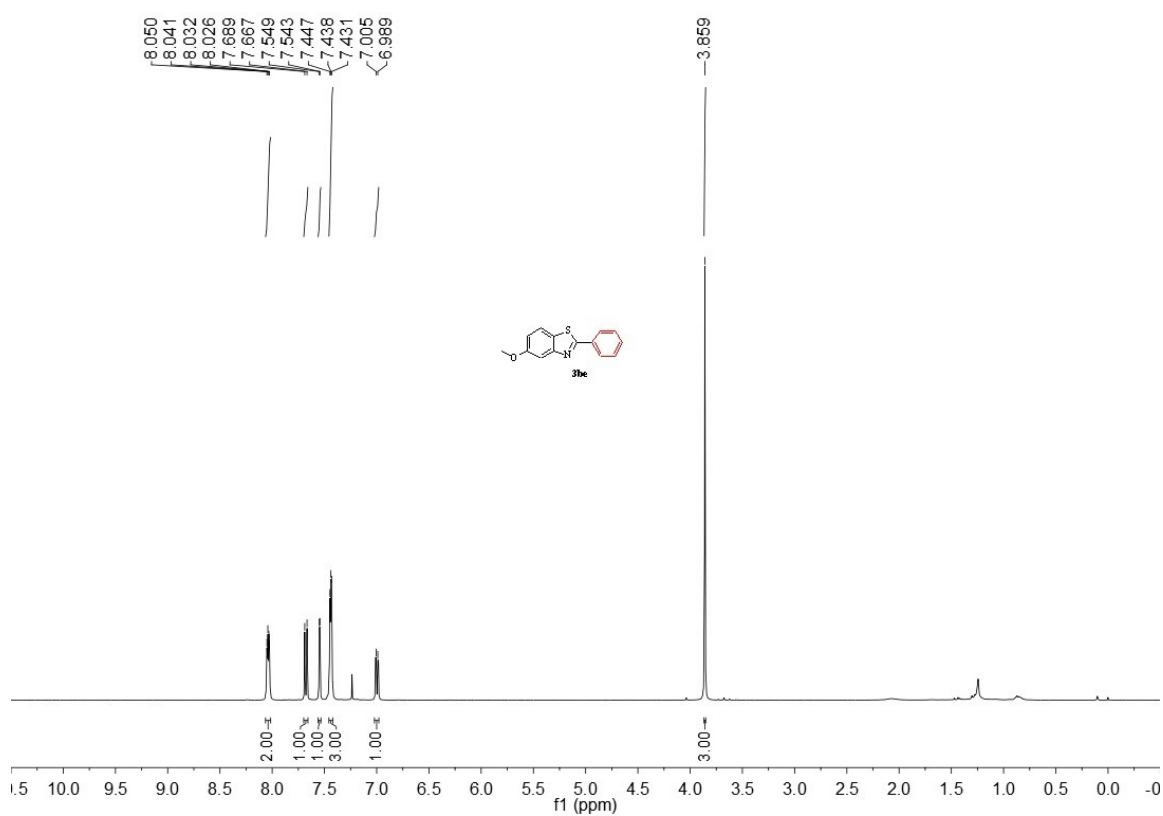
¹H and ¹³C NMR Spectra of 4-chloro-2-(3-methoxyphenyl)benzo[d]thiazole (**3am**)



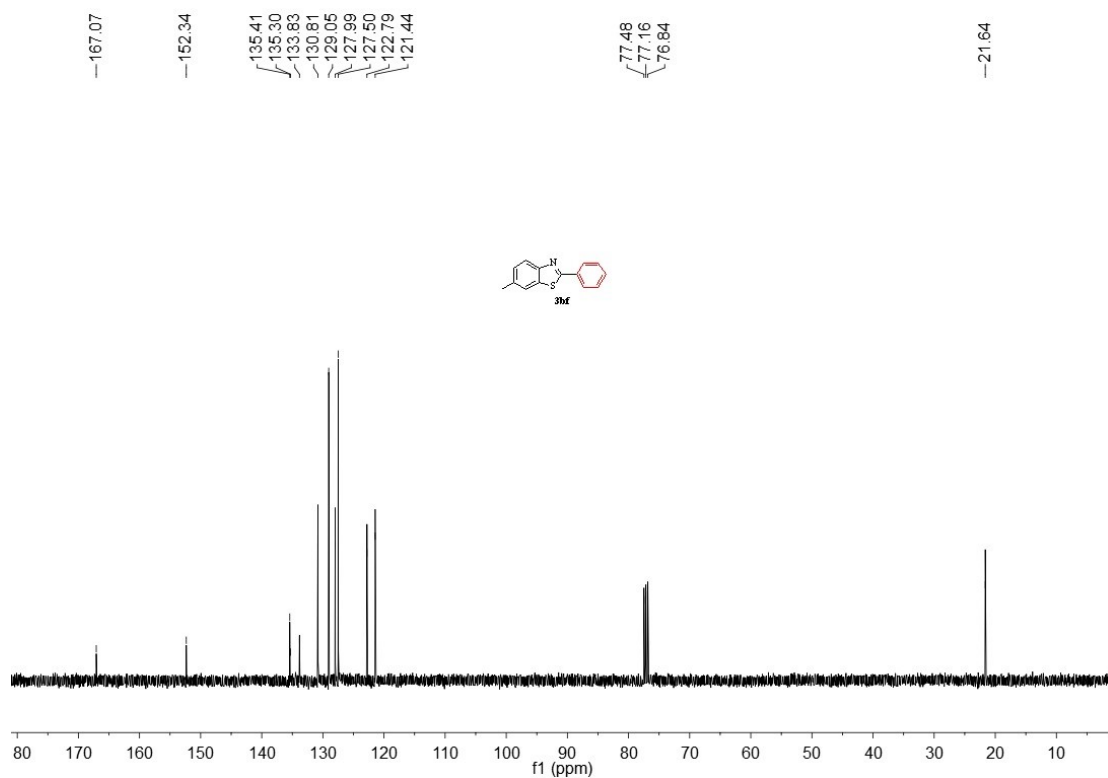
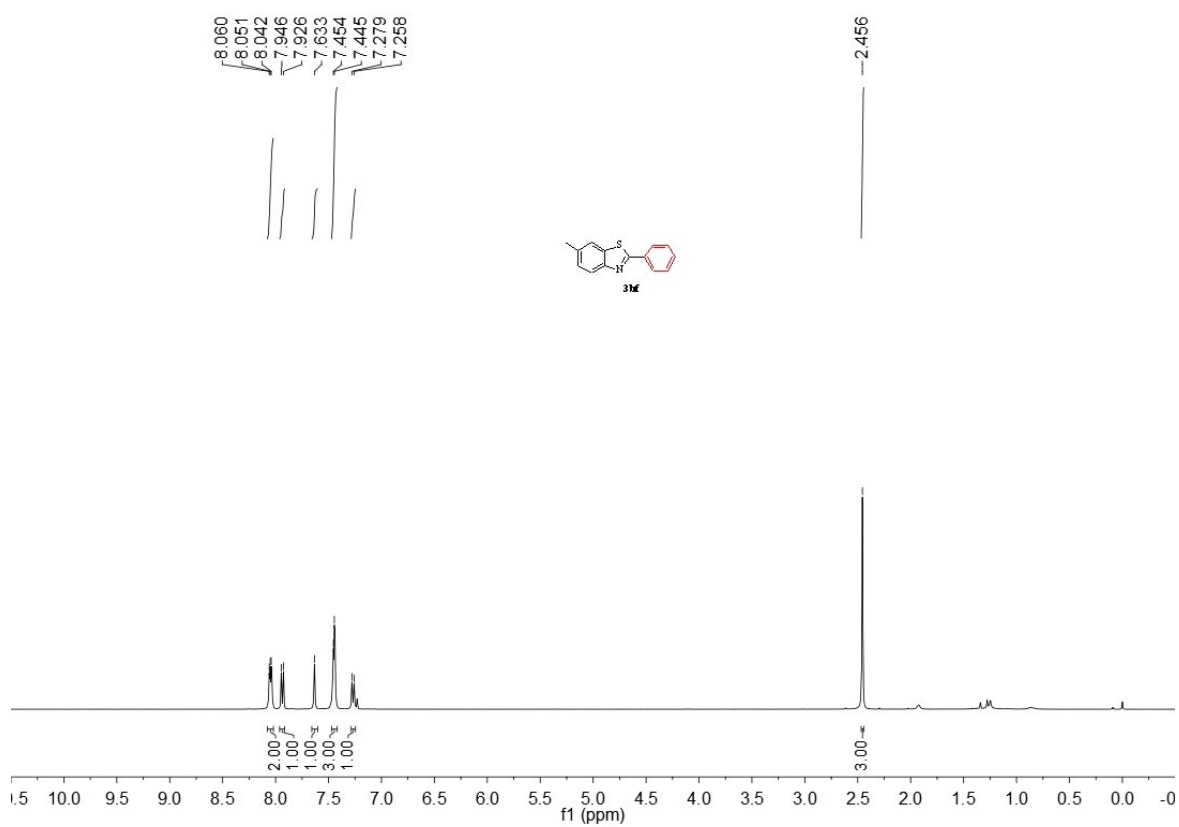
^1H and ^{13}C NMR Spectra of 2-phenylbenzo[*d*]thiazole (**3bb**)



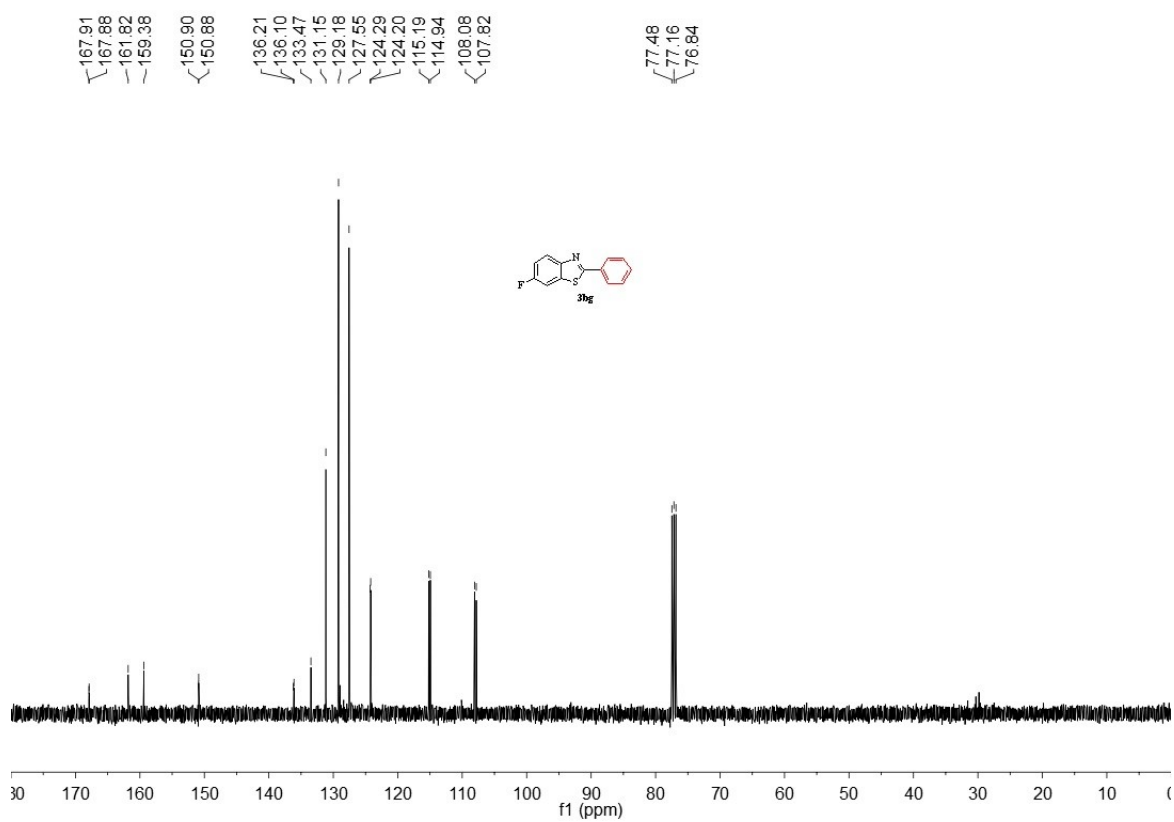
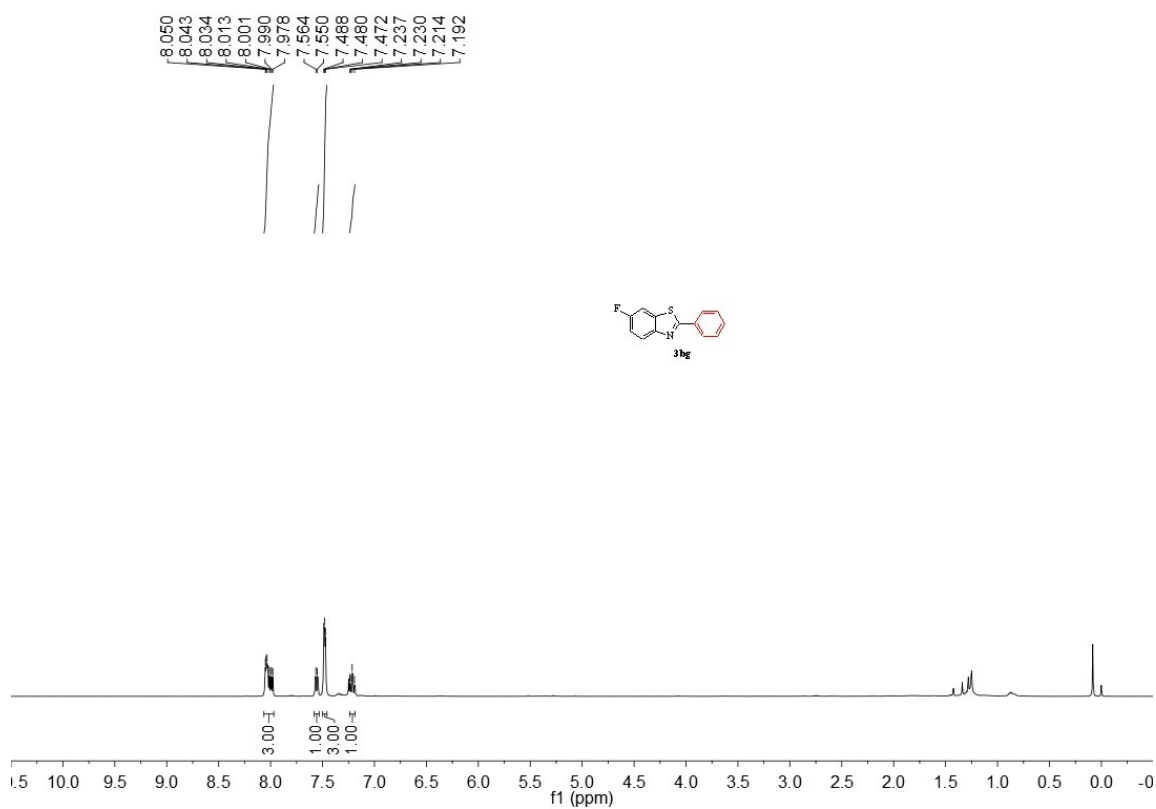
^1H and ^{13}C NMR Spectra of 5-methoxy-2-phenylbenzo[d]thiazole (**3be**)



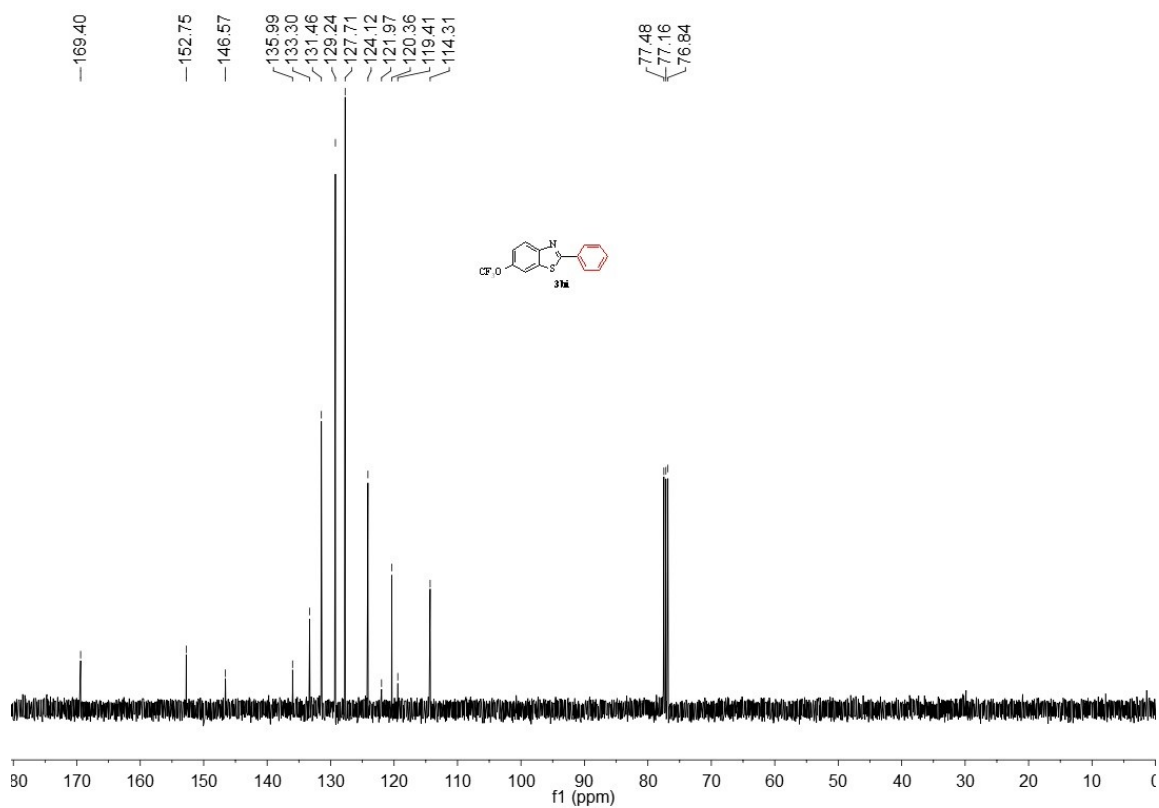
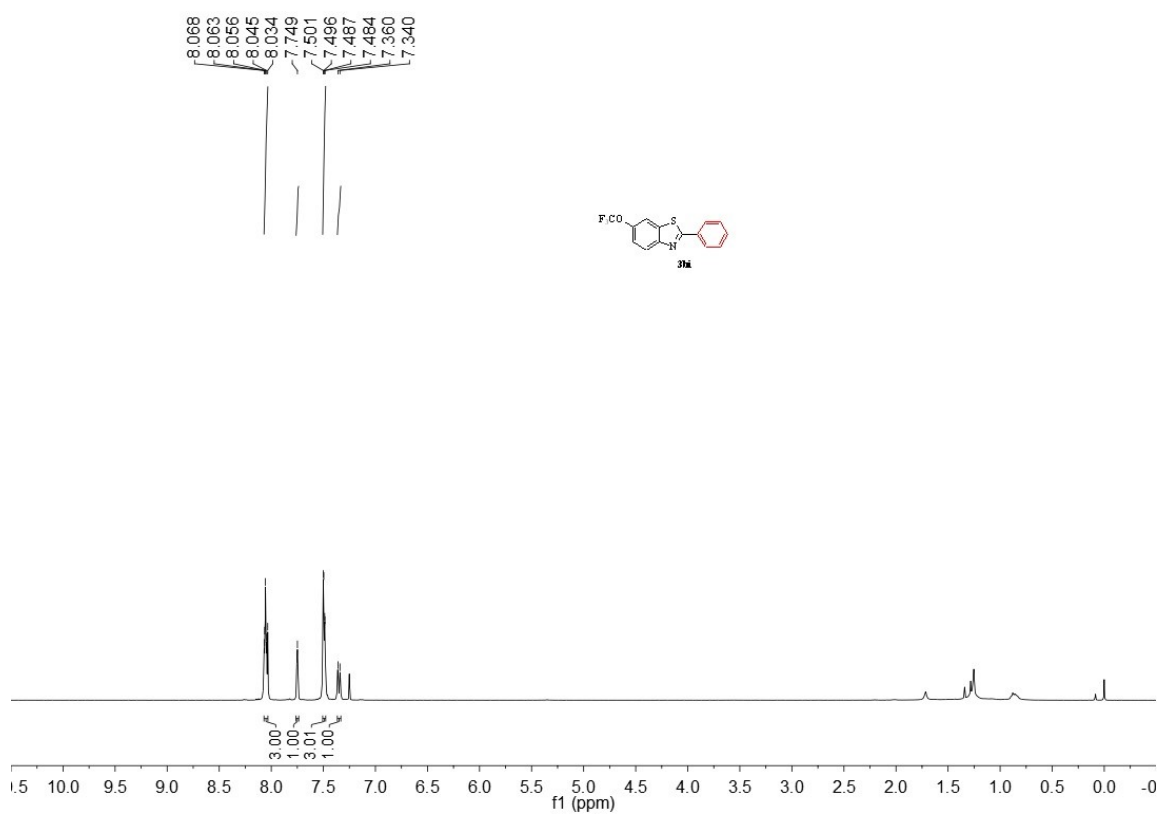
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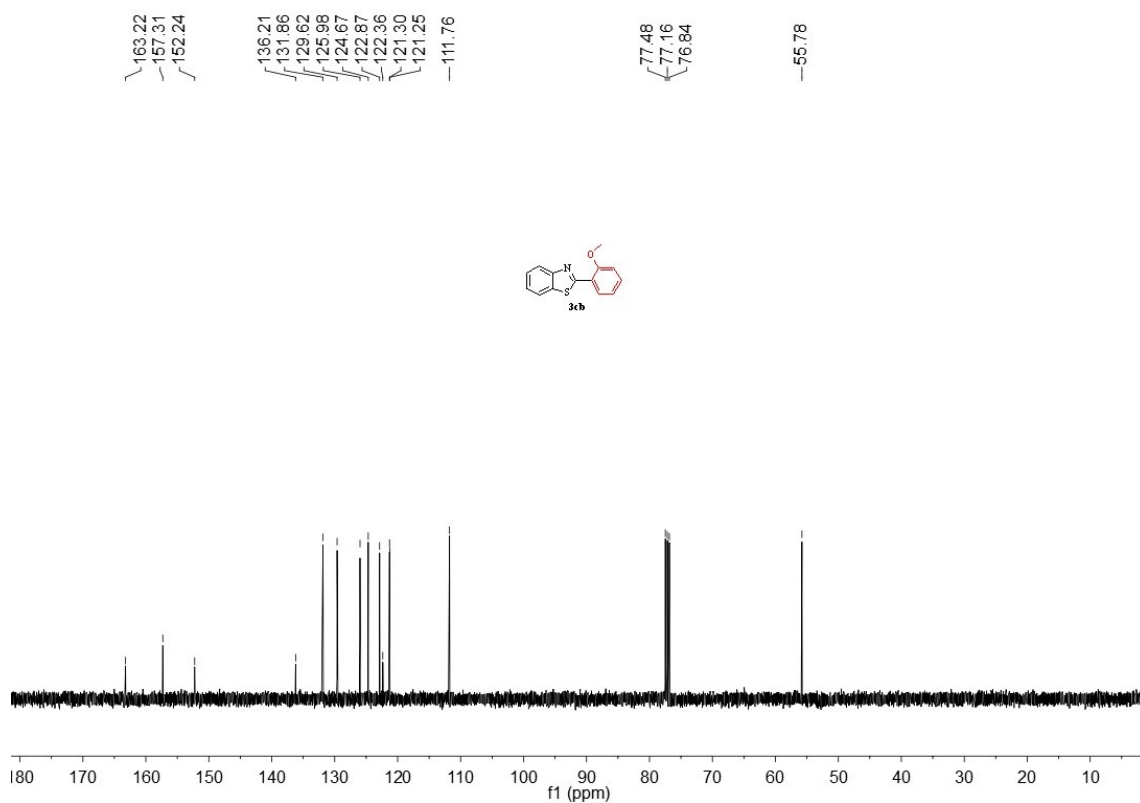
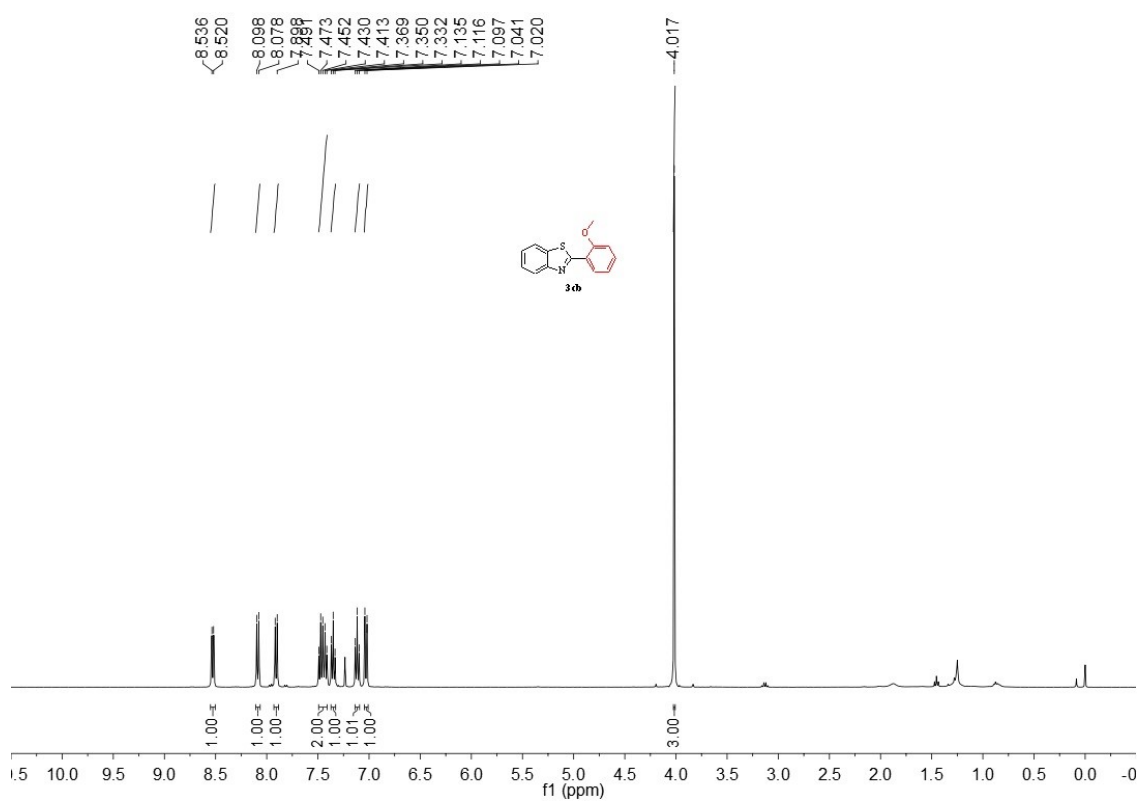
^1H and ^{13}C NMR Spectra of 6-fluoro-2-phenylbenzo[d]thiazole (**3bg**)



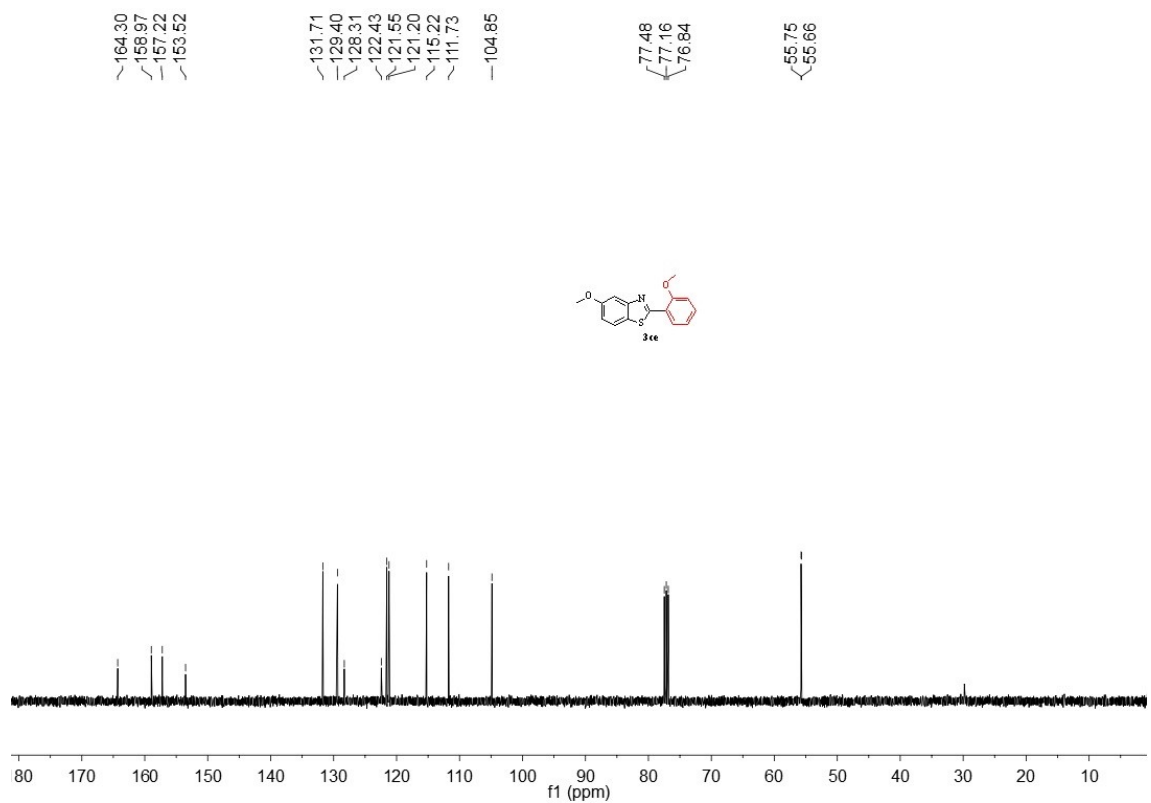
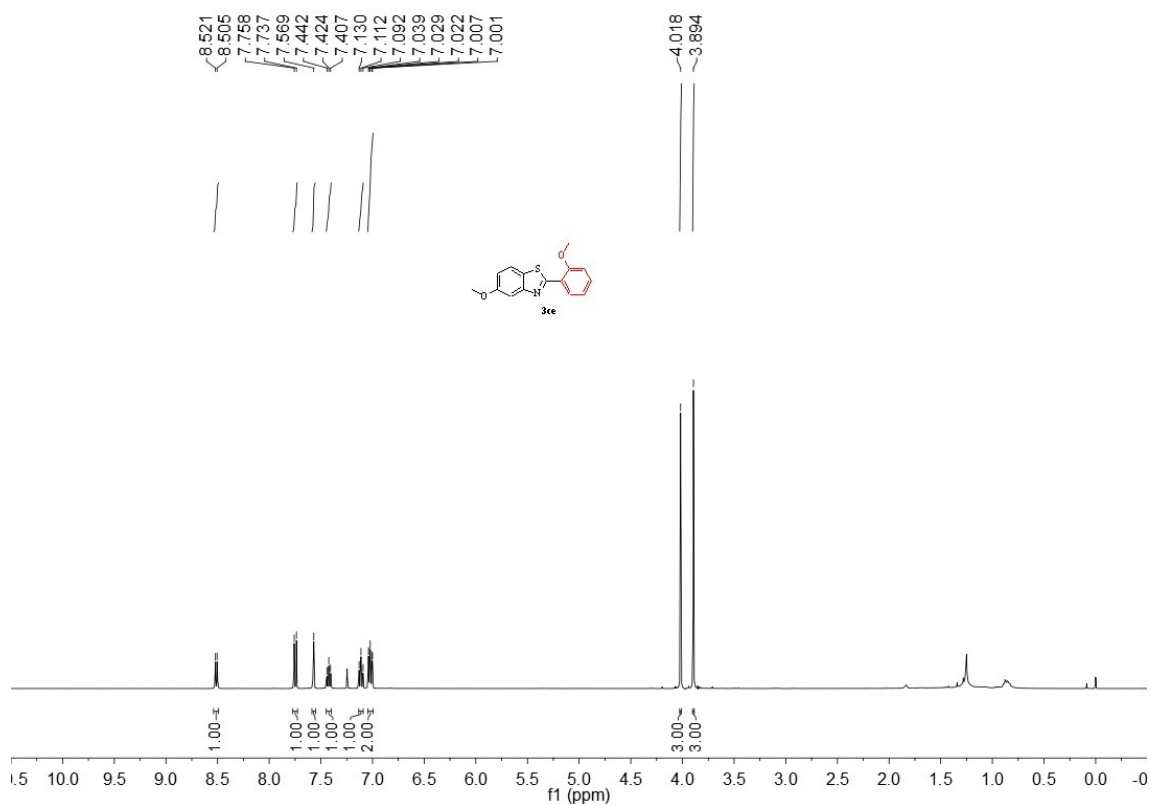
^1H and ^{13}C NMR Spectra of 2-phenyl-6-(trifluoromethoxy)benzo[*d*]thiazole (**3bi**)



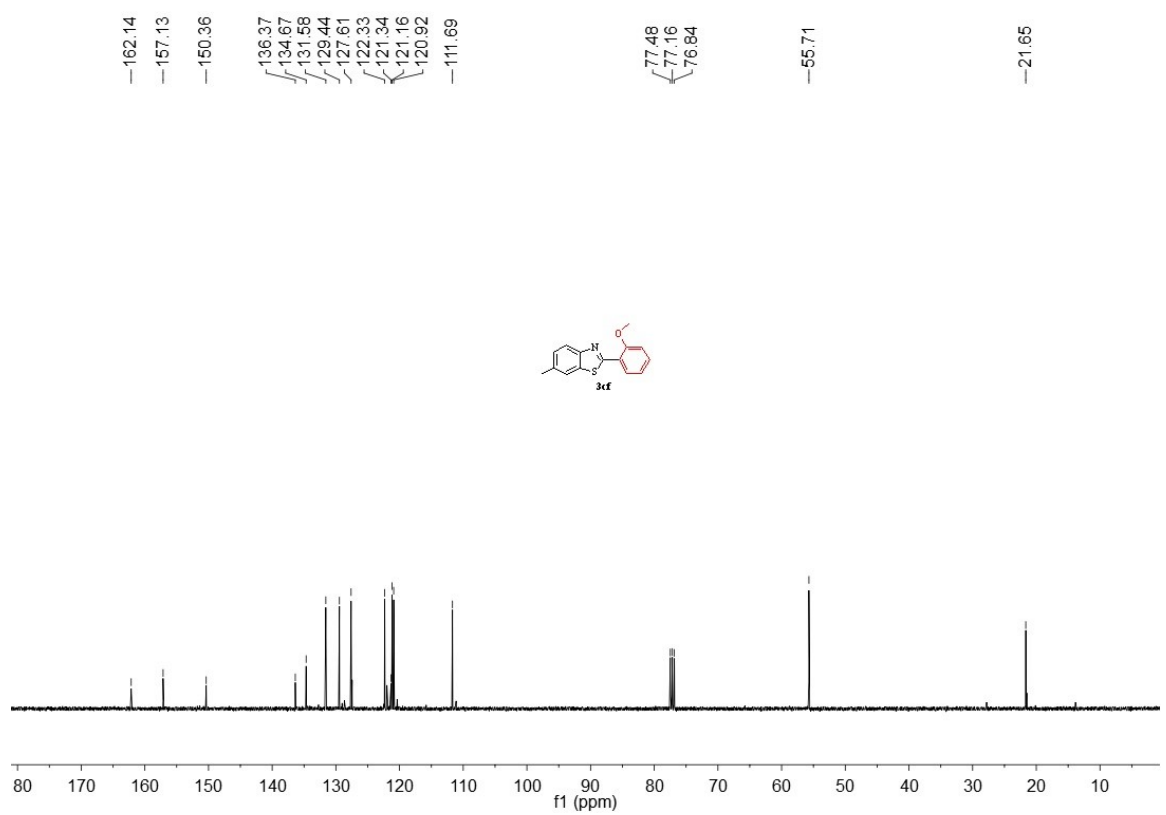
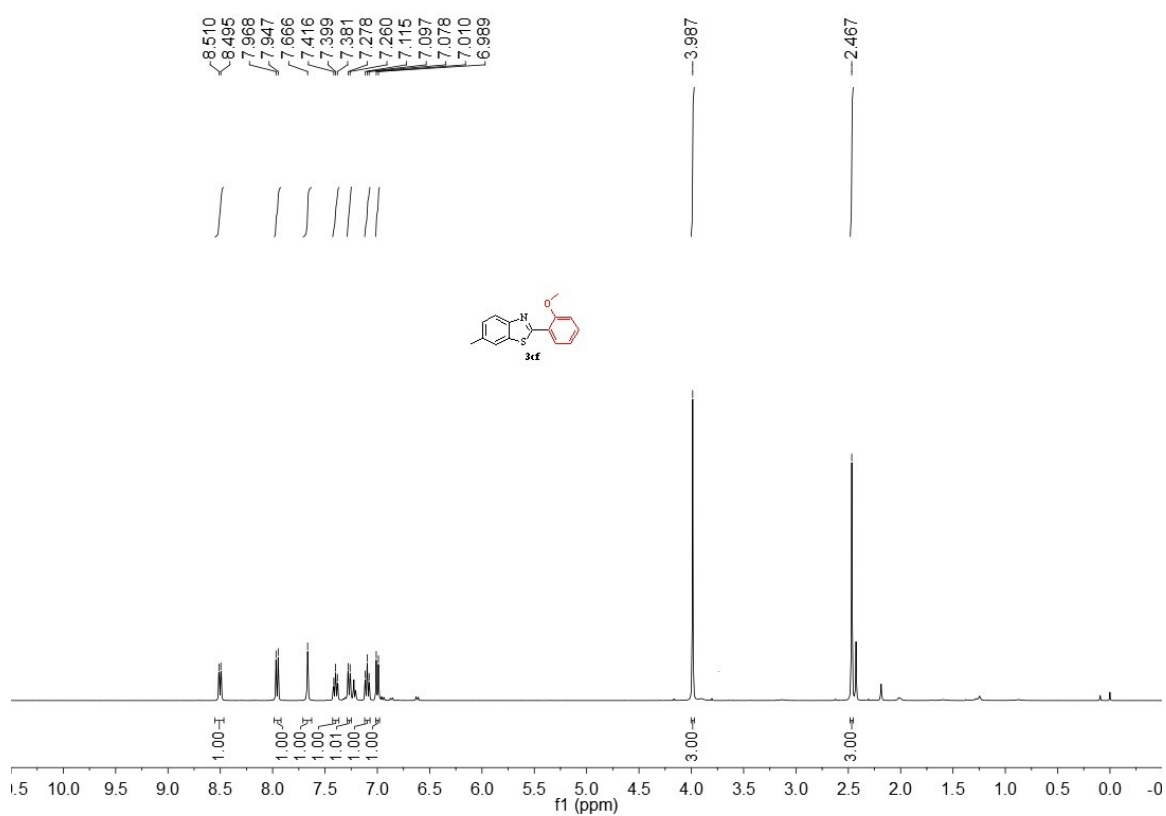
¹H and ¹³C NMR Spectra of 2-(2-methoxyphenyl)benzo[d]thiazole (**3cb**)



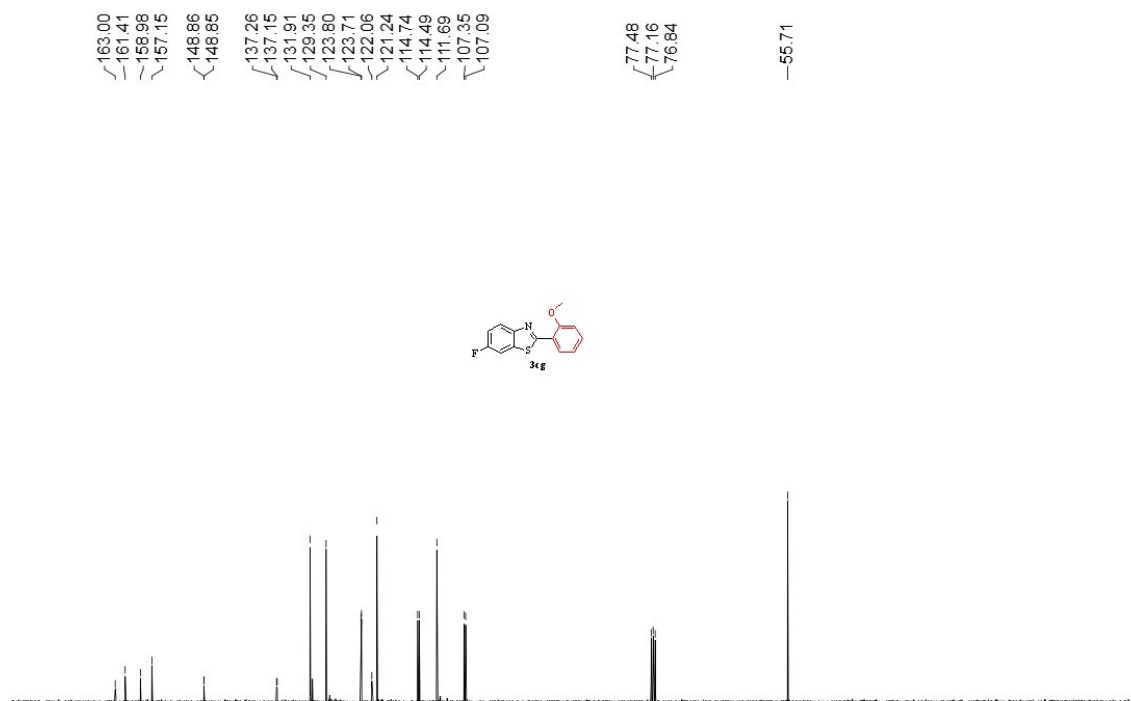
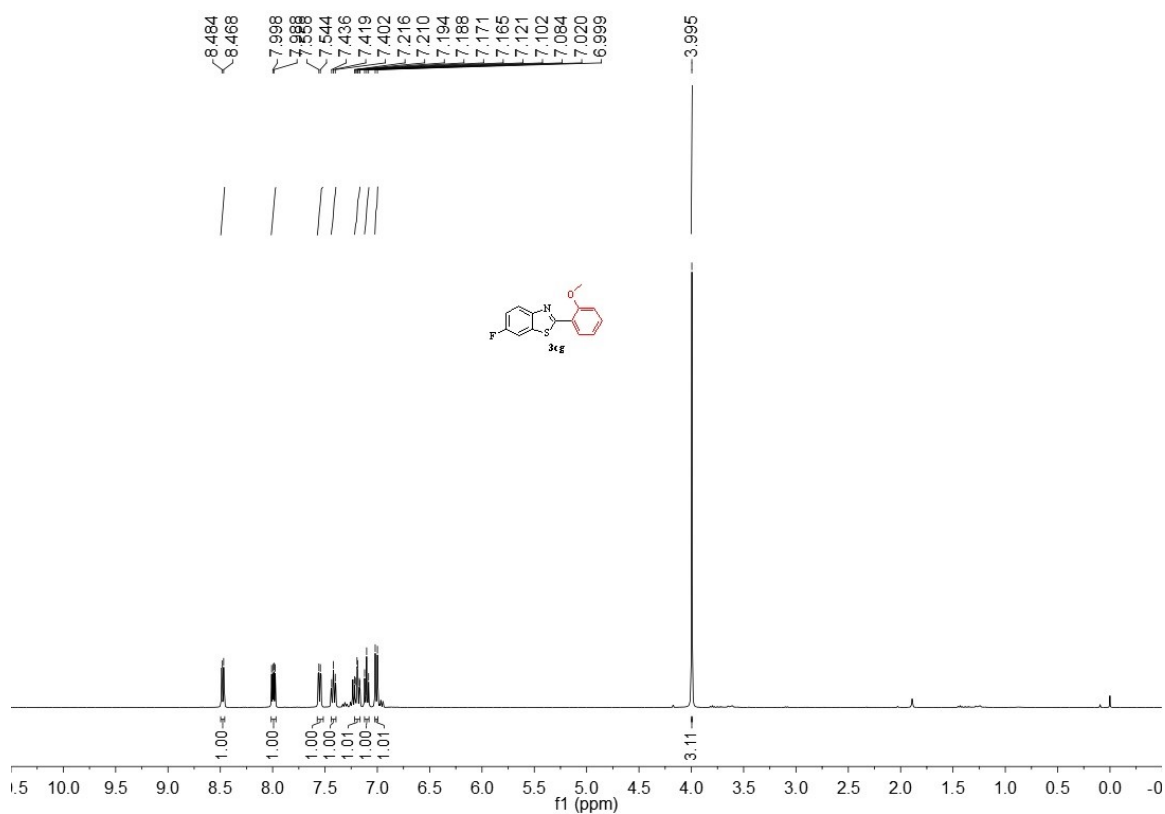
^1H and ^{13}C NMR Spectra of 5-methoxy-2-(2-methoxyphenyl)benzo[d]thiazole (**3ce**)



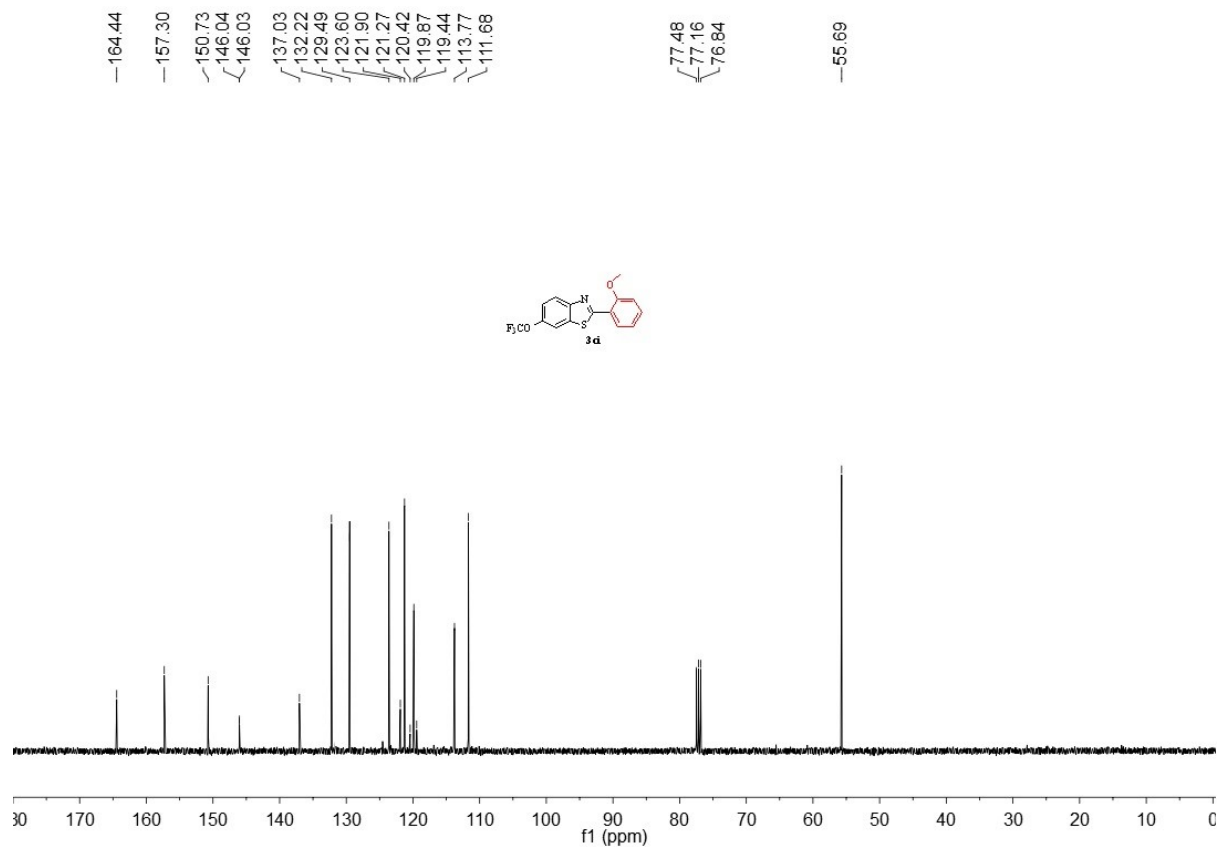
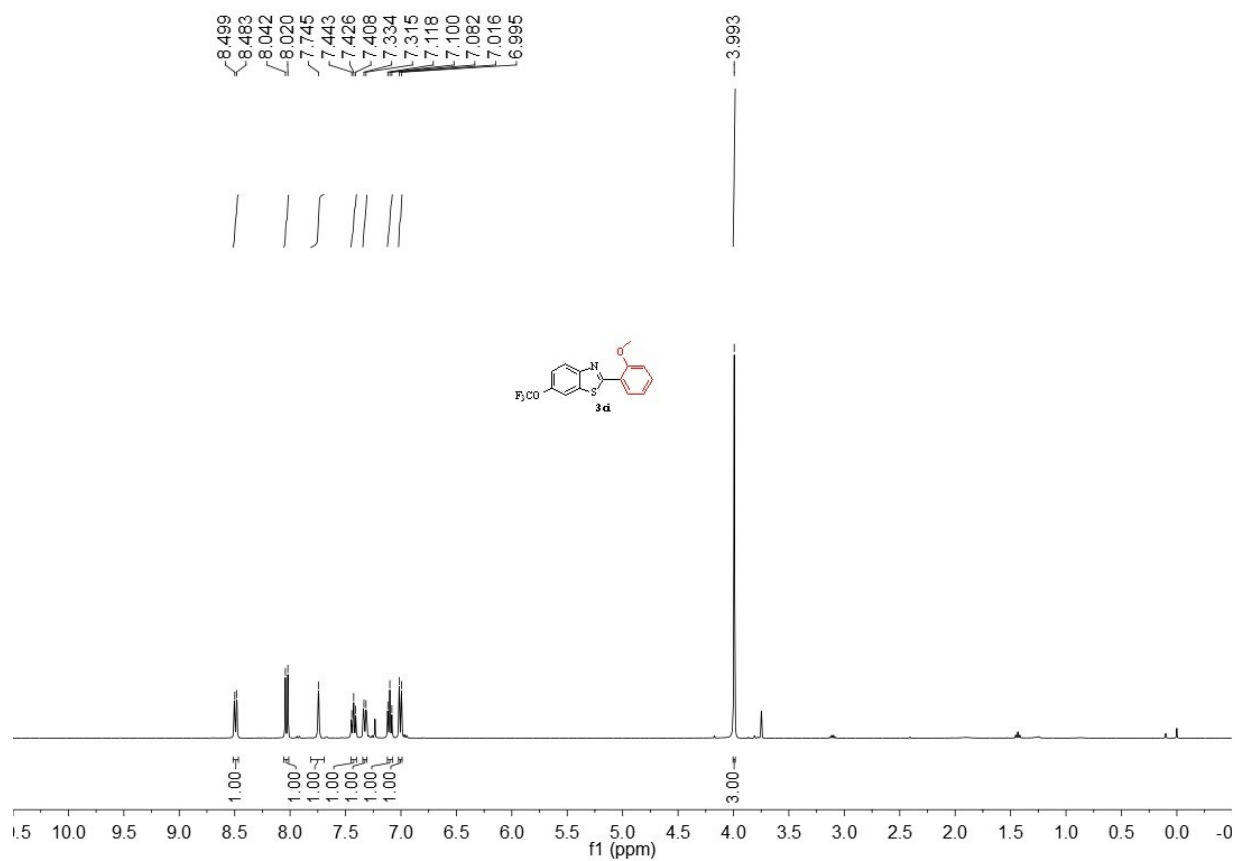
¹H and ¹³C NMR Spectra of 2-(2-methoxyphenyl)-6-methylbenzo[d]thiazole(**3cf**)



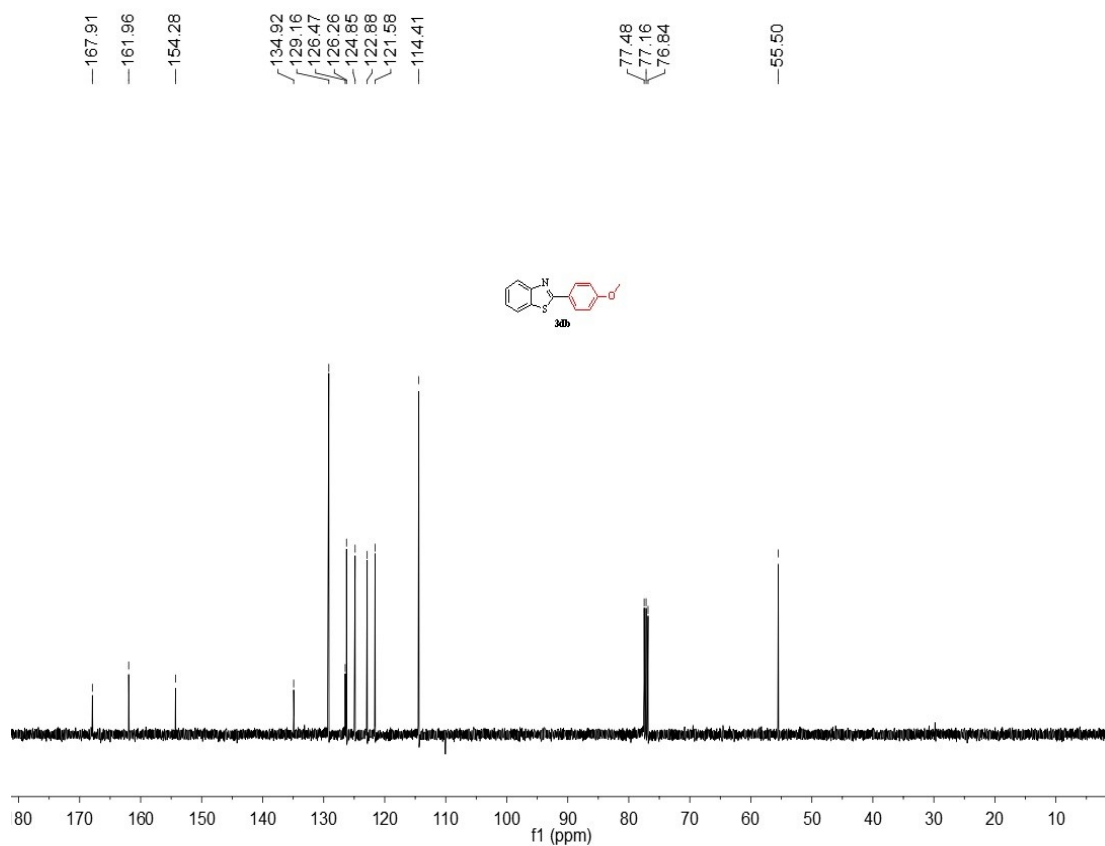
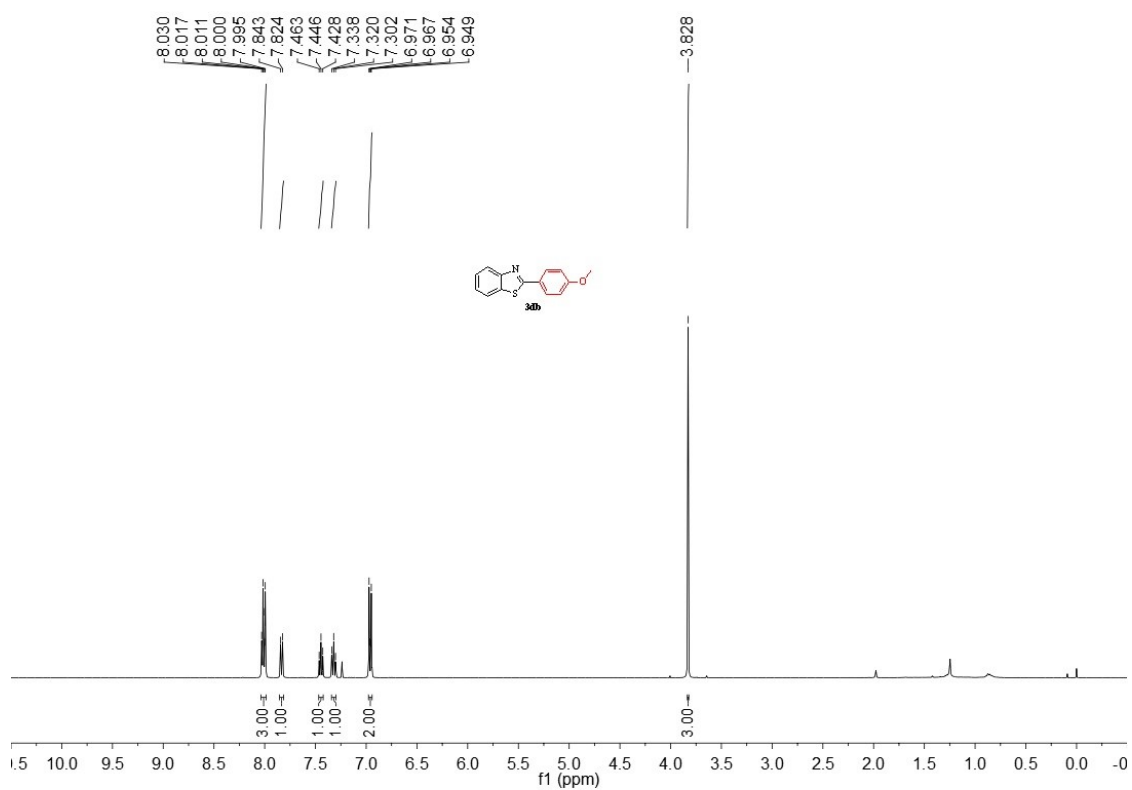
¹H and ¹³C NMR Spectra of 6-fluoro-2-(2-methoxyphenyl)benzo[d]thiazole (**3cg**)



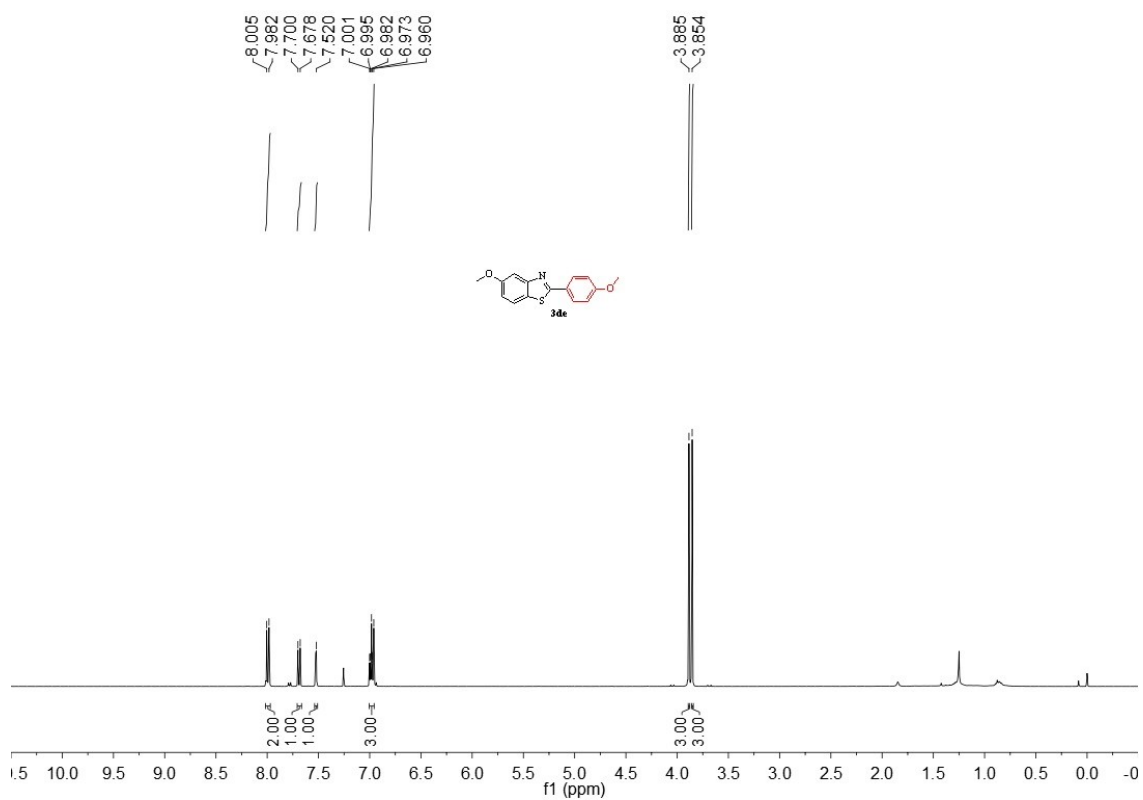
¹H and ¹³C NMR Spectra of 2-(2-methoxyphenyl)-6-(trifluoromethoxy) benzo[d]thiazole (**3ci**)

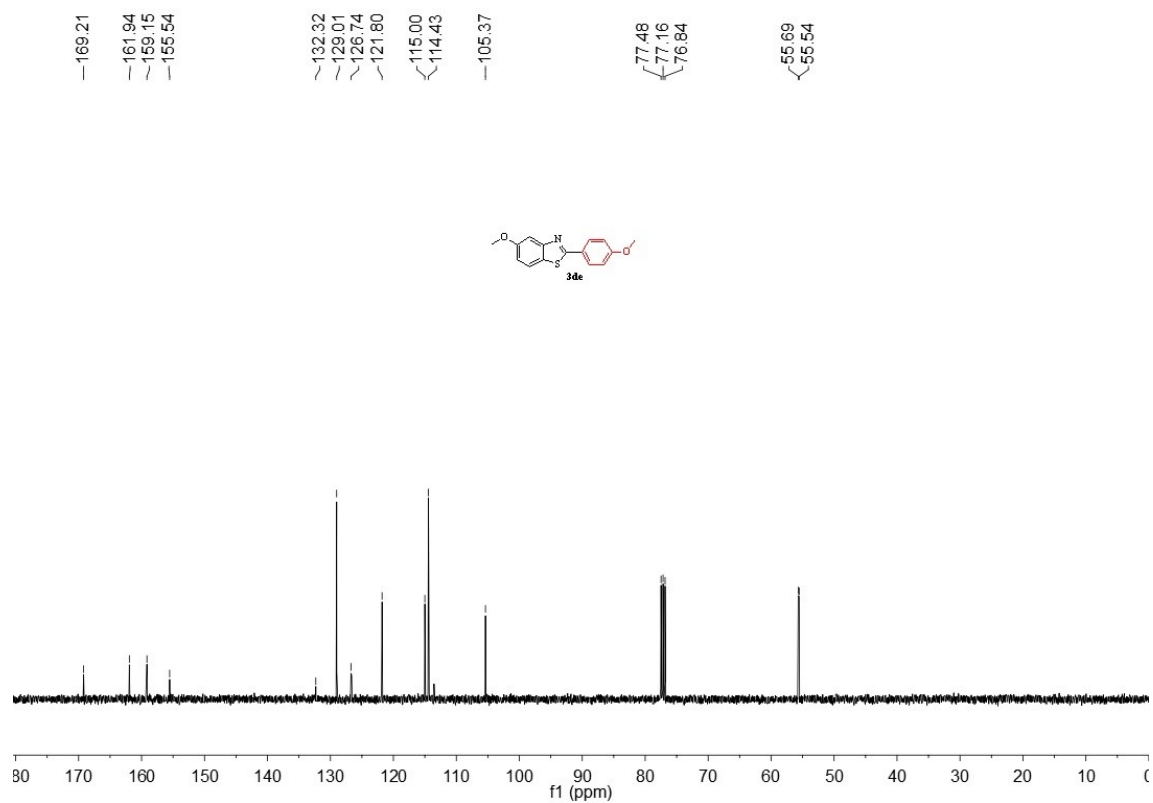


^1H and ^{13}C NMR Spectra of 2-(4-methoxyphenyl)benzo[d]thiazole (**3db**)

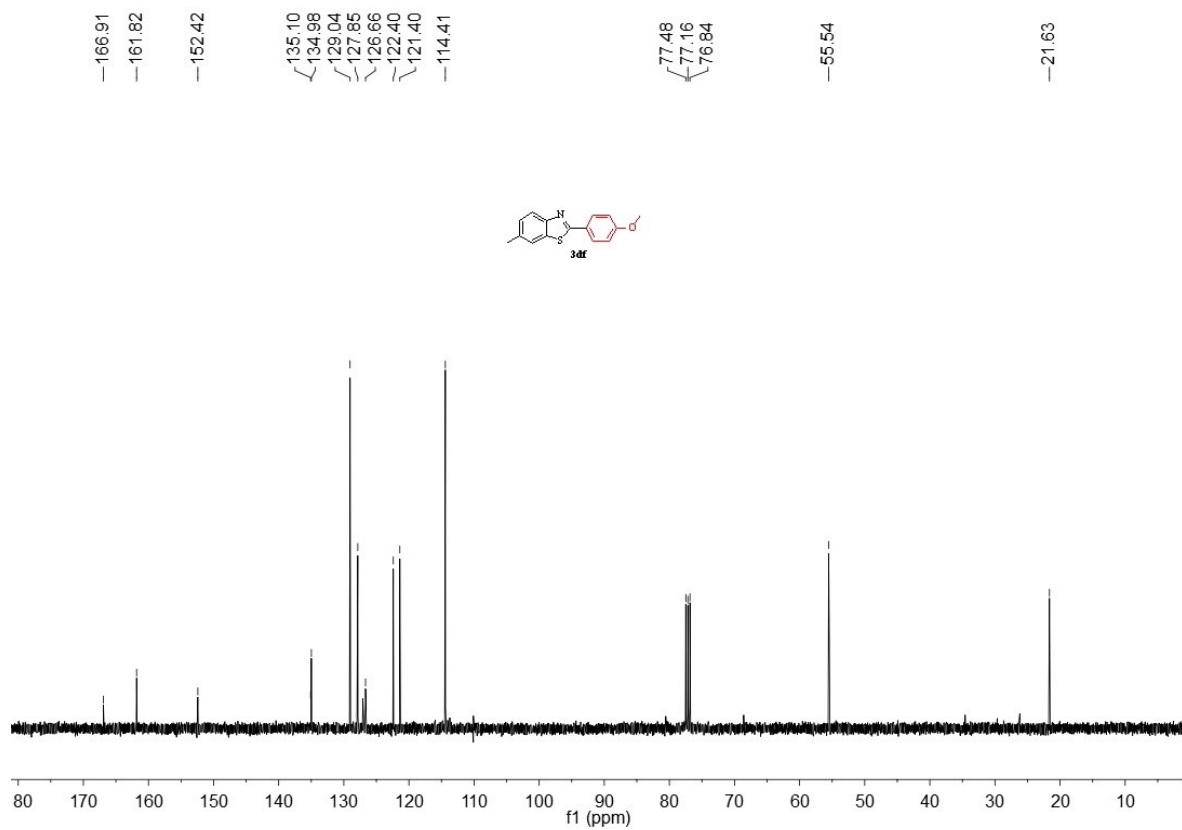
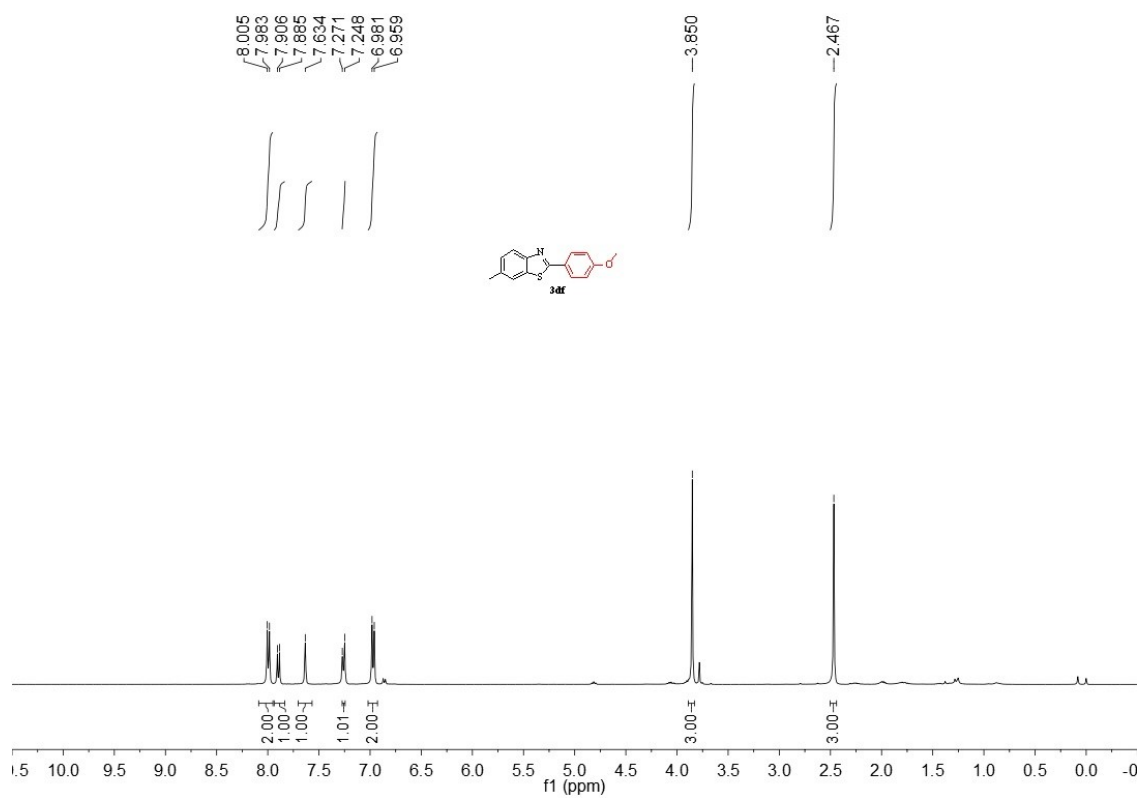


^1H and ^{13}C NMR Spectra of 5-methoxy-2-(4-methoxyphenyl)benzo[*d*]thiazole (**3de**)

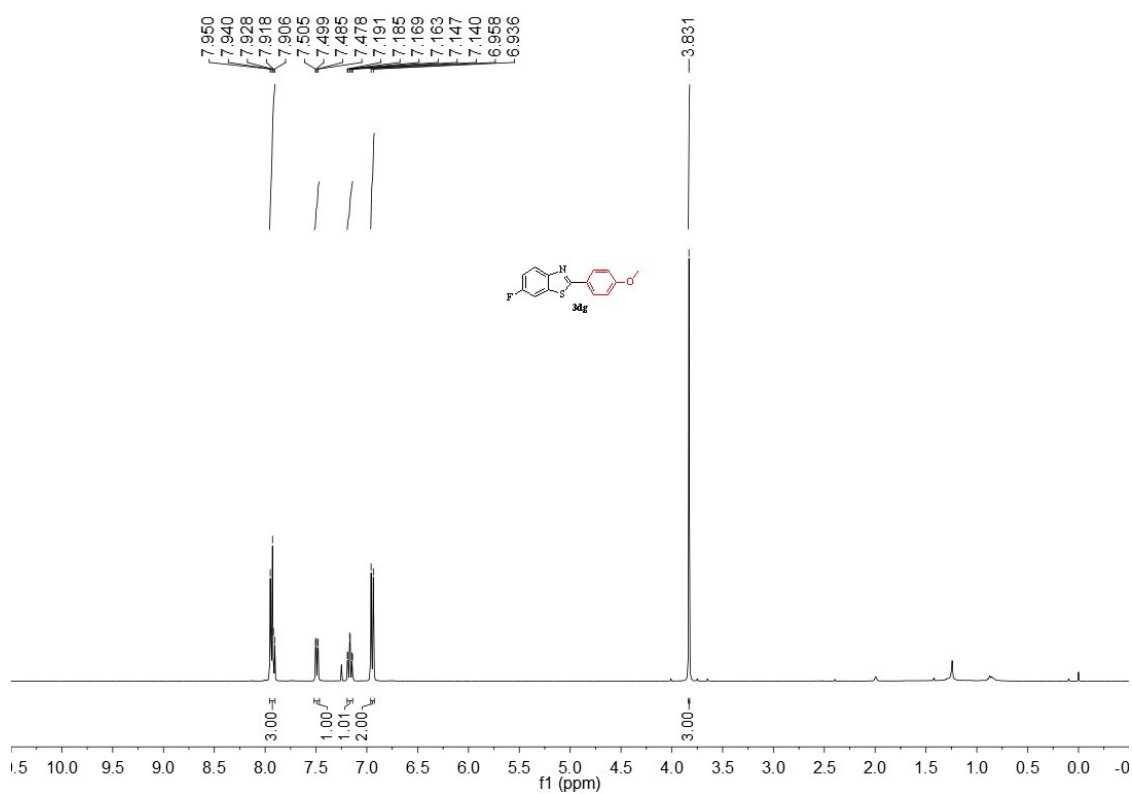


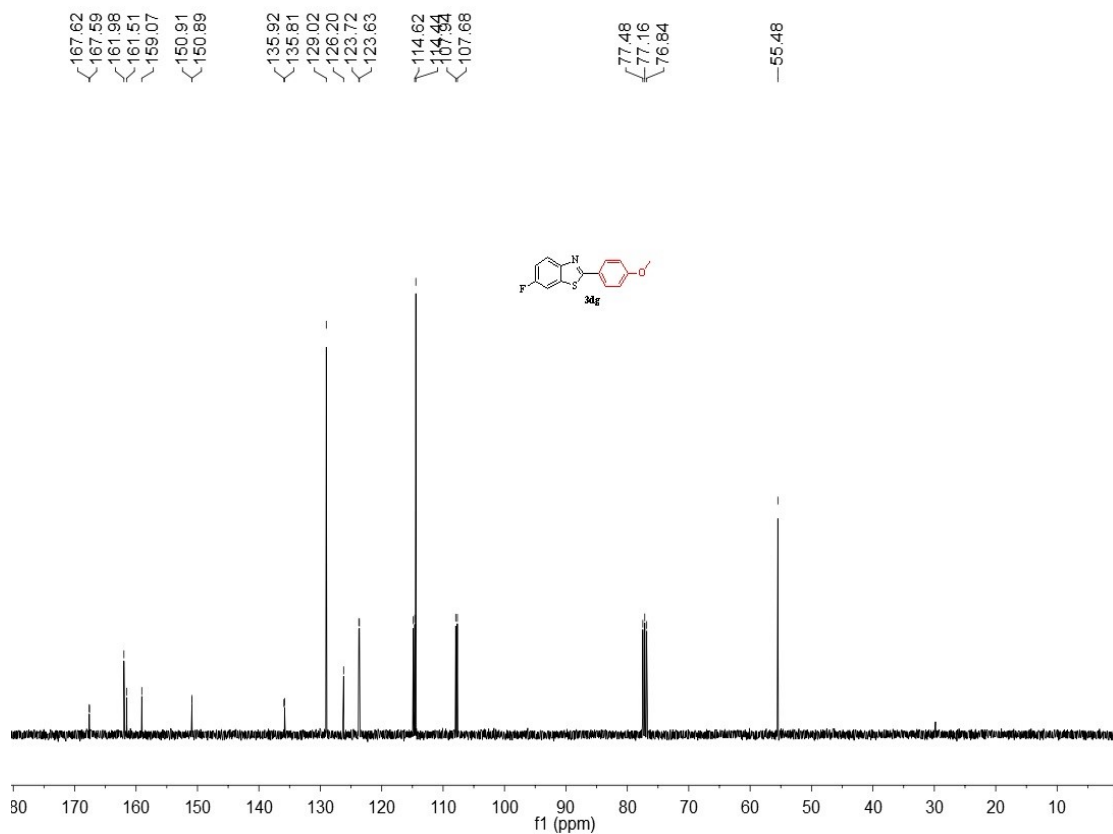


¹H and ¹³C NMR Spectra of 2-(4-methoxyphenyl)-6-methylbenzo[d]thiazole (**3df**)

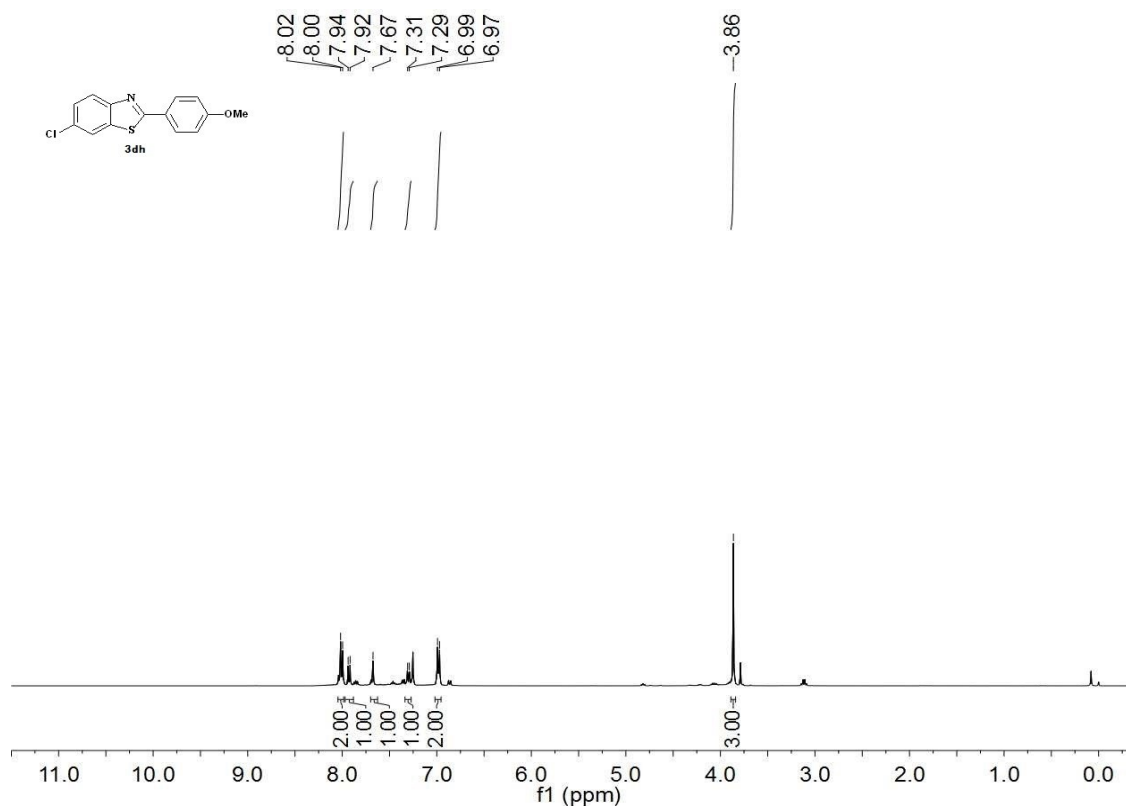


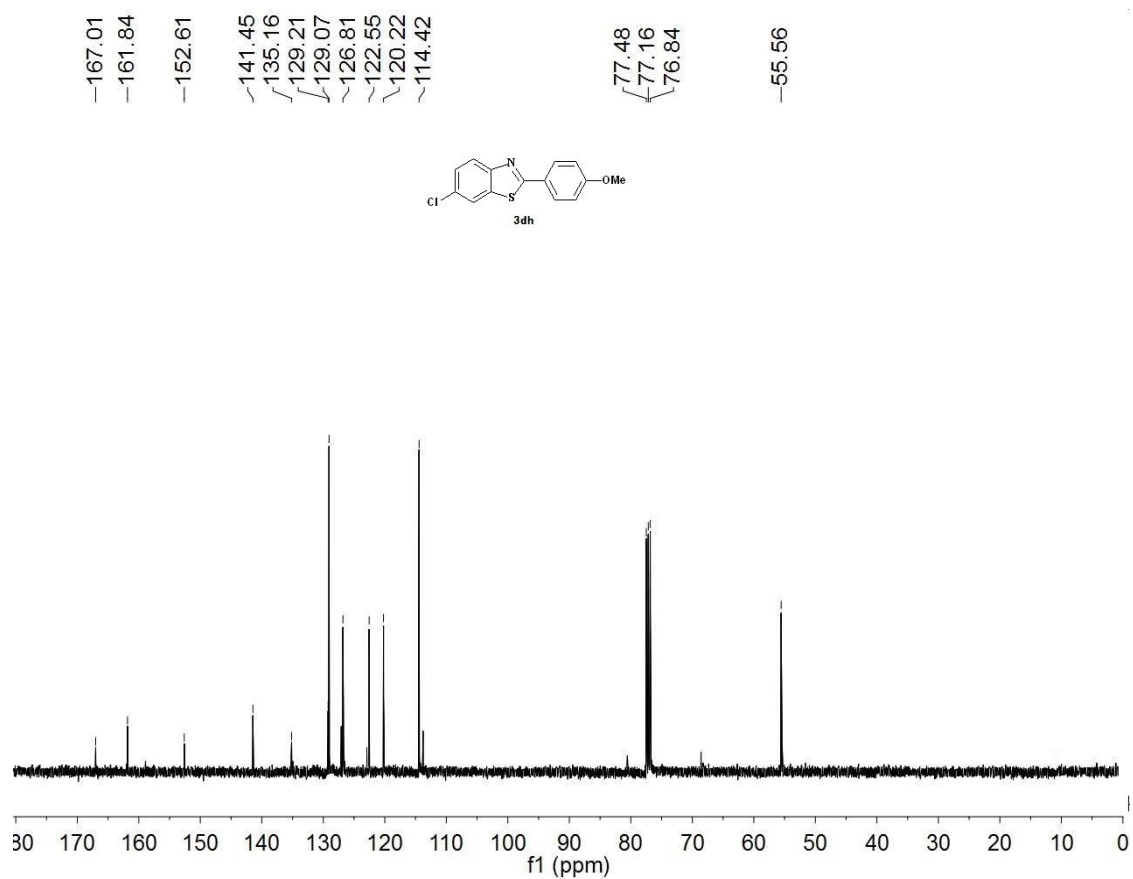
^1H and ^{13}C NMR Spectra of 6-fluoro-2-(4-methoxyphenyl) benzo[d]thiazole (**3dg**)



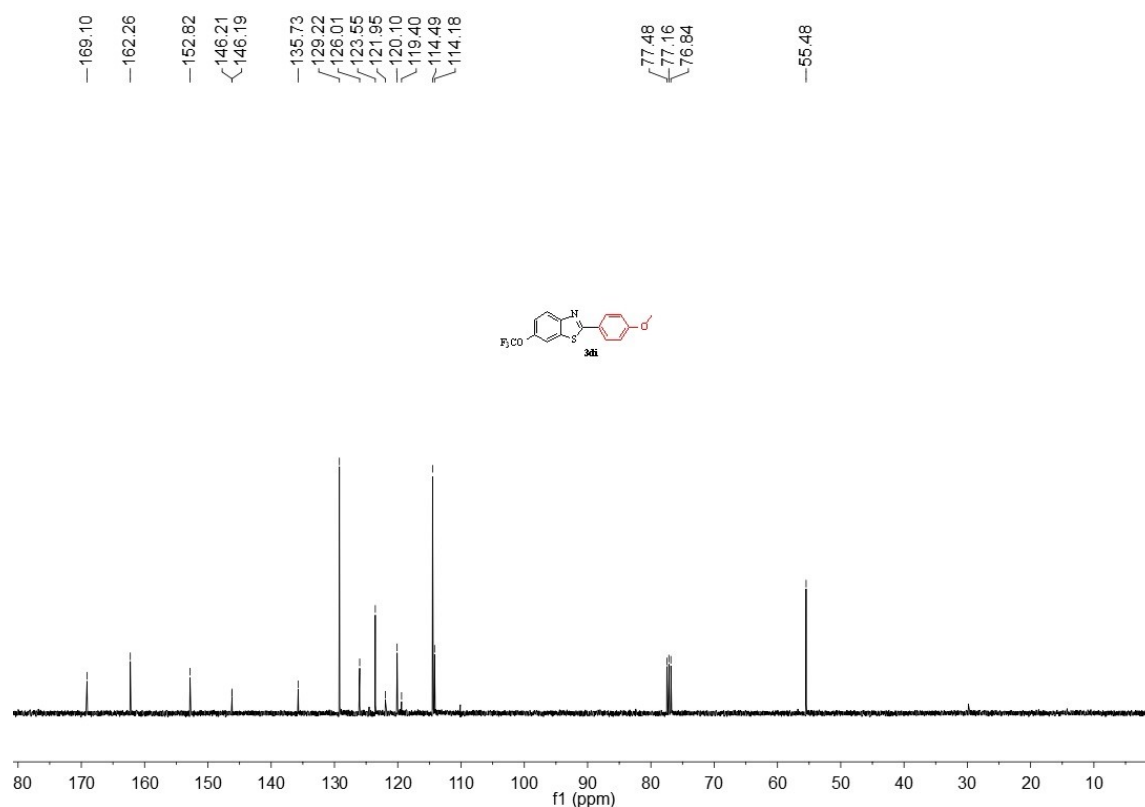
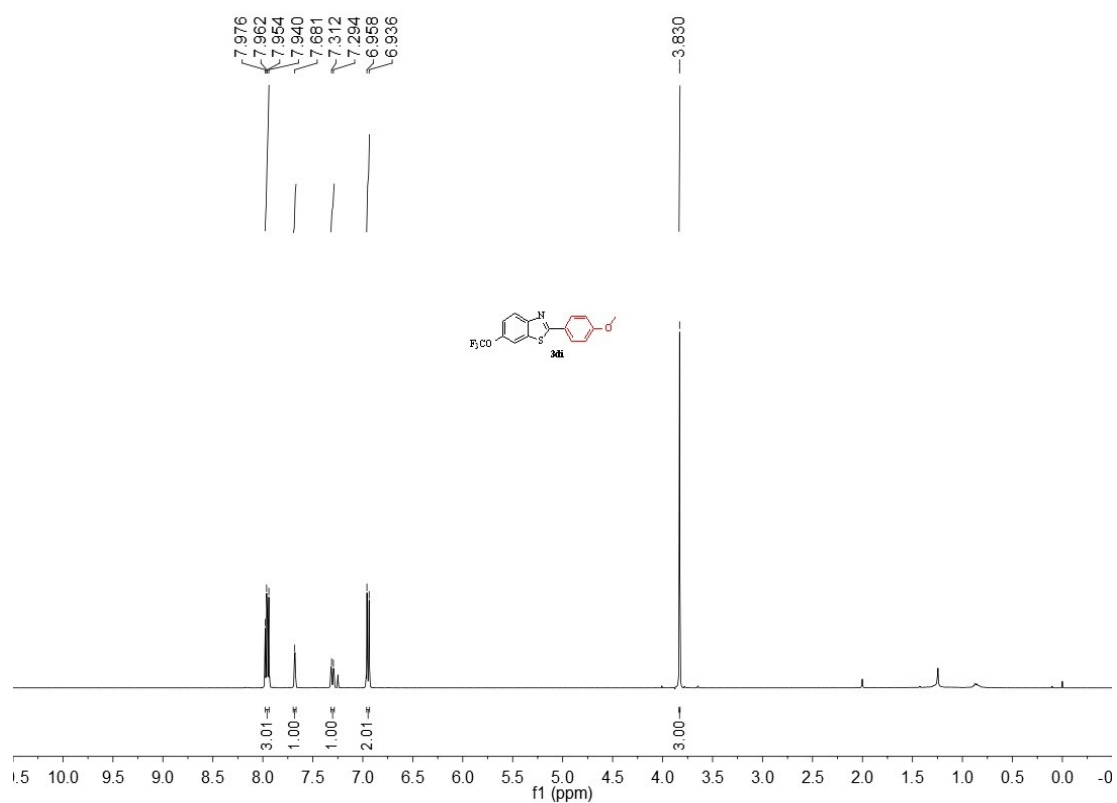


¹H and ¹³C NMR Spectra of 6-chloro-2-(4-methoxyphenyl)benzo[d]thiazole (**3dh**)

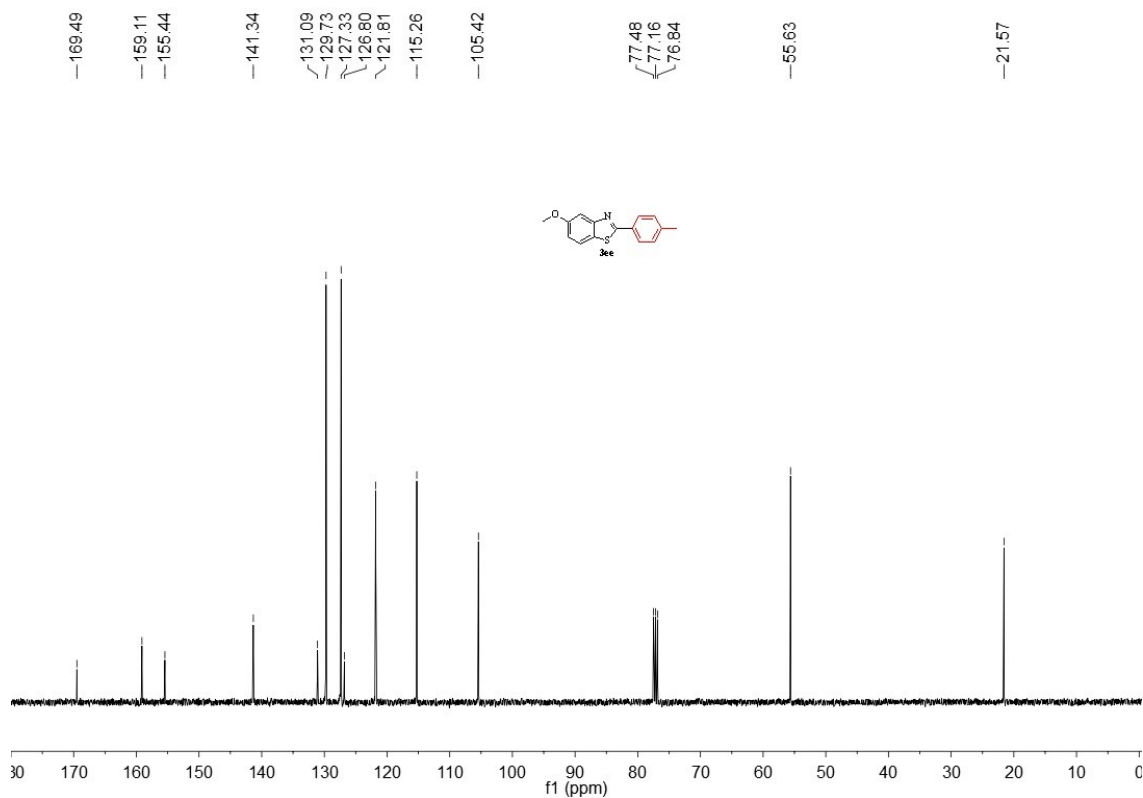
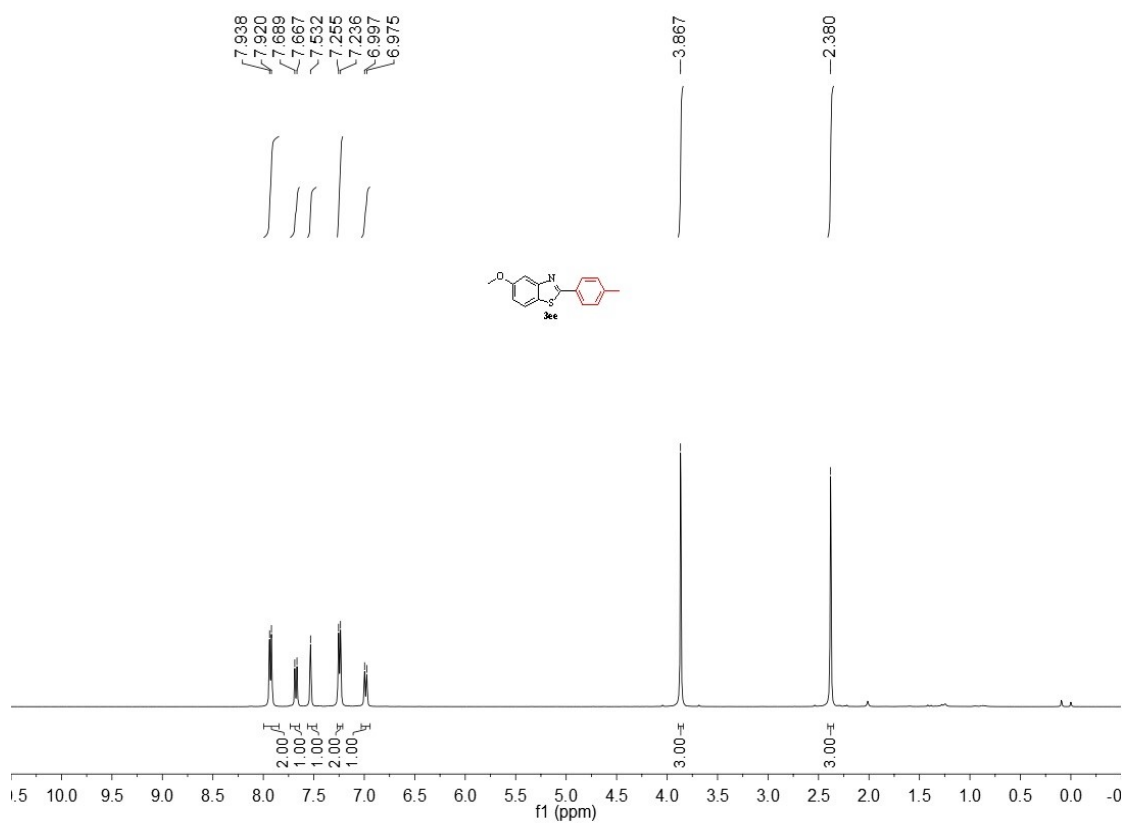




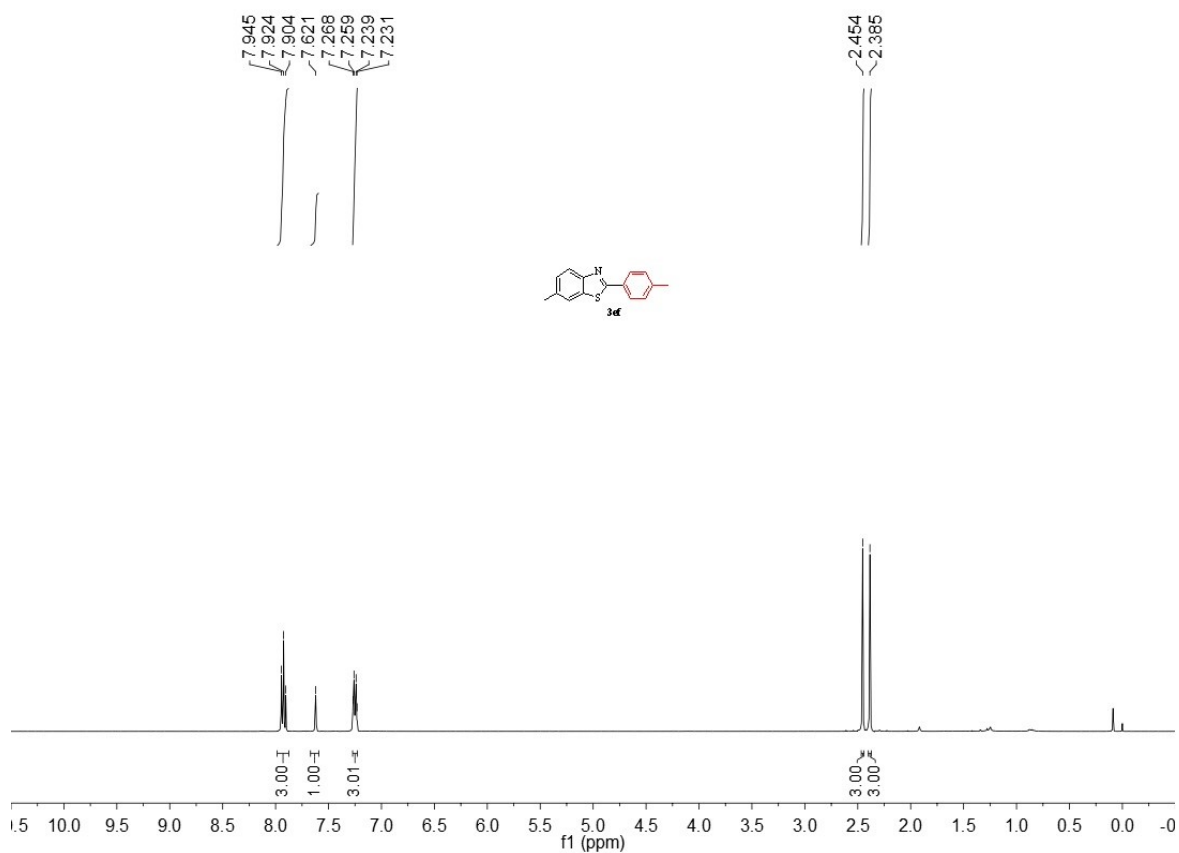
¹H and ¹³C NMR Spectra of 2-(4-methoxyphenyl)-6-(trifluoromethoxy)benzo[d]thiazole (**3di**)

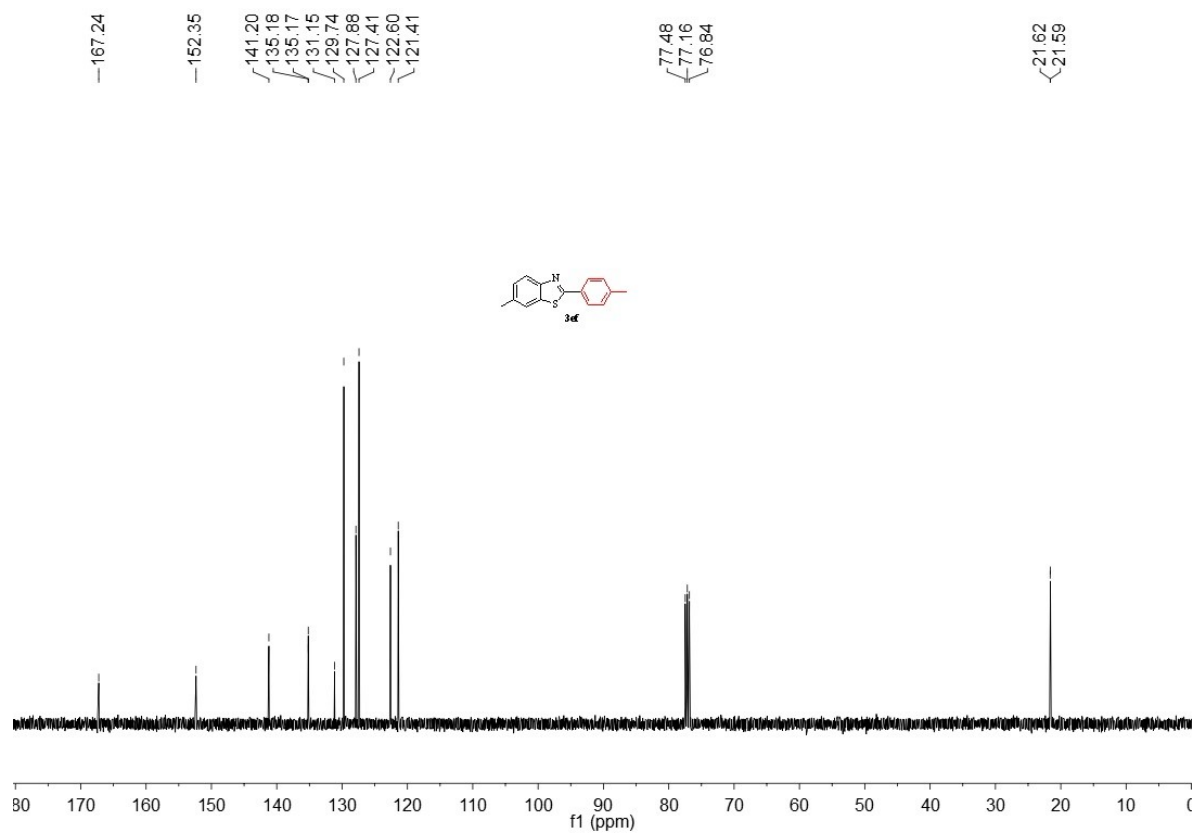


¹H and ¹³C NMR Spectra of 5-methoxy-2-(p-tolyl)benzo[d]thiazole (**3ee**)

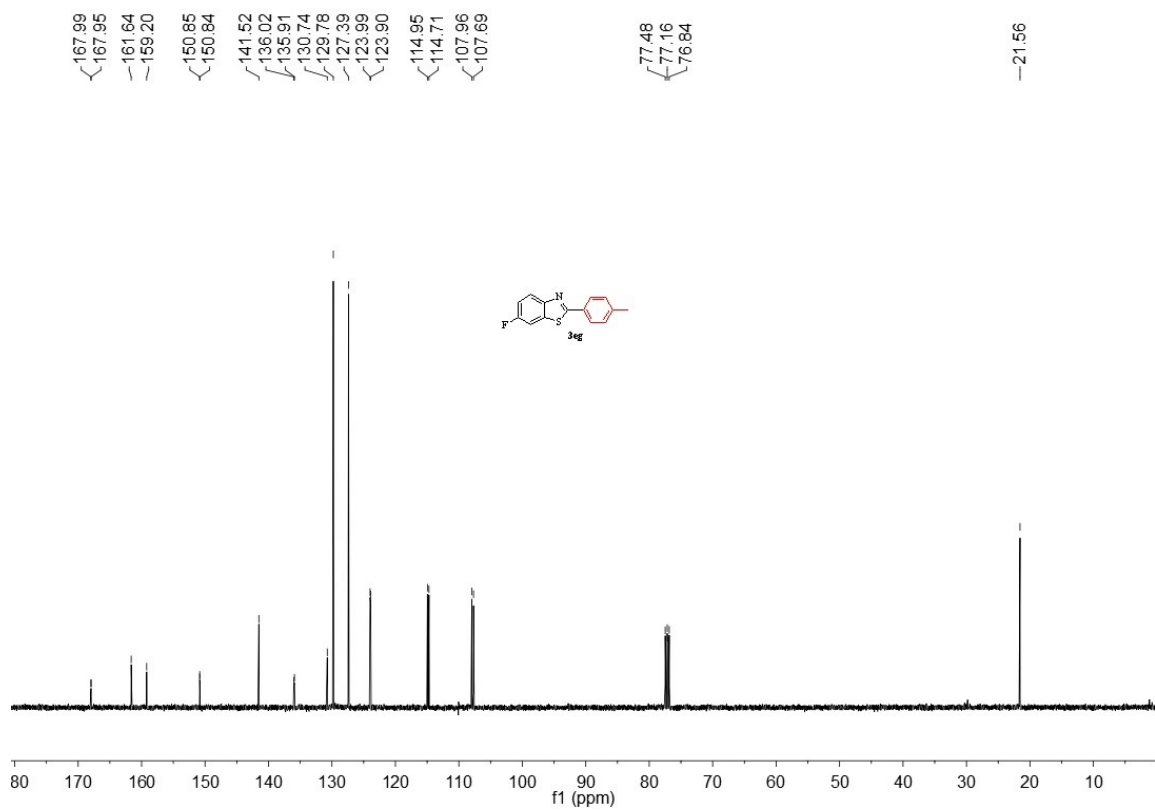
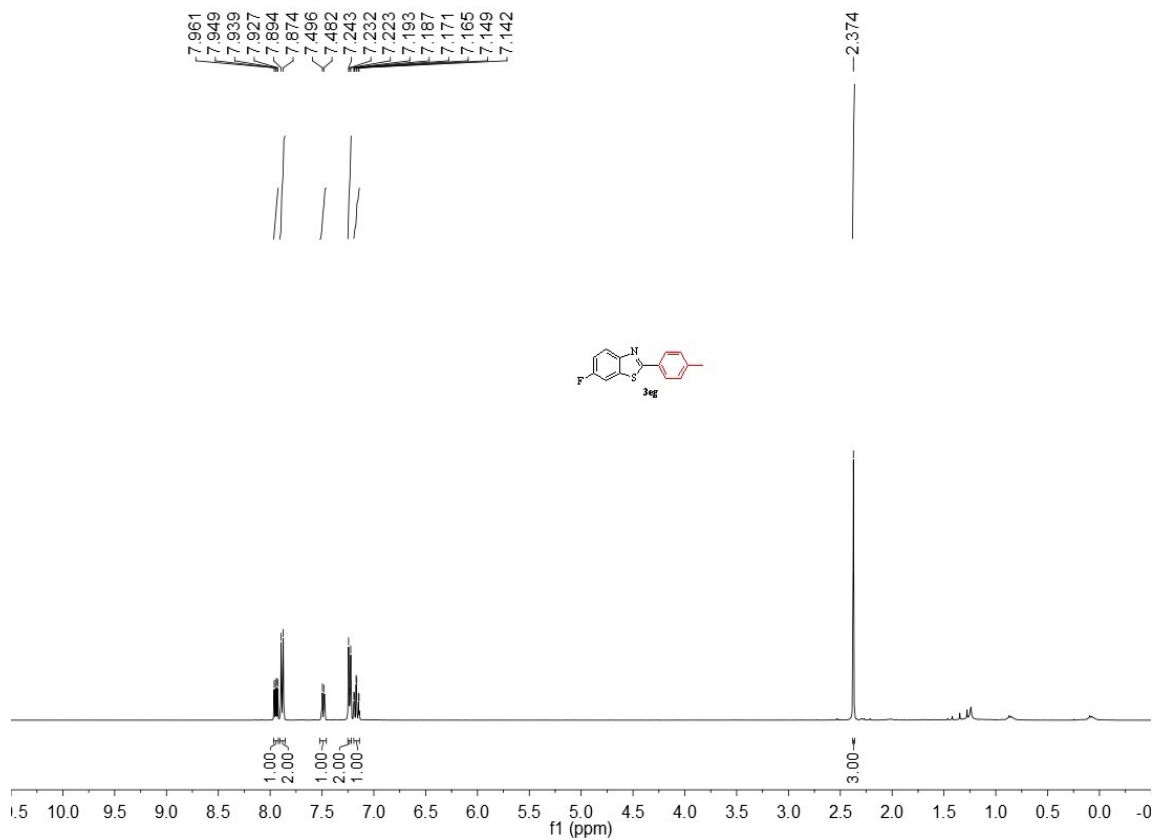


^1H and ^{13}C NMR Spectra of 6-methyl-2-(p-tolyl)benzo[d]thiazole (**3ef**)

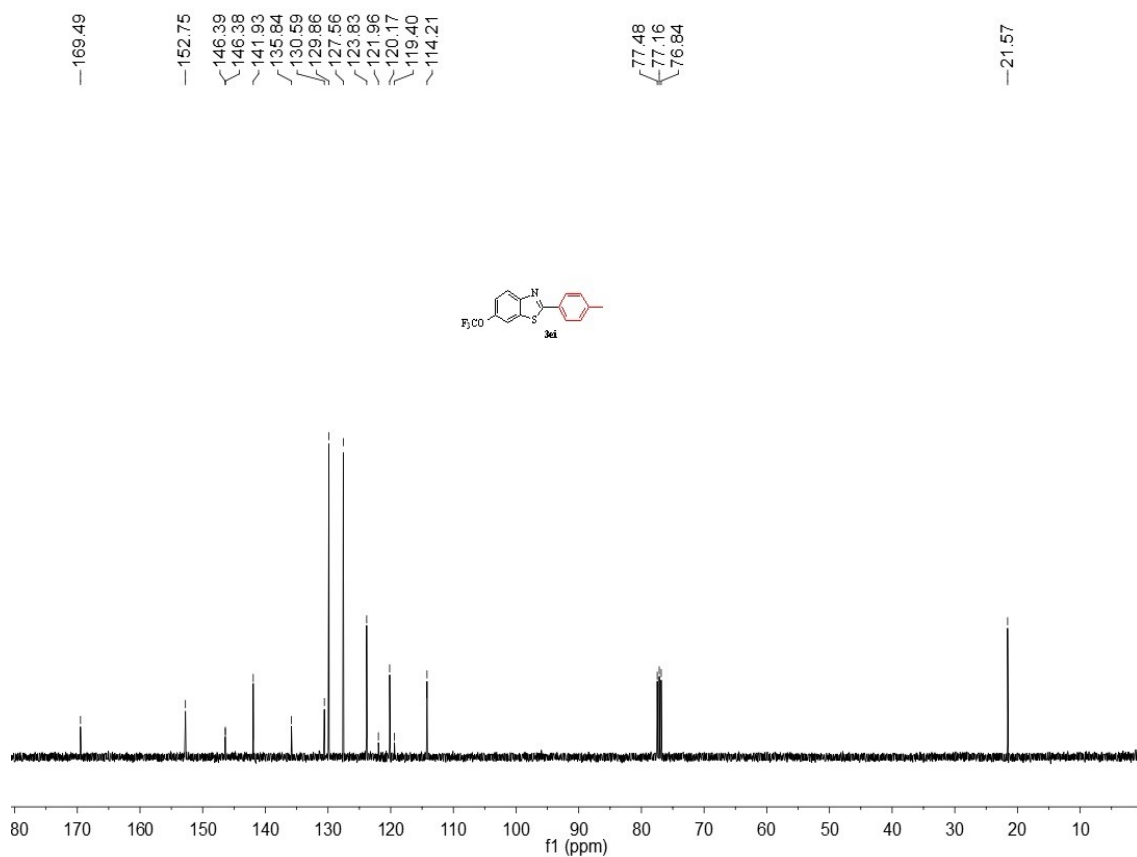
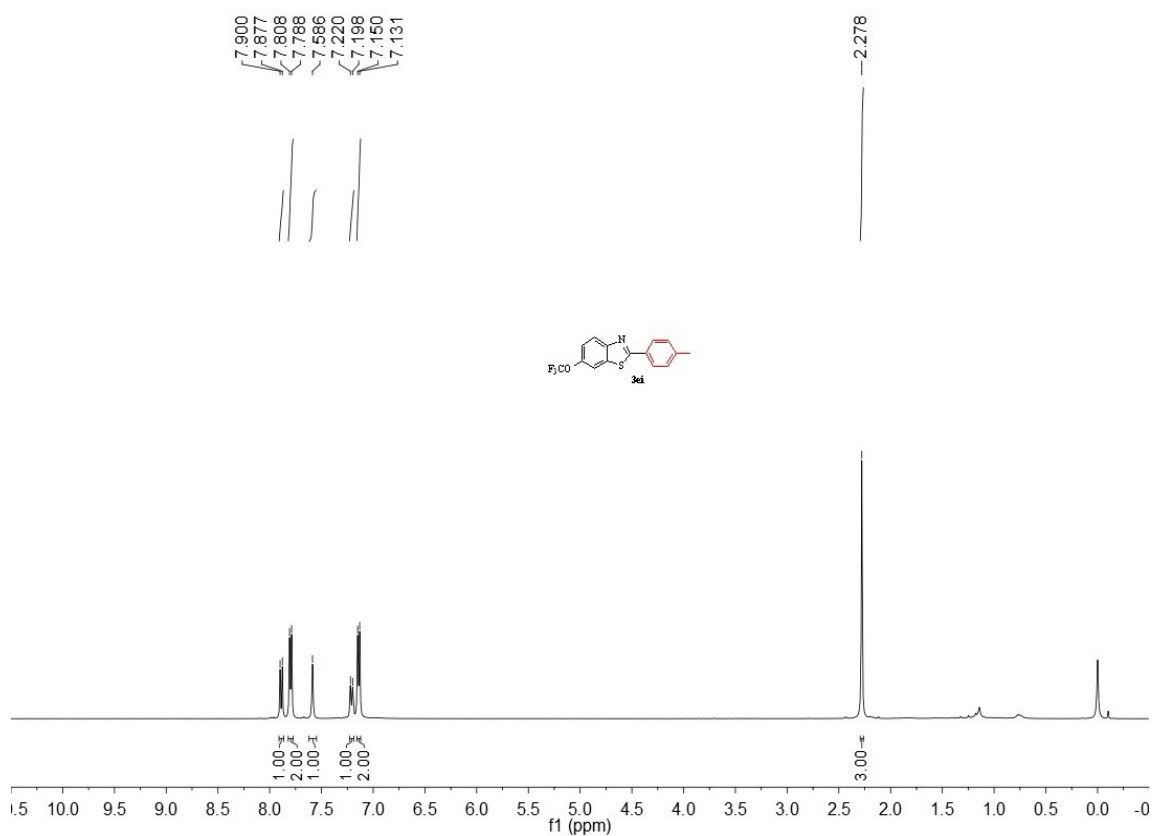




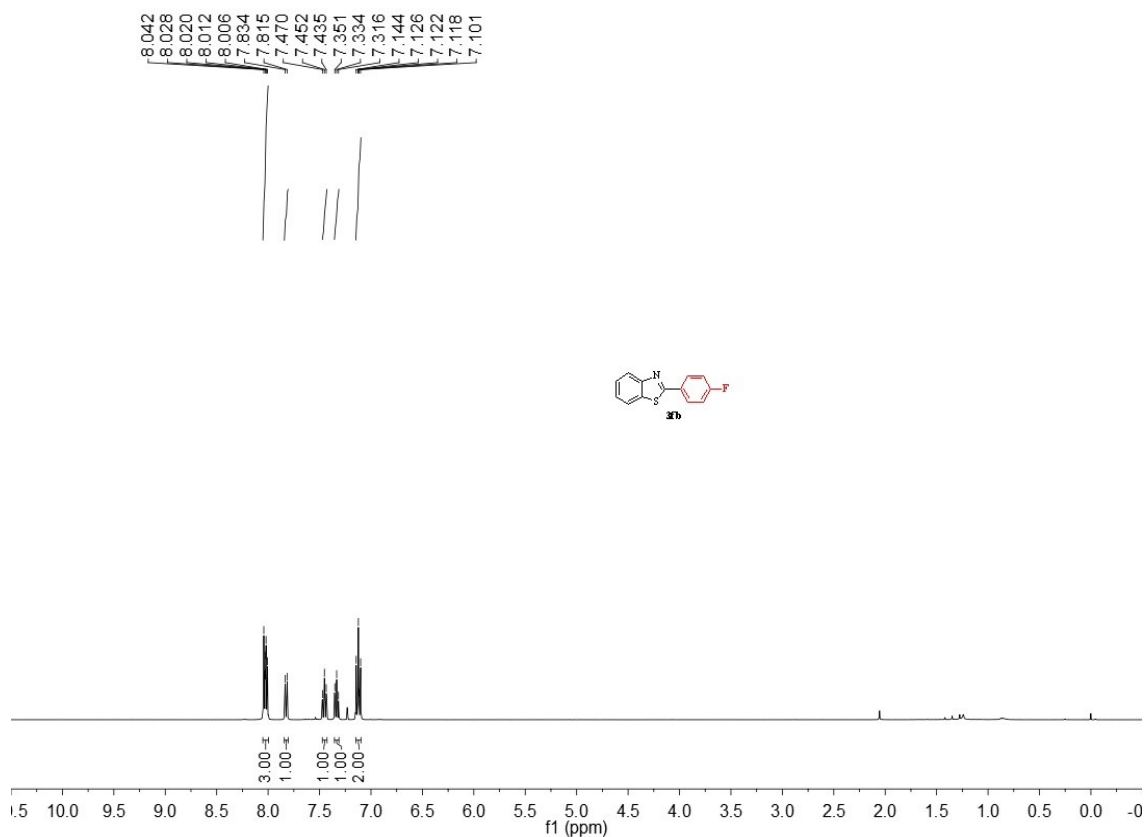
¹H and ¹³C NMR Spectra of 6-fluoro-2-(p-tolyl)benzo[d]thiazole (**3eg**)

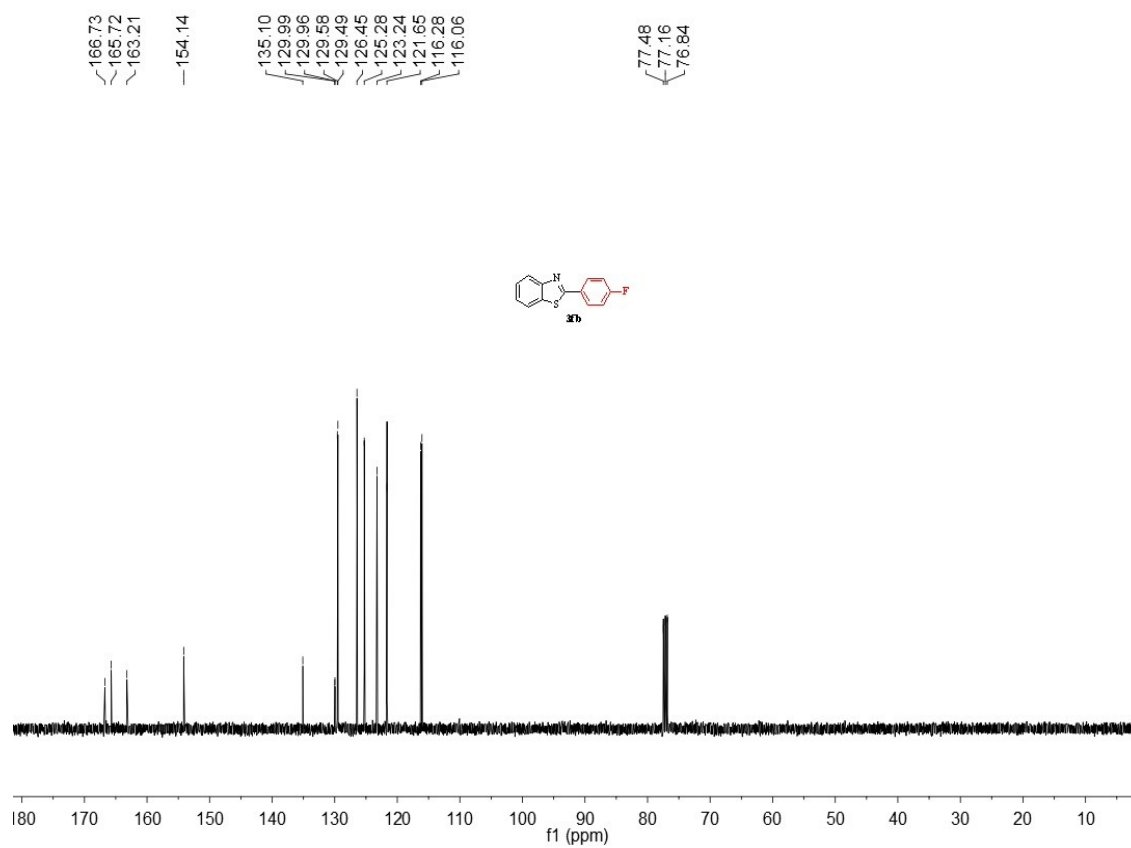


¹H and ¹³C NMR Spectra of 2-(p-tolyl)-6-(trifluoromethoxy)benzo[d]thiazole (**3ei**)

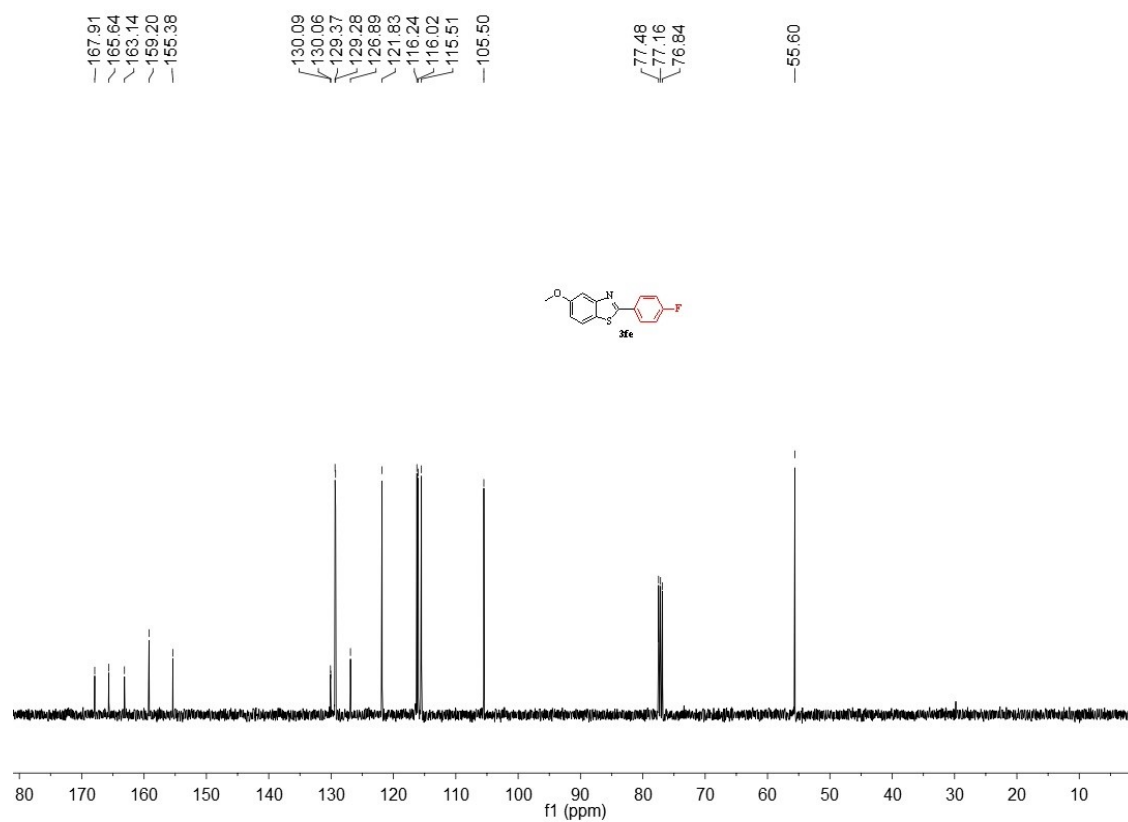
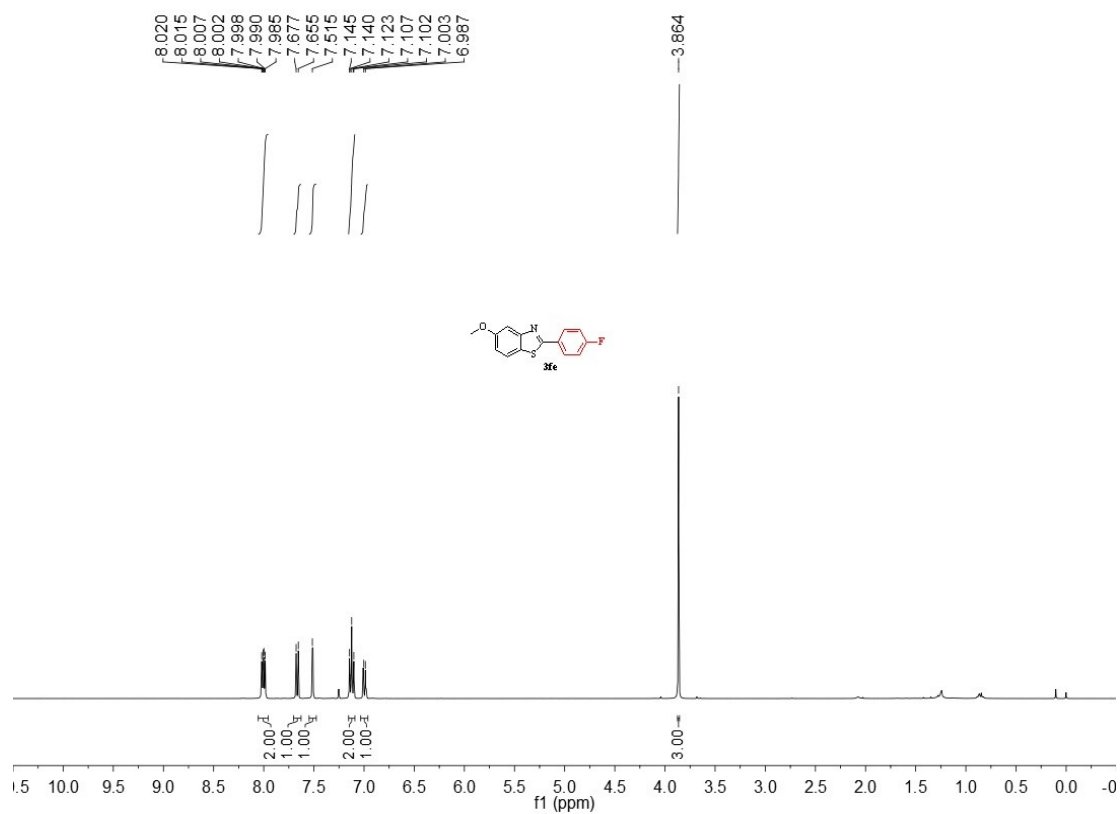


^1H and ^{13}C NMR Spectra of 2-(4-fluorophenyl)benzo[d]thiazole (**3fb**)

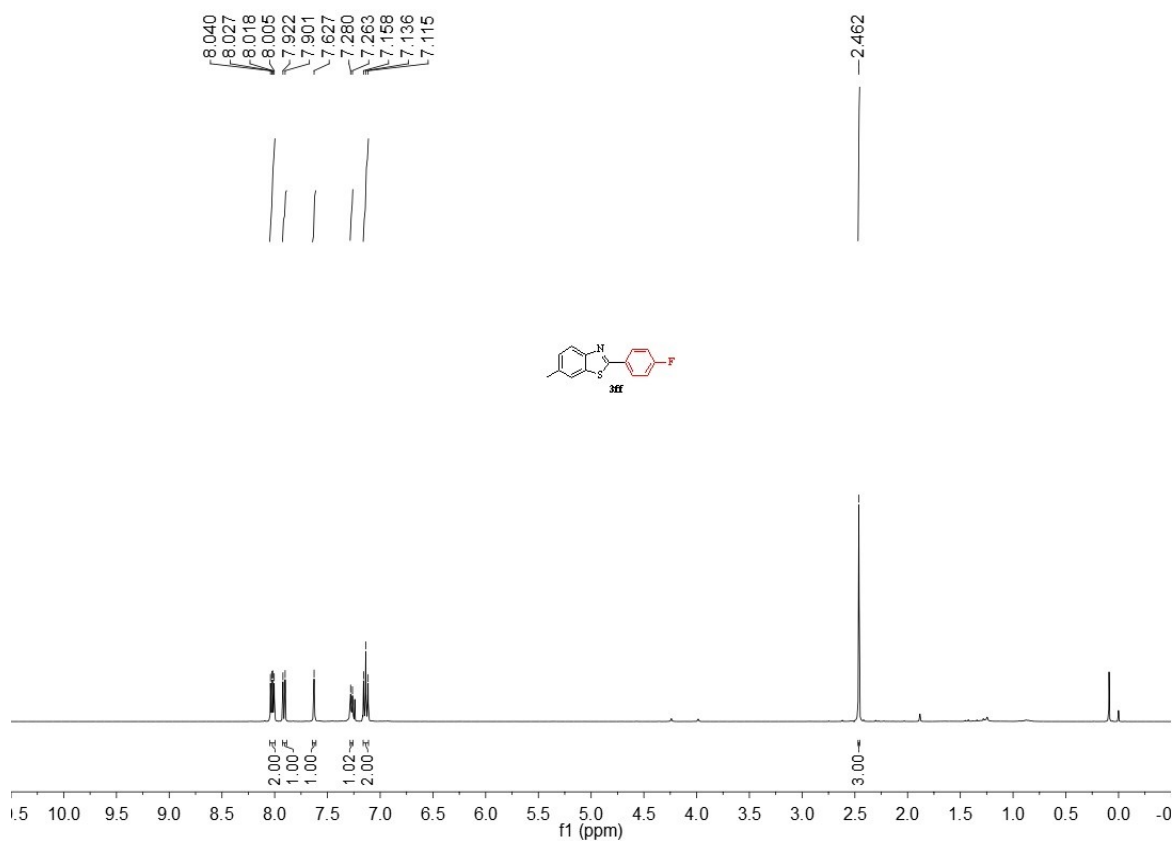


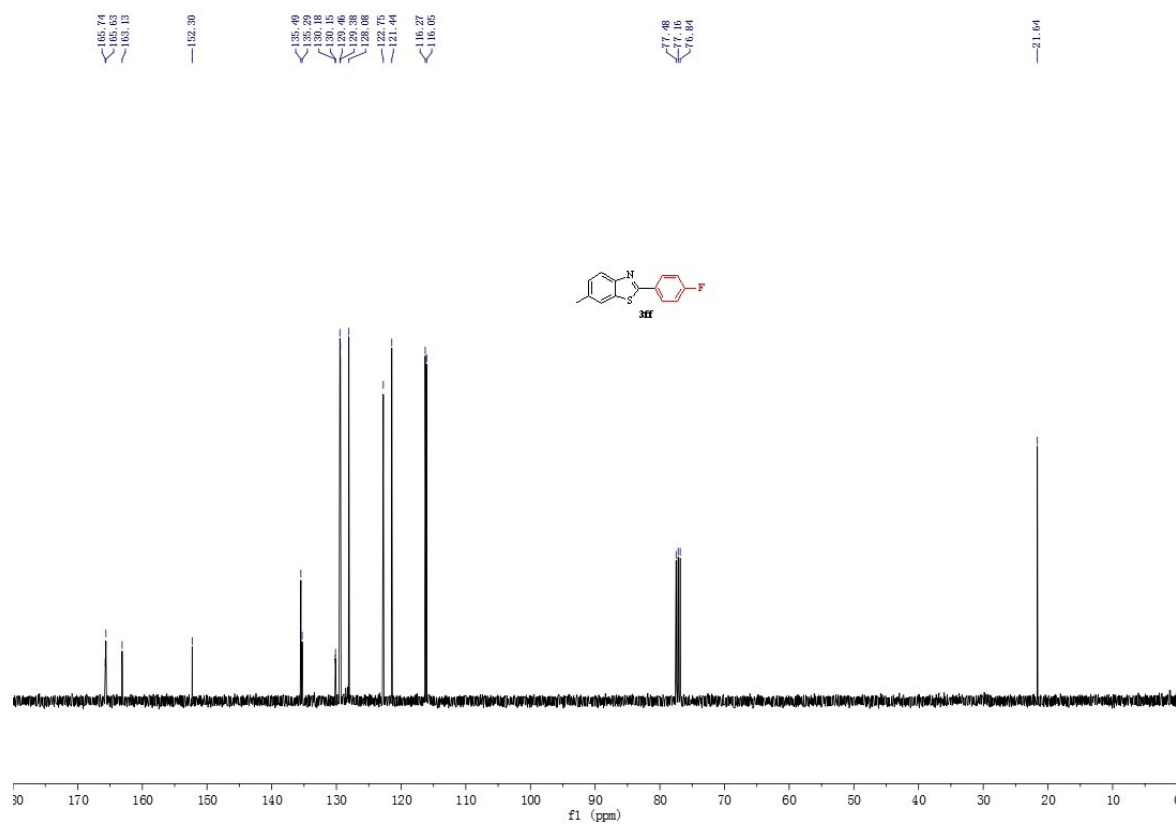


¹H and ¹³C NMR Spectra of 2-(4-fluorophenyl)- 5-methoxy benzo[d]thiazole (**3fe**)

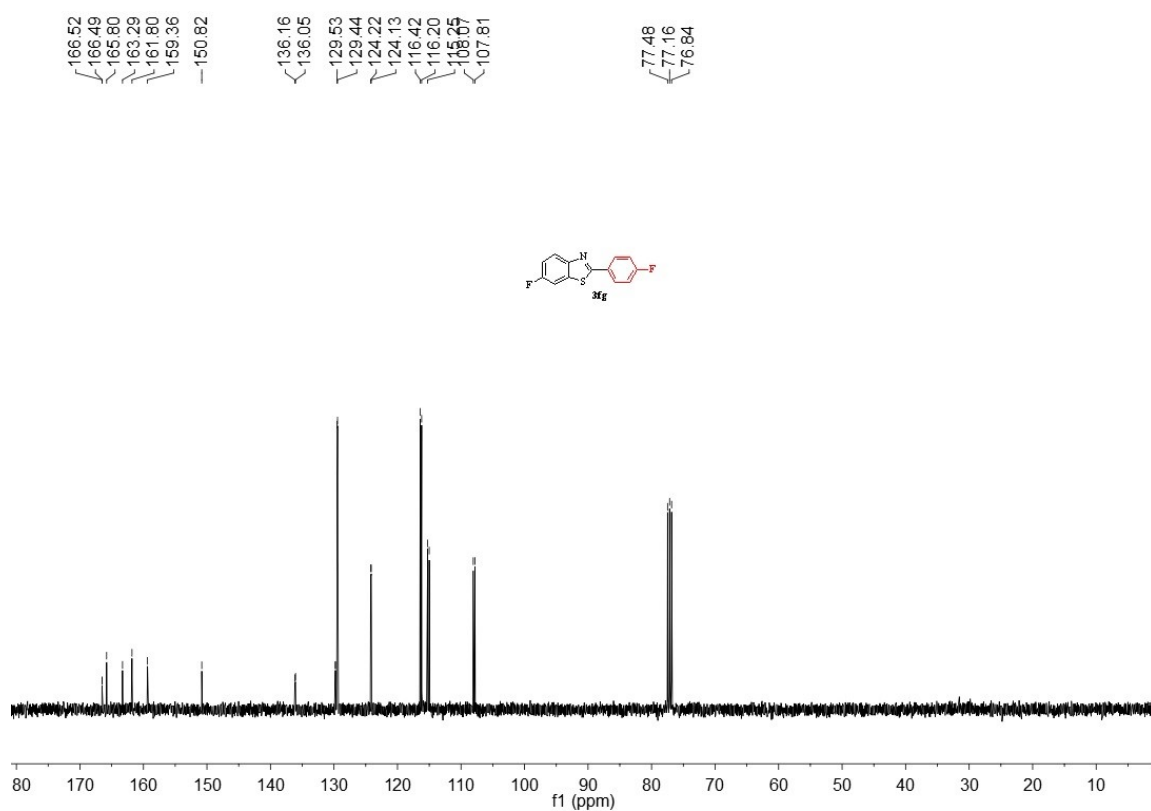
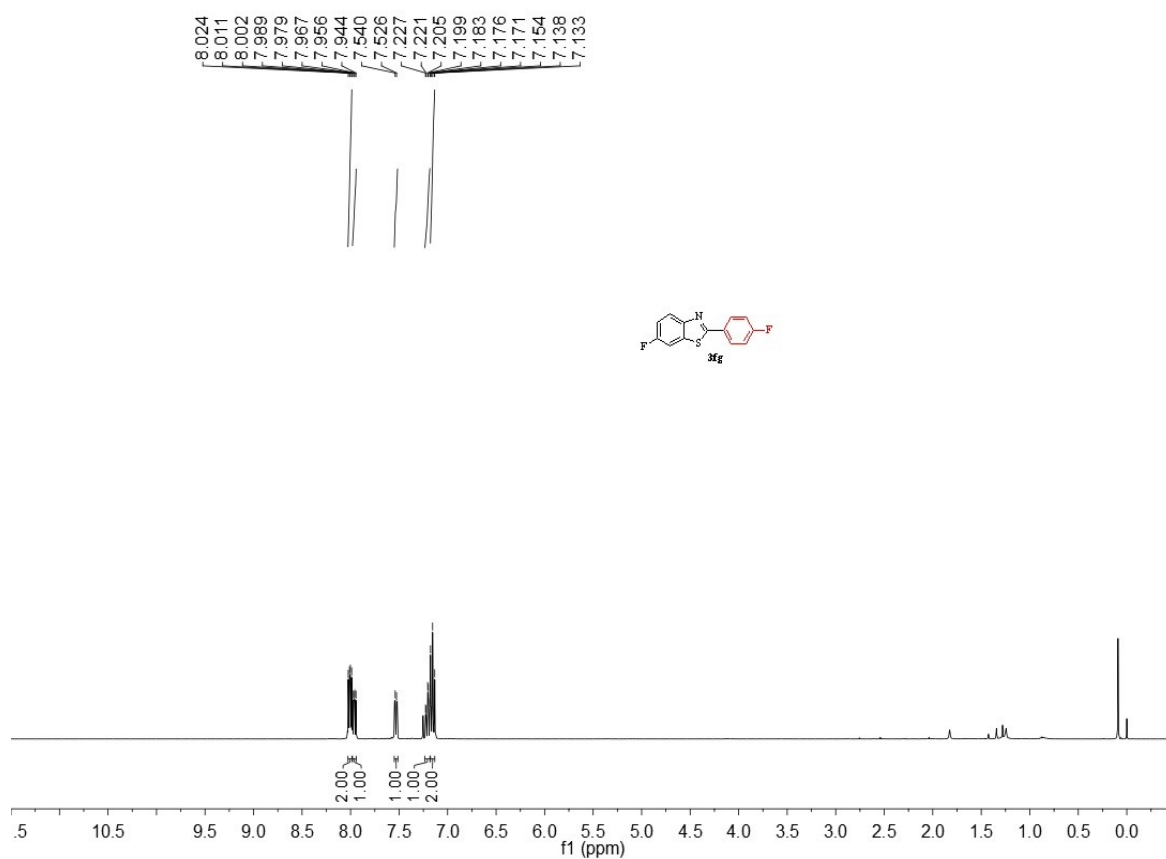


¹H and ¹³C NMR Spectra of 6-methyl-2-(4-fluorophenyl)benzo[d]thiazole (**3ff**)

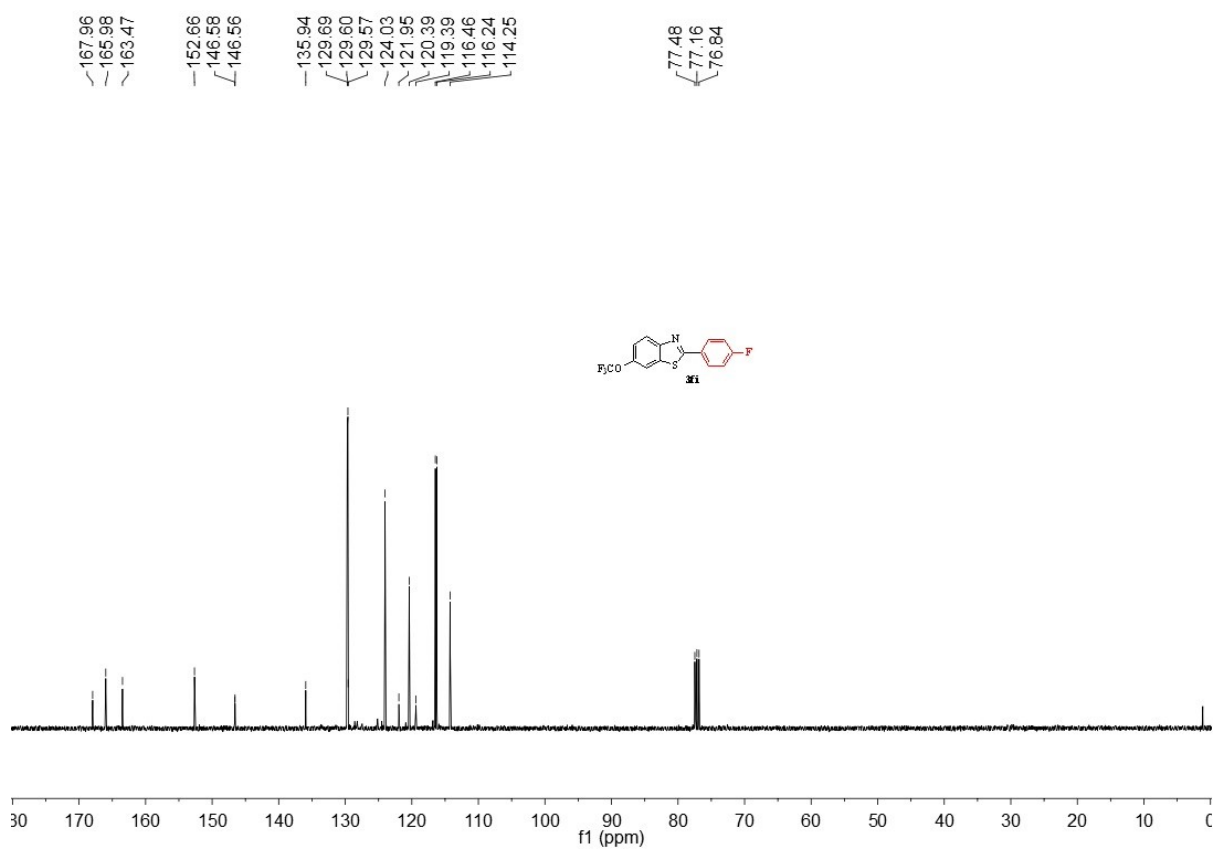
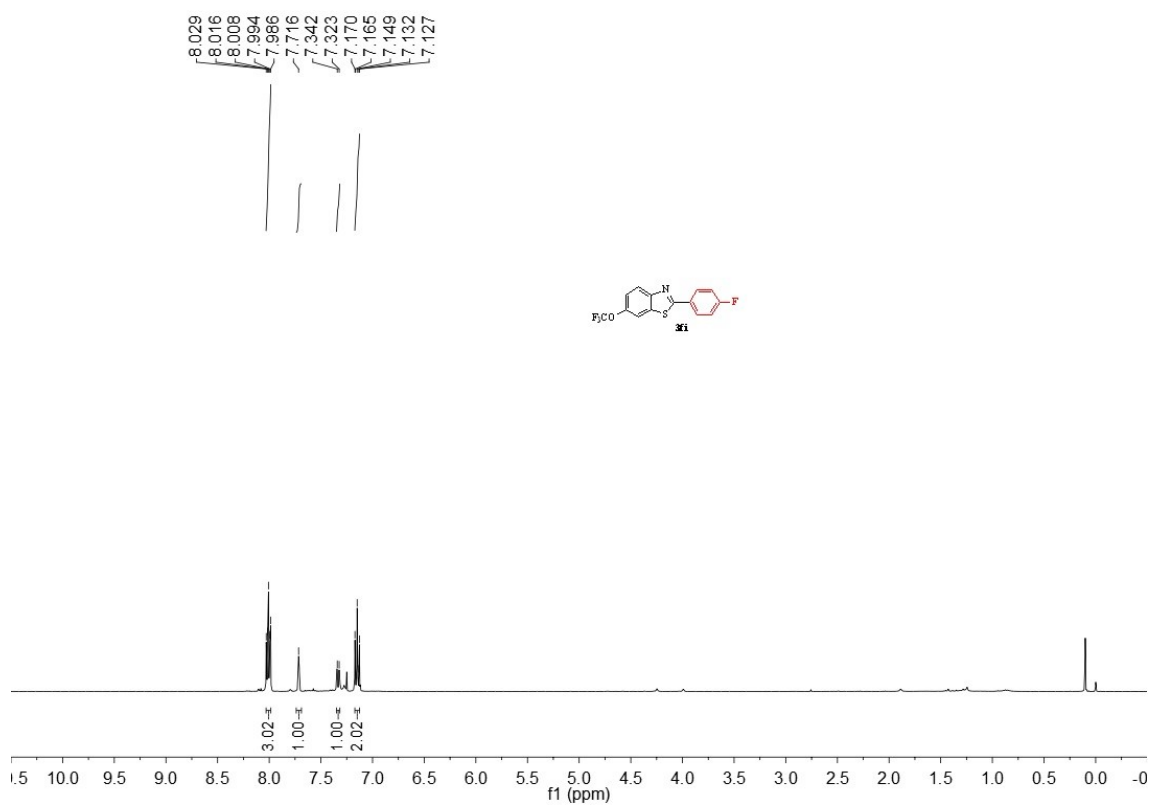




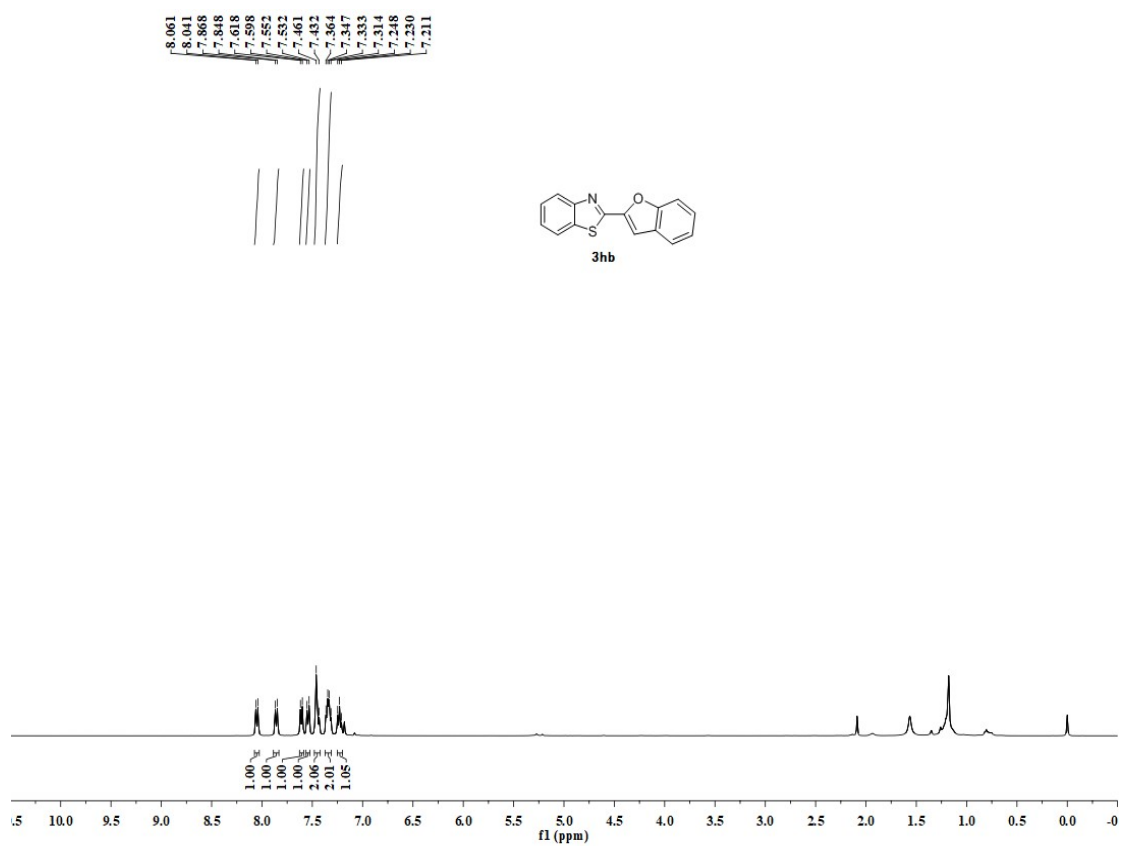
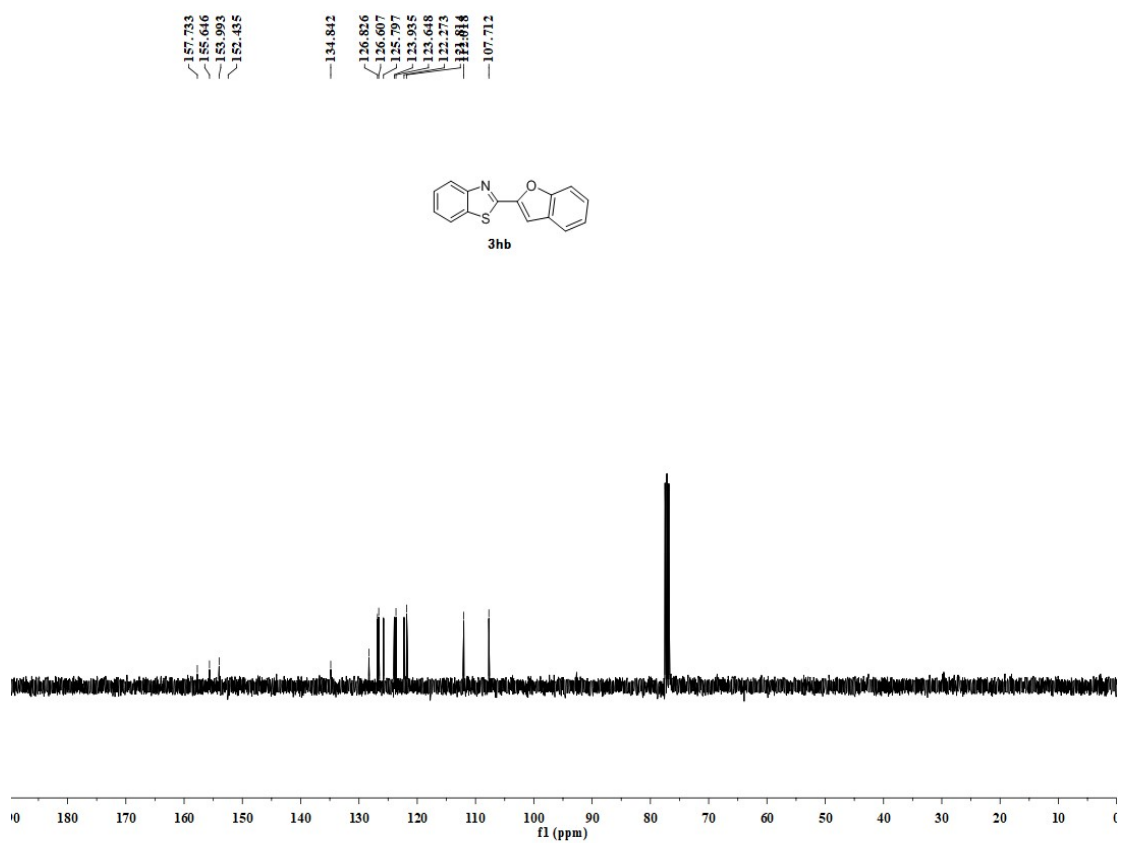
¹H and ¹³C NMR Spectra of 6-fluoro-2-(4-fluorophenyl)benzo[*d*]thiazole (**3fg**)



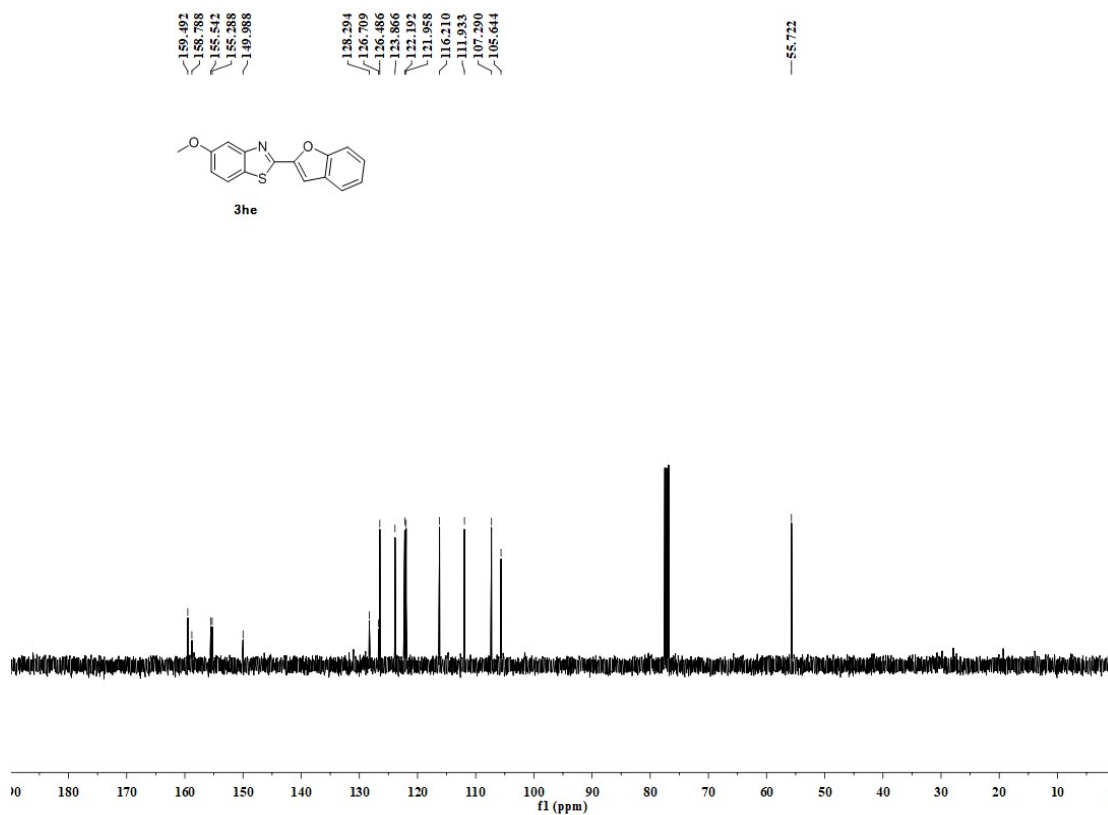
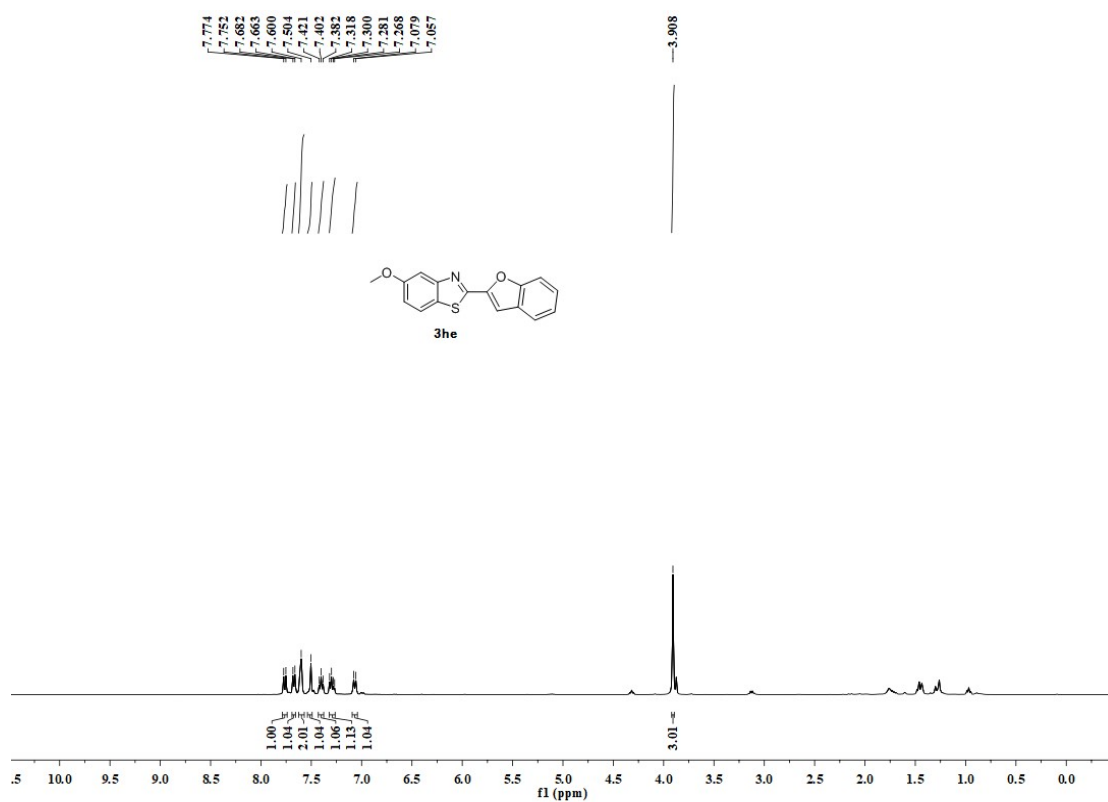
^1H and ^{13}C NMR Spectra of 2-(4-fluorophenyl)-6-(trifluoromethoxy)benzo[d]thiazole (**3fi**)



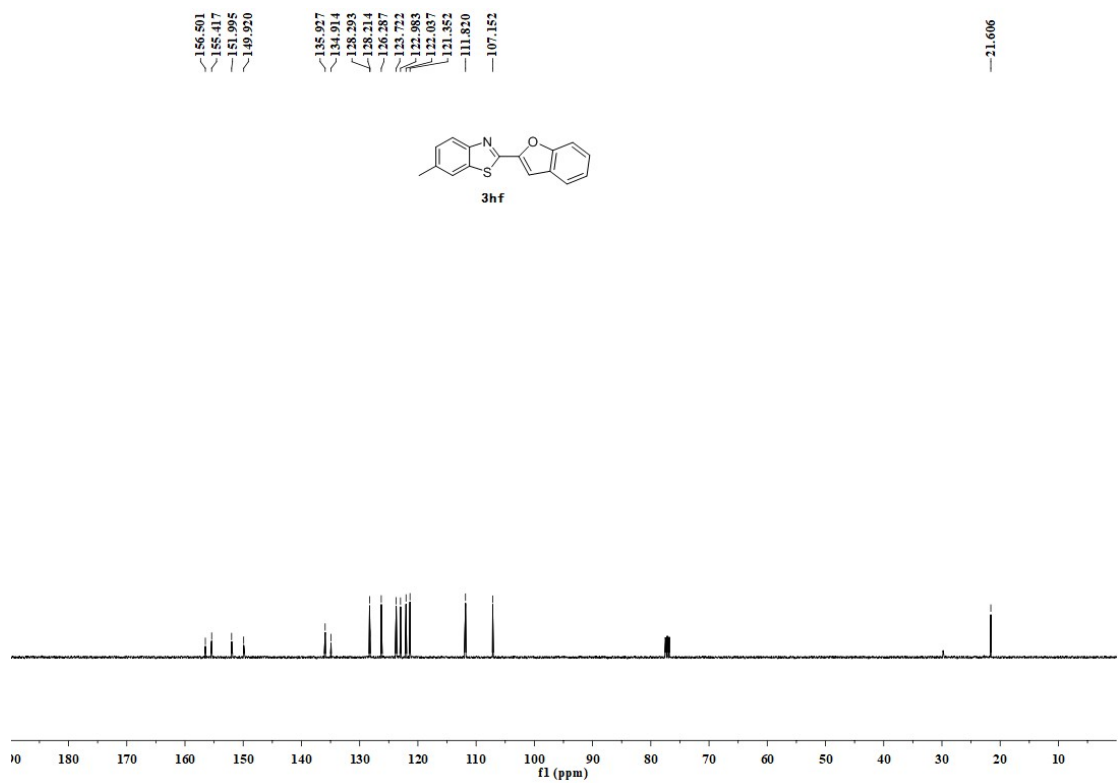
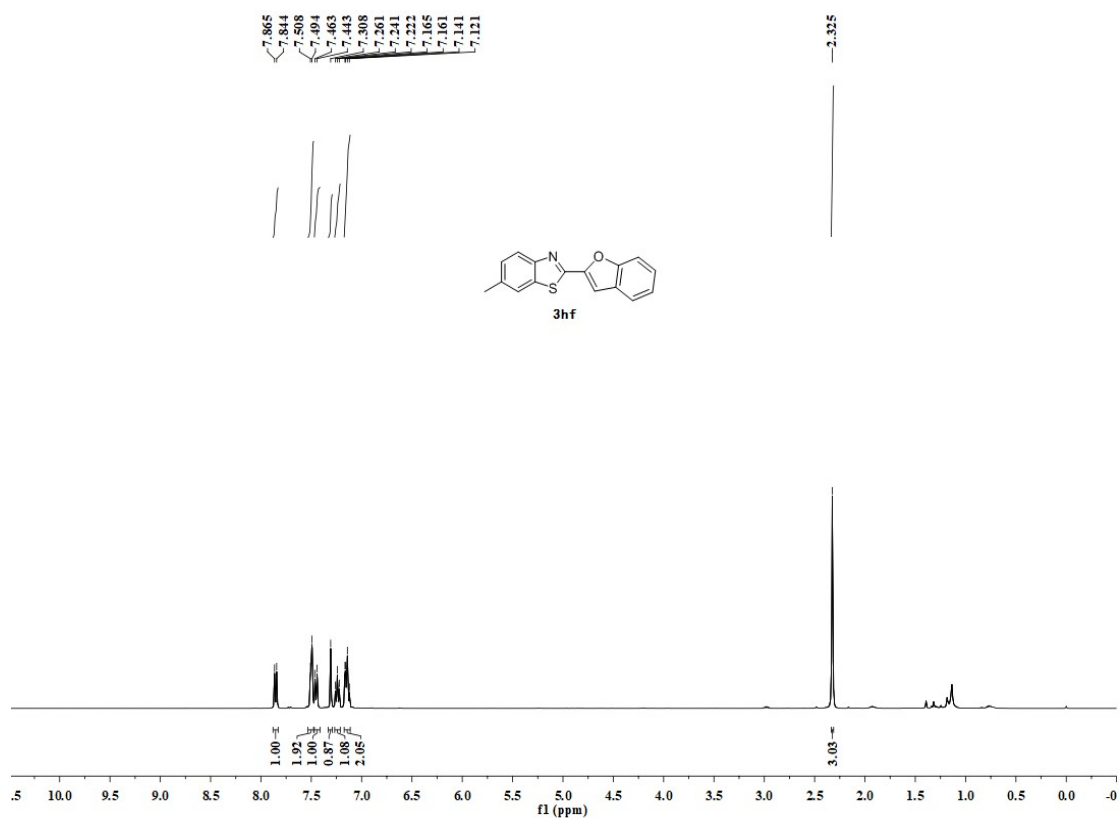
^1H and ^{13}C NMR Spectra of 2-(benzofuran-2-yl)benzo[d]thiazole (**3hb**)



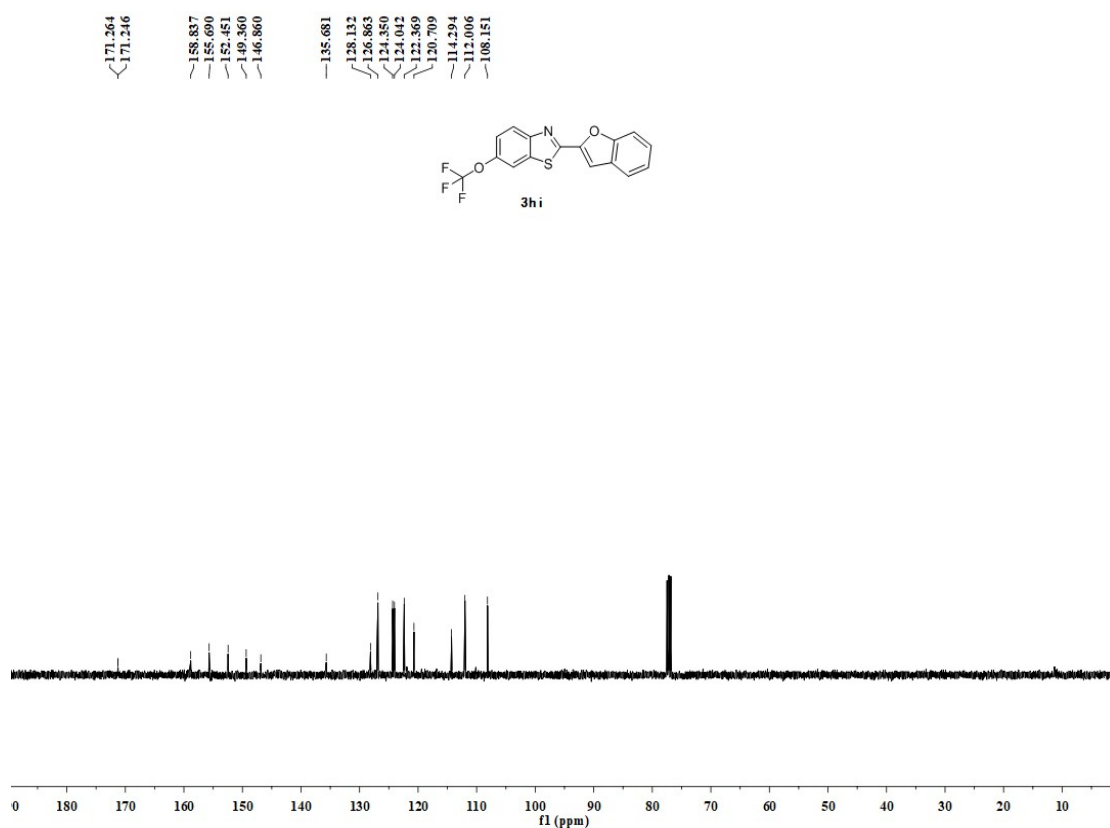
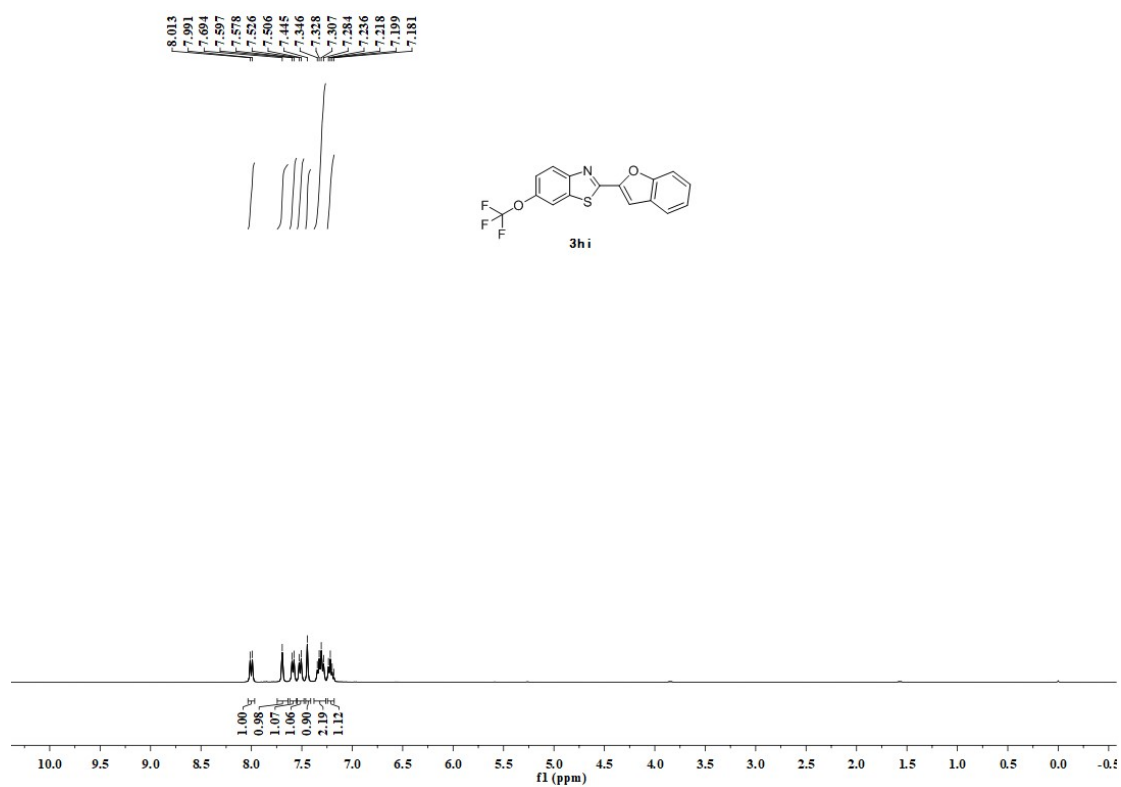
^1H and ^{13}C NMR Spectra of 2-(benzofuran-2-yl)-5-methoxybenzo[d]thiazole (**3he**)



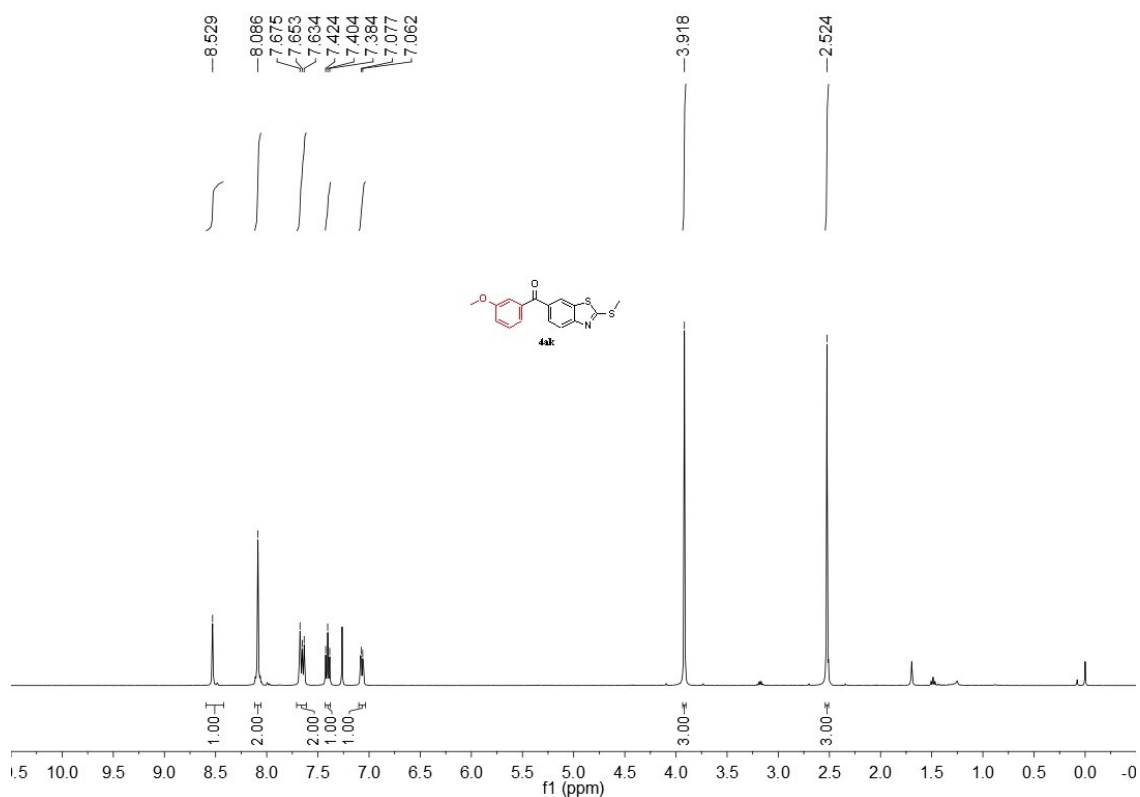
^1H and ^{13}C NMR Spectra of 2-(benzofuran-2-yl)-6-methylbenzo[d]thiazole (**3hf**)

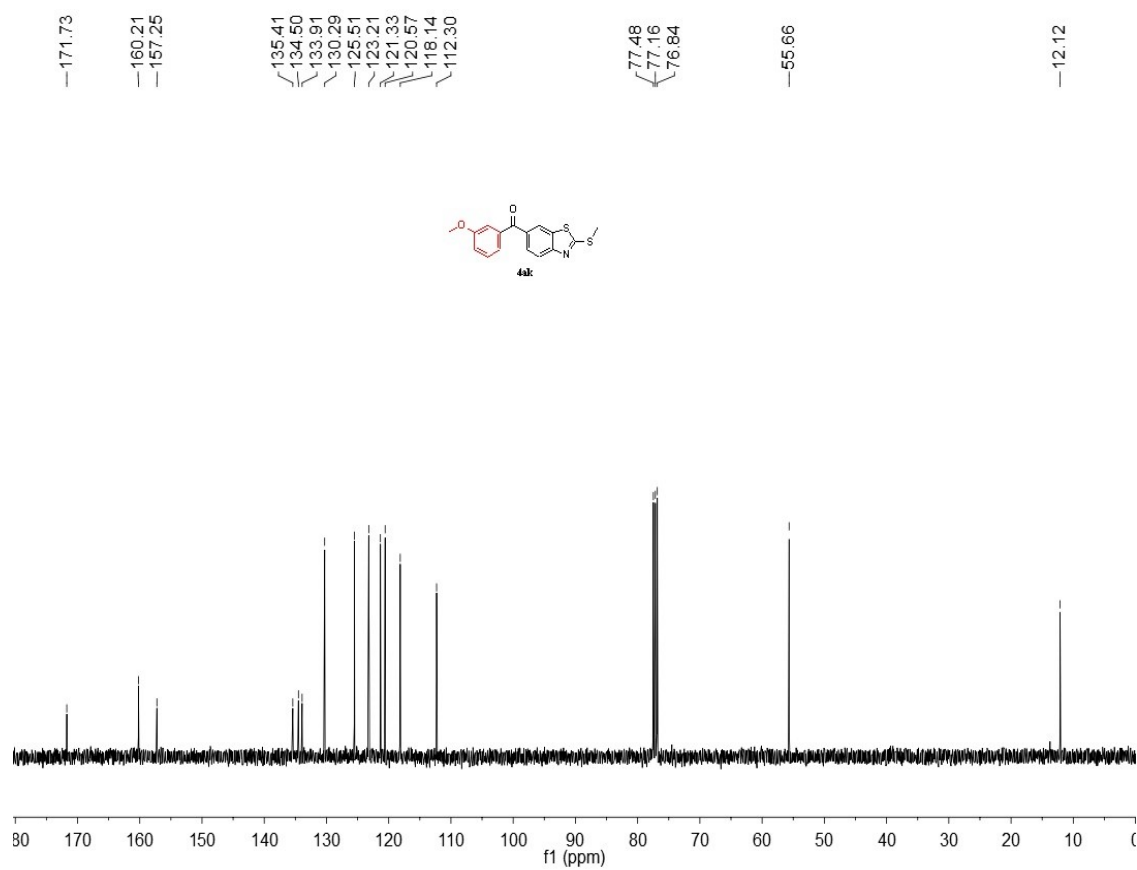


^1H and ^{13}C NMR Spectra of 2-(benzofuran-2-yl)-6-(trifluoromethoxy)benzo[d]thiazole (**3hi**)

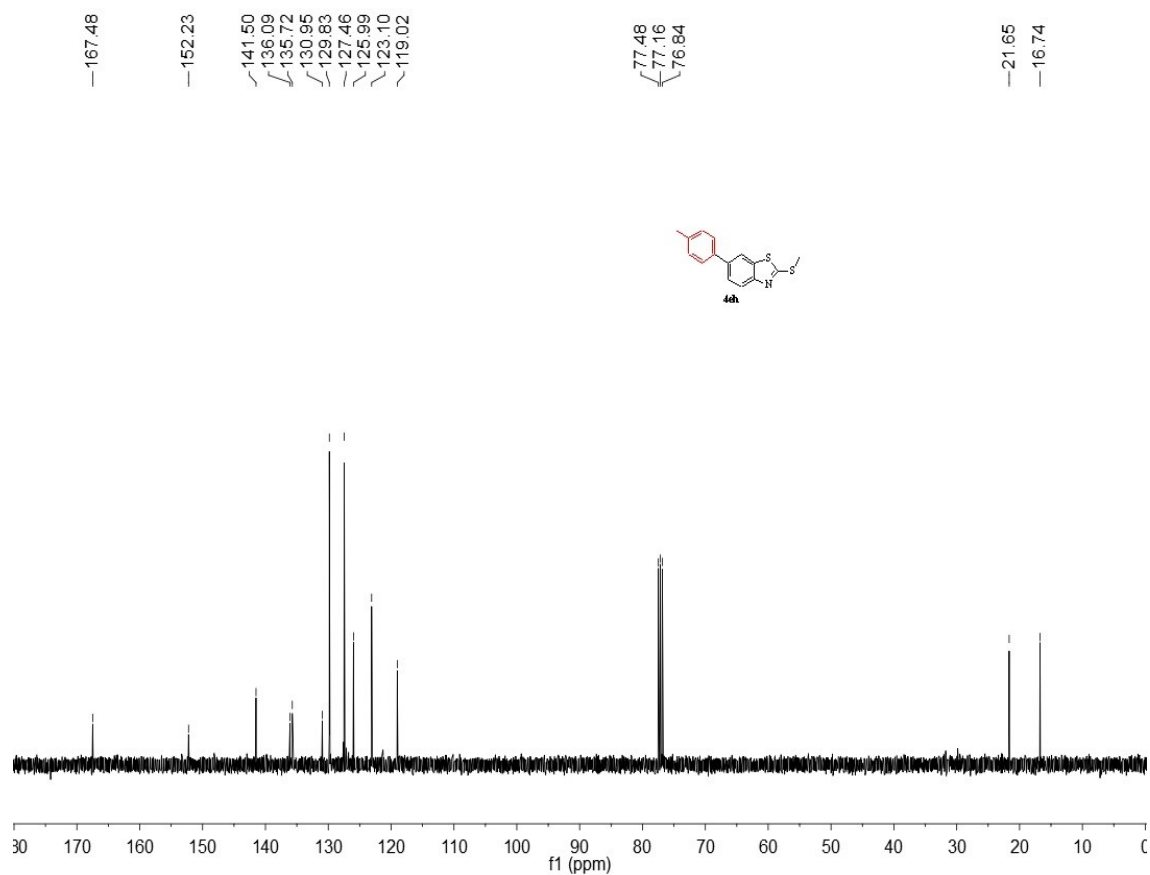
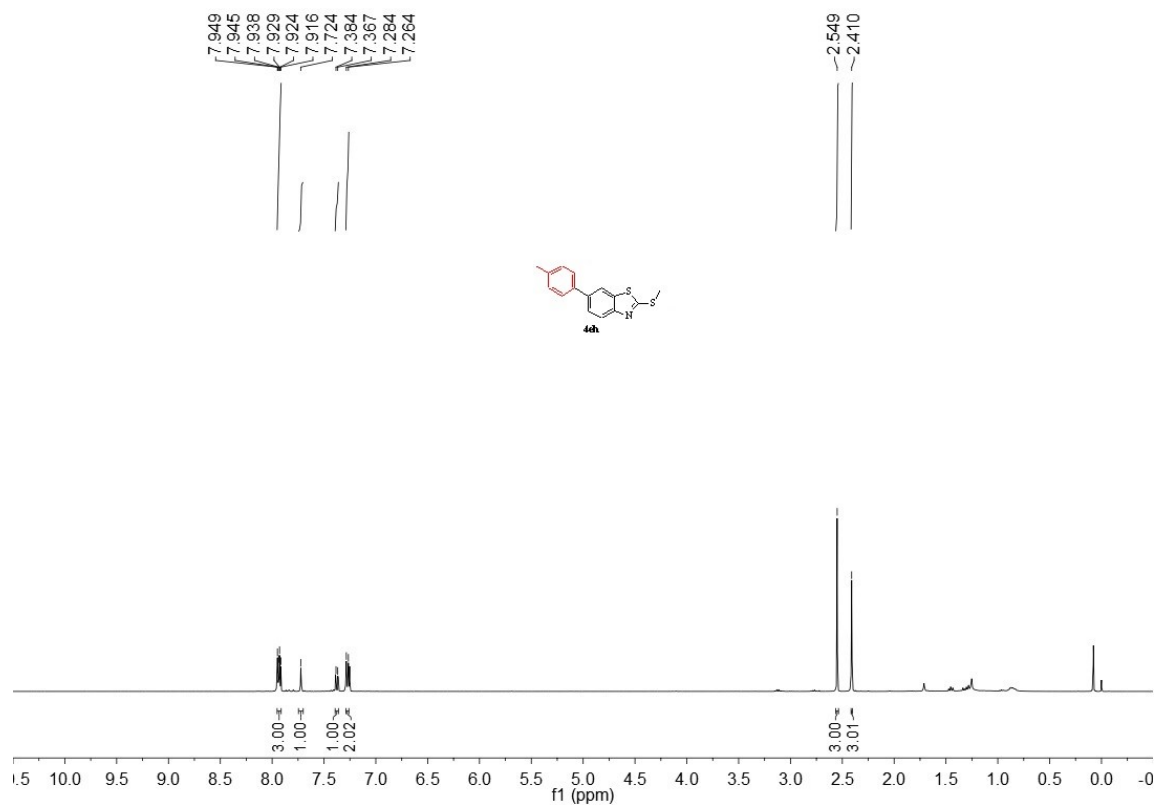


¹H and ¹³C NMR Spectra of (3-methoxyphenyl)(2-(methylthio)benzo[d]thiazol-6-yl)methanone
(4ak)

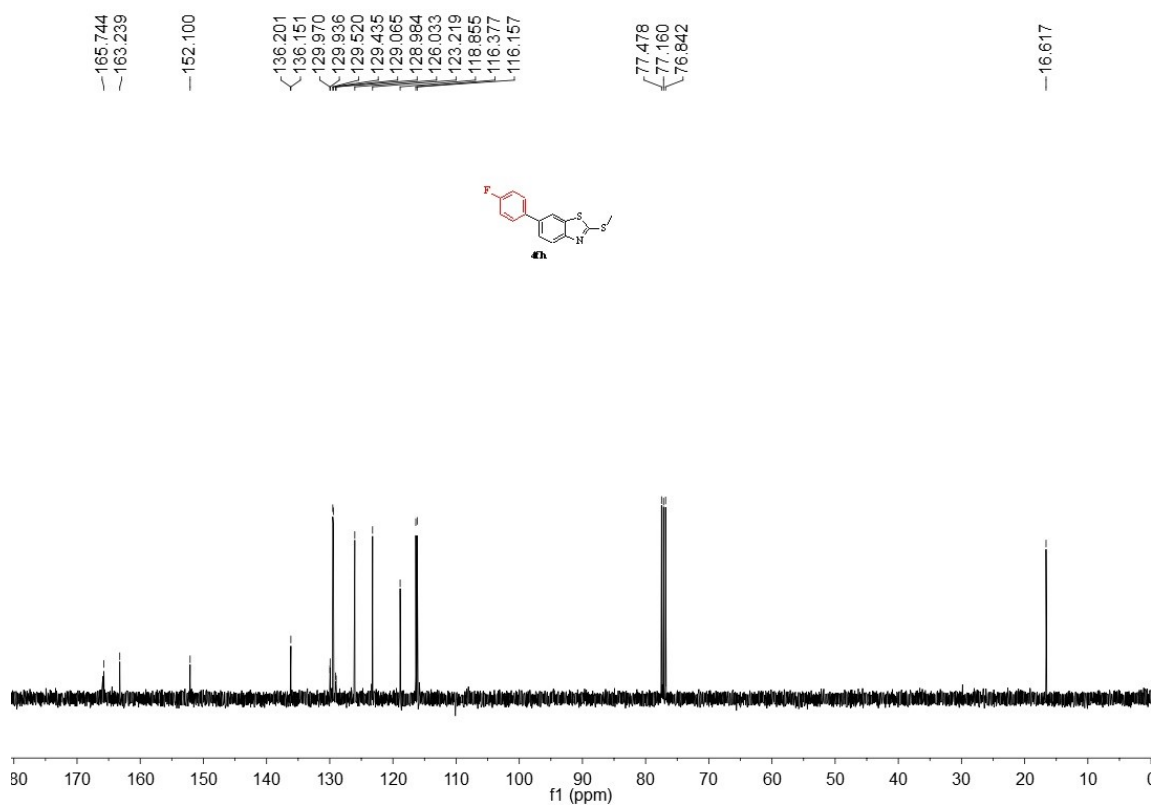
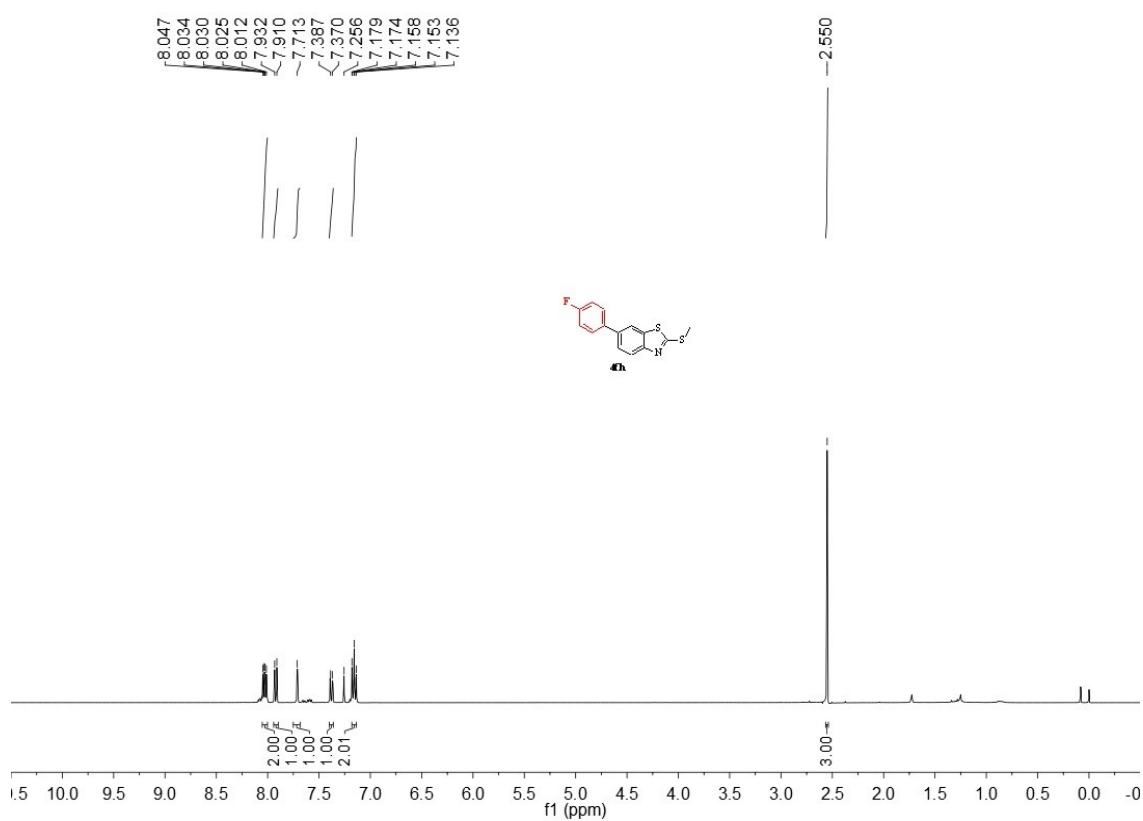




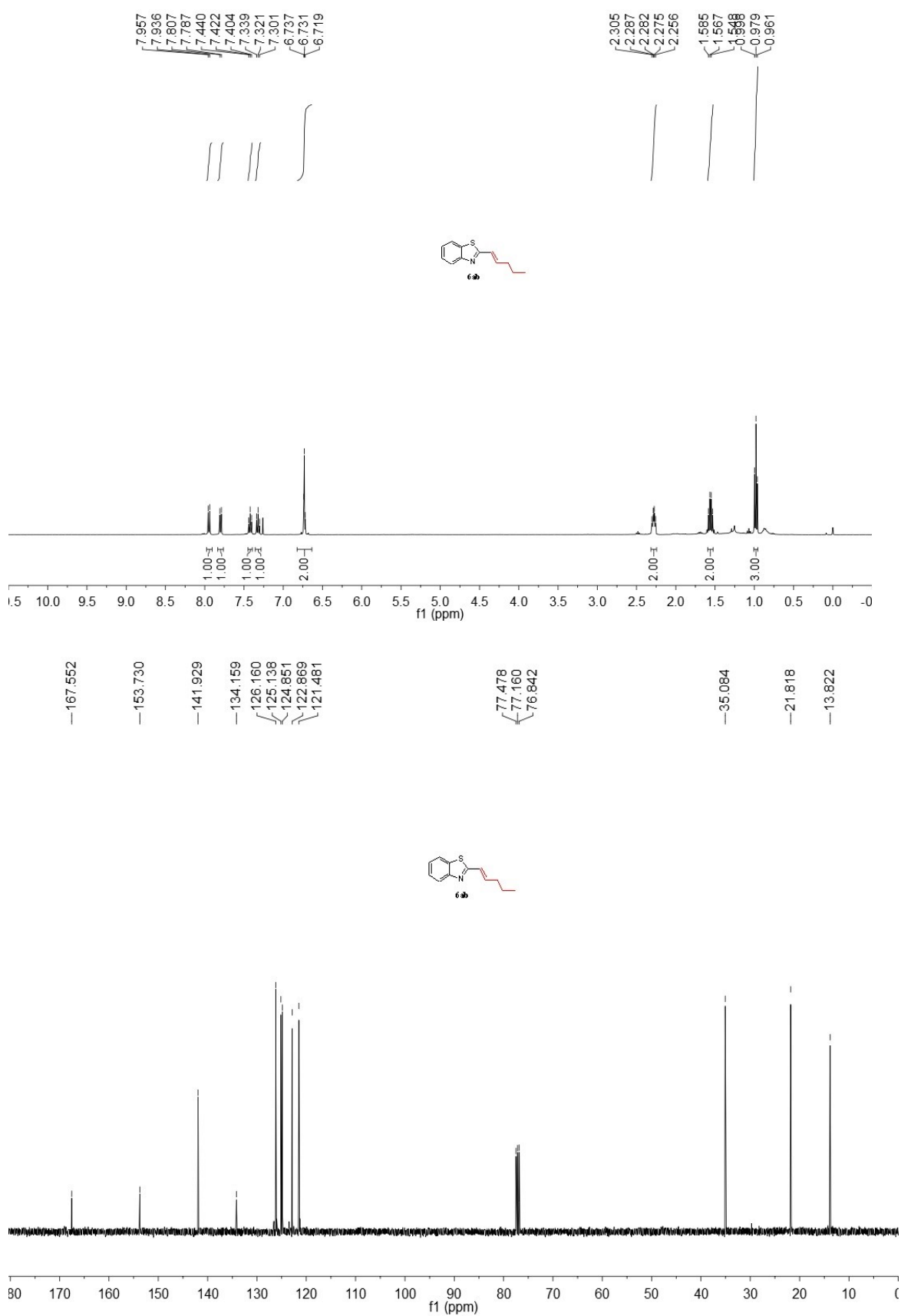
¹H and ¹³C NMR Spectra of 2-(methylthio)-6-(p-tolyl)benzo[d]thiazole (4eh)



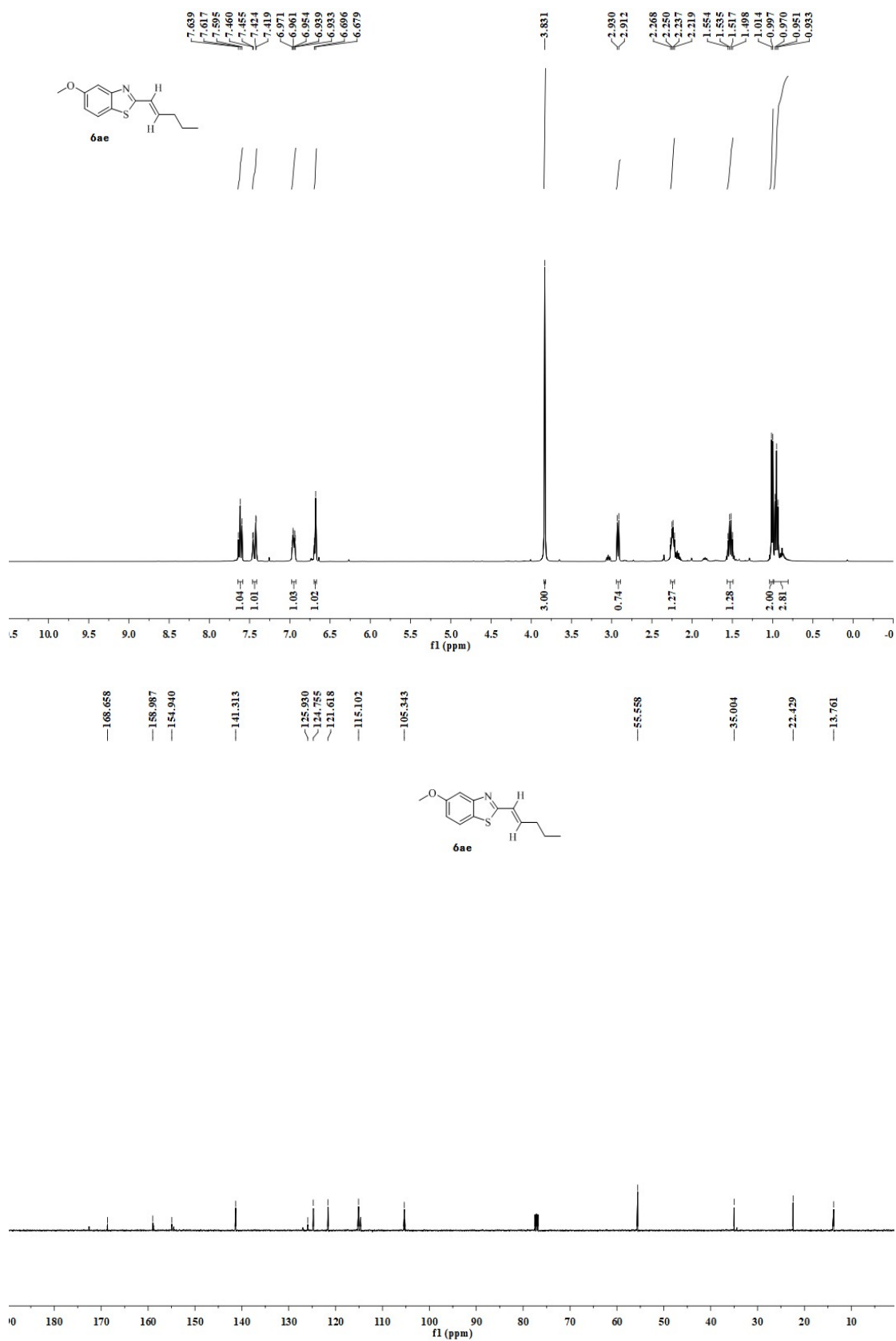
¹H and ¹³C NMR Spectra of 6-(4-fluorophenyl)-2-(methylthio)benzo[d]thiazole (**4fh**)



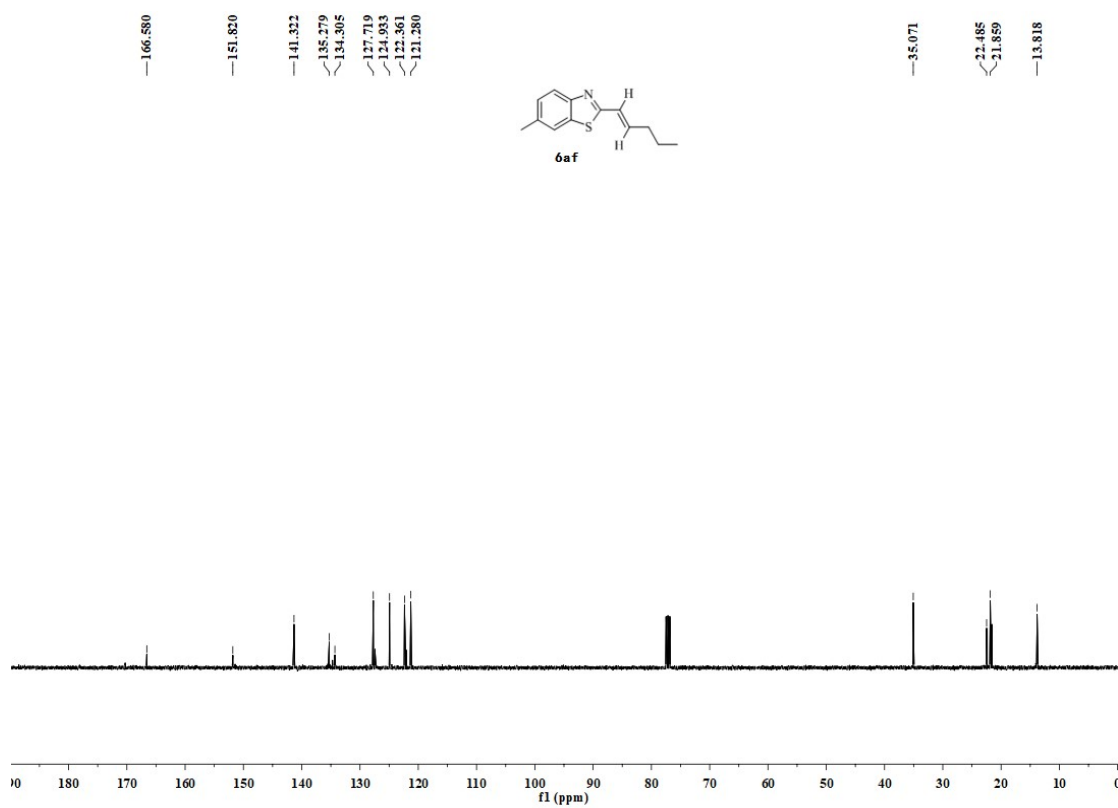
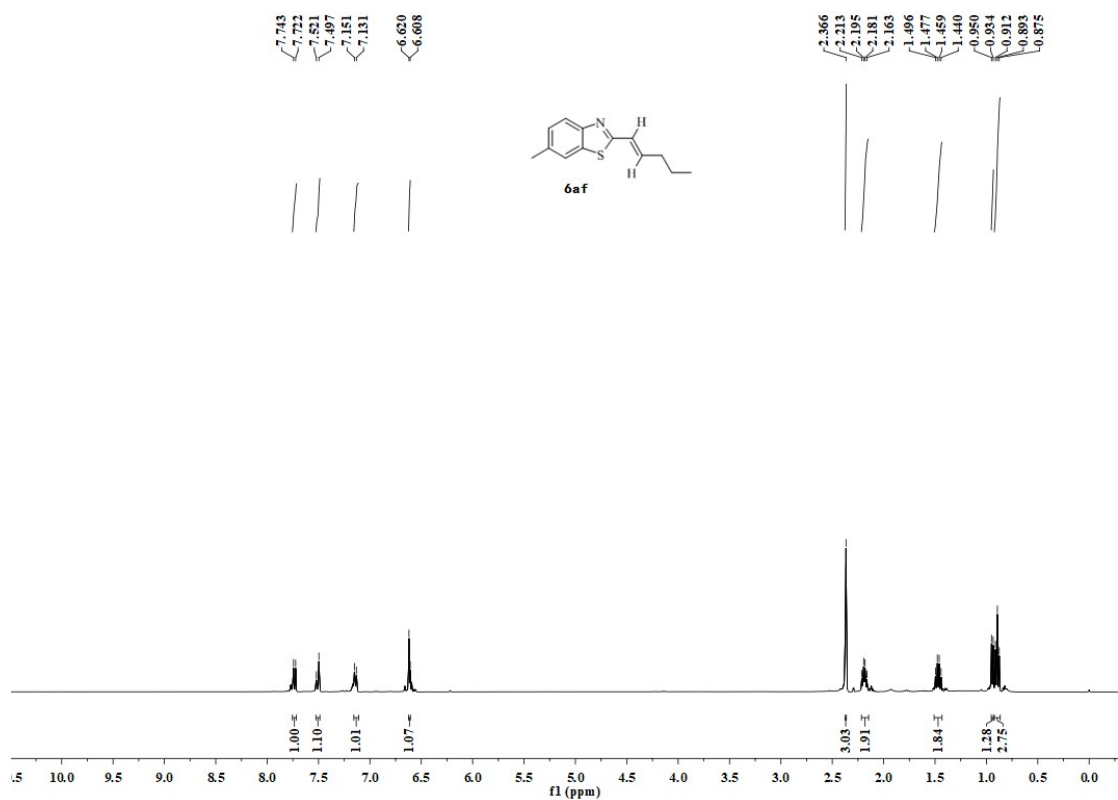
¹H and ¹³C NMR Spectra of (E)-2-(pent-1-en-1-yl)benzo[d]thiazole (**6ab**)



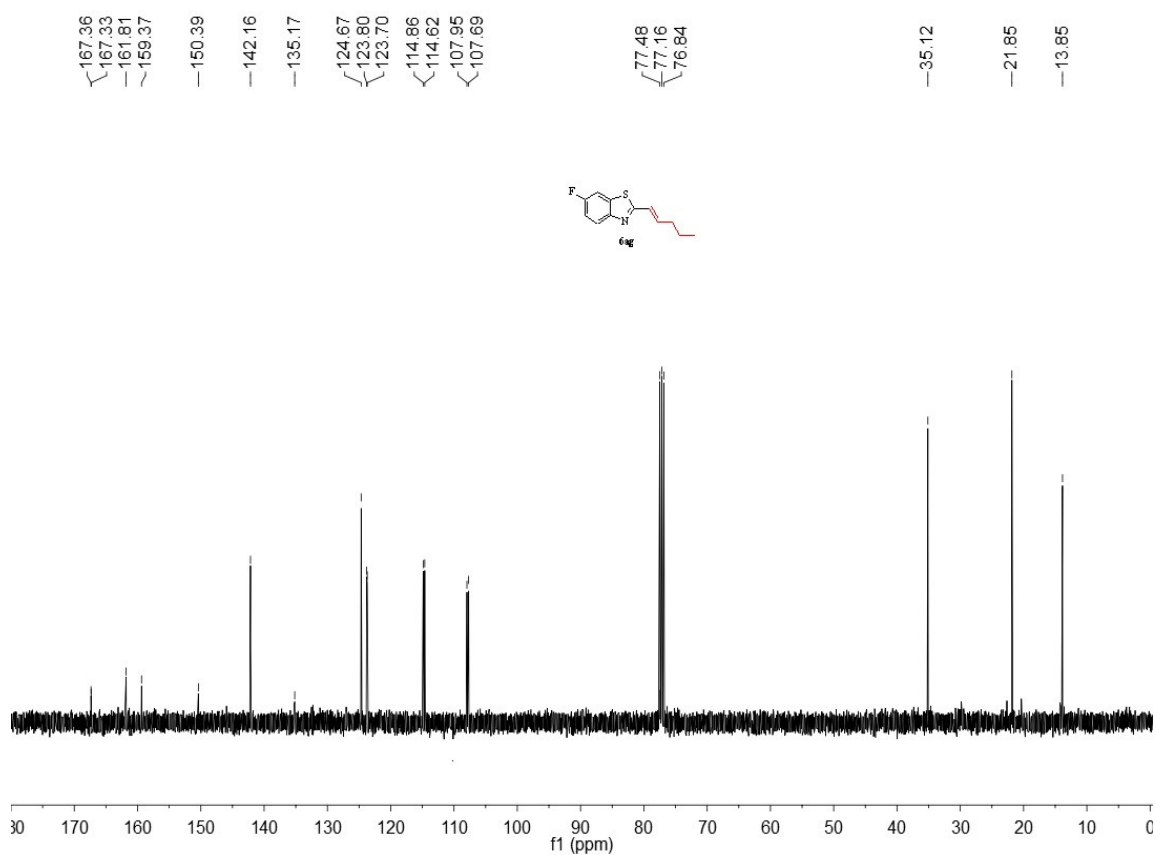
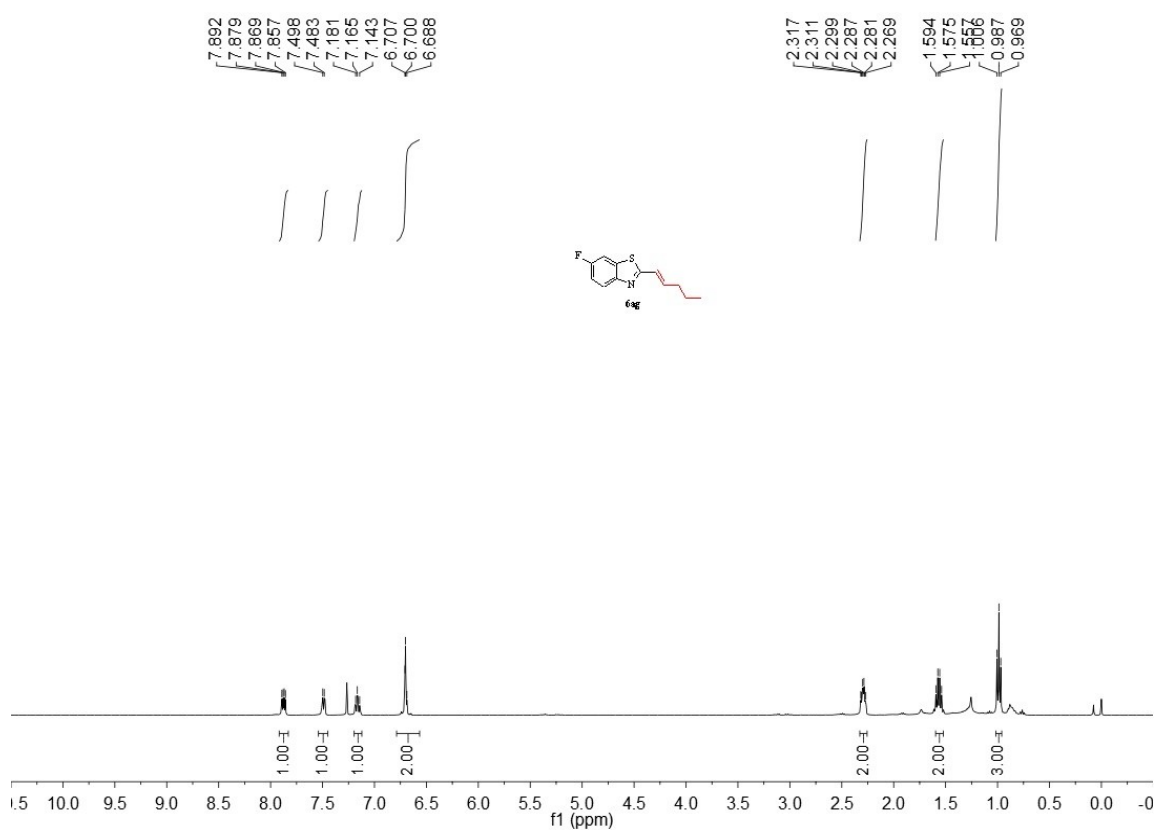
^1H and ^{13}C NMR Spectra of (*E*)-5-methoxy-2-(pent-1-en-1-yl)benzo[d]thiazole (**6ae**)



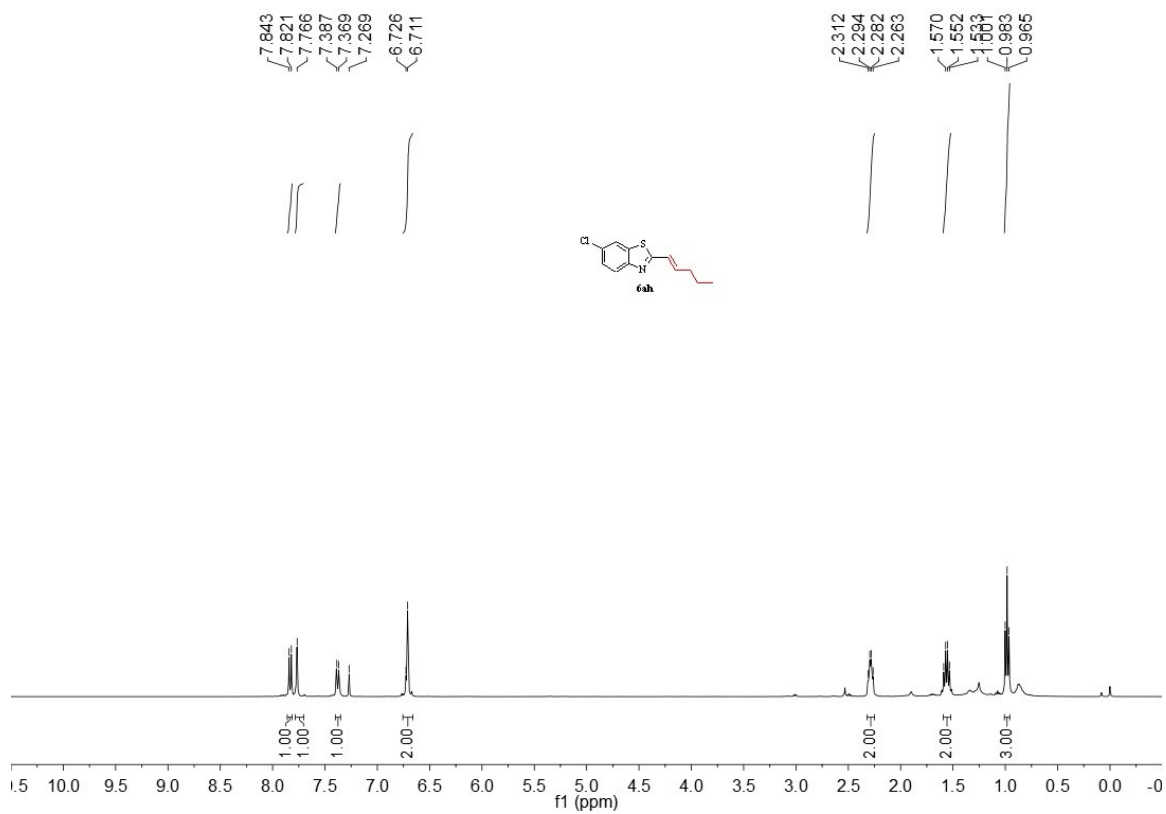
^1H and ^{13}C NMR Spectra of (*E*)-5-methyl-2-(pent-1-en-1-yl)benzo[d]thiazole (**6af**)

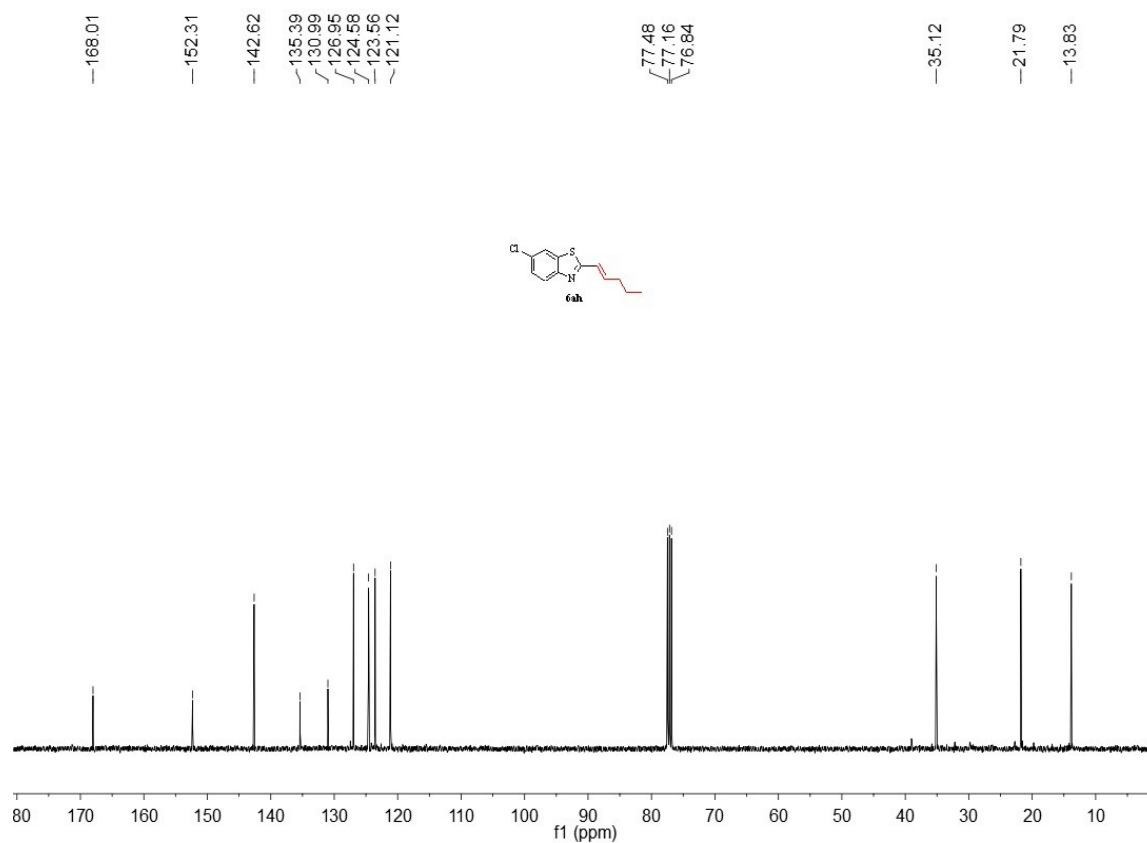


^1H and ^{13}C NMR Spectra of (*E*)-6-fluoro-2-(pent-1-en-1-yl)benzo[*d*]thiazole(**6ag**)

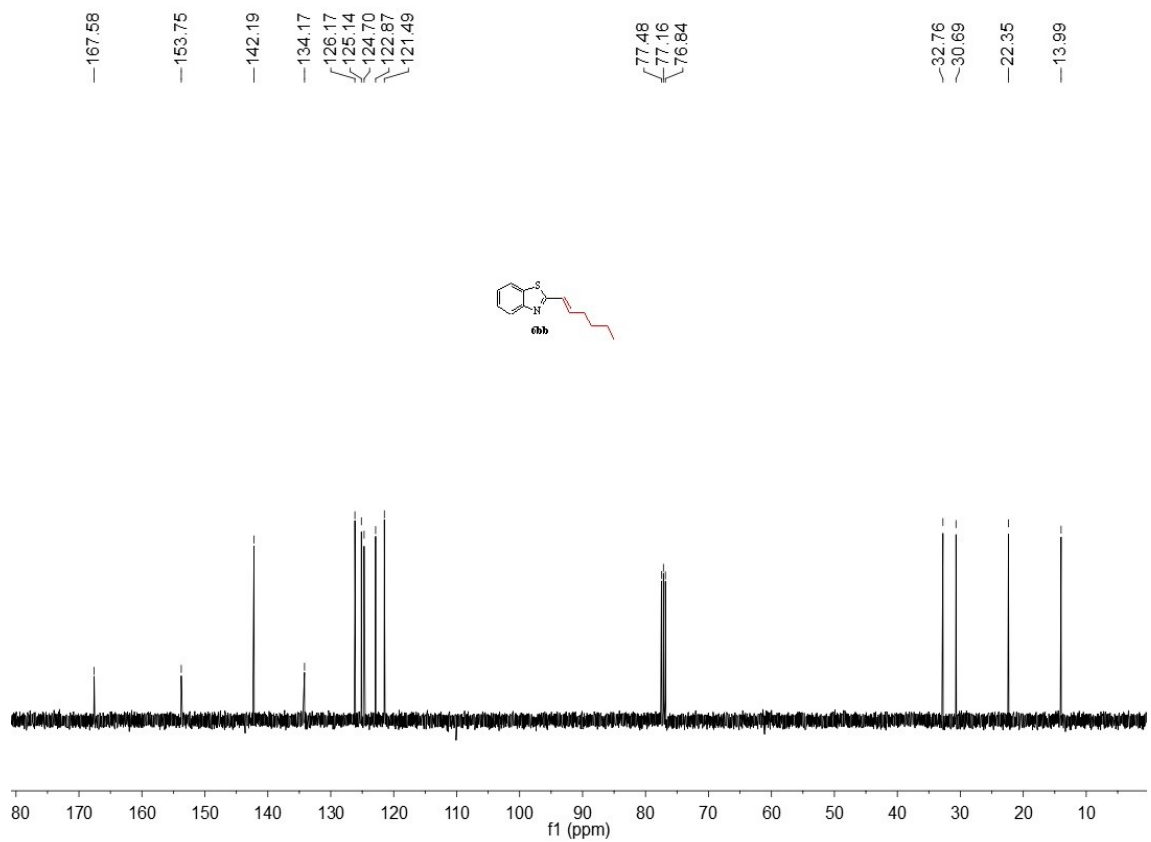
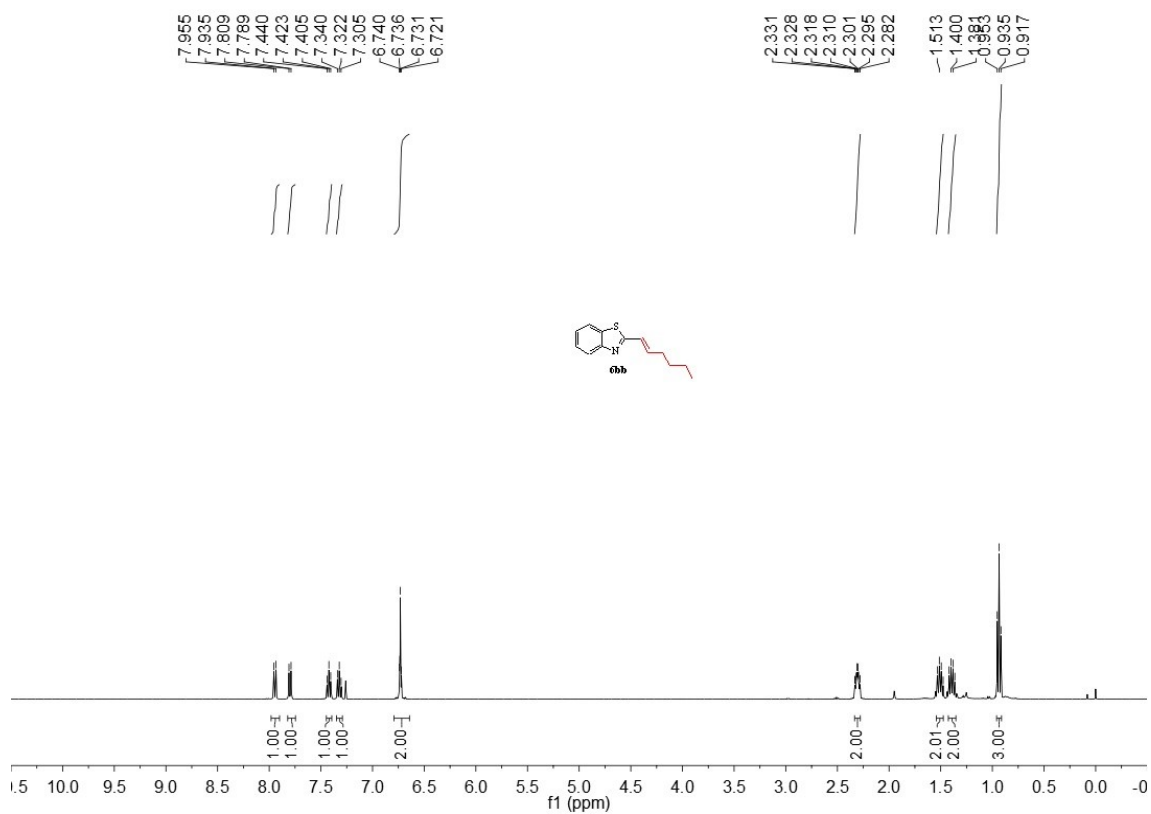


^1H and ^{13}C NMR Spectra of (*E*)-6-chloro-2-(pent-1-en-1-yl)benzo[*d*]thiazole(**6ah**)

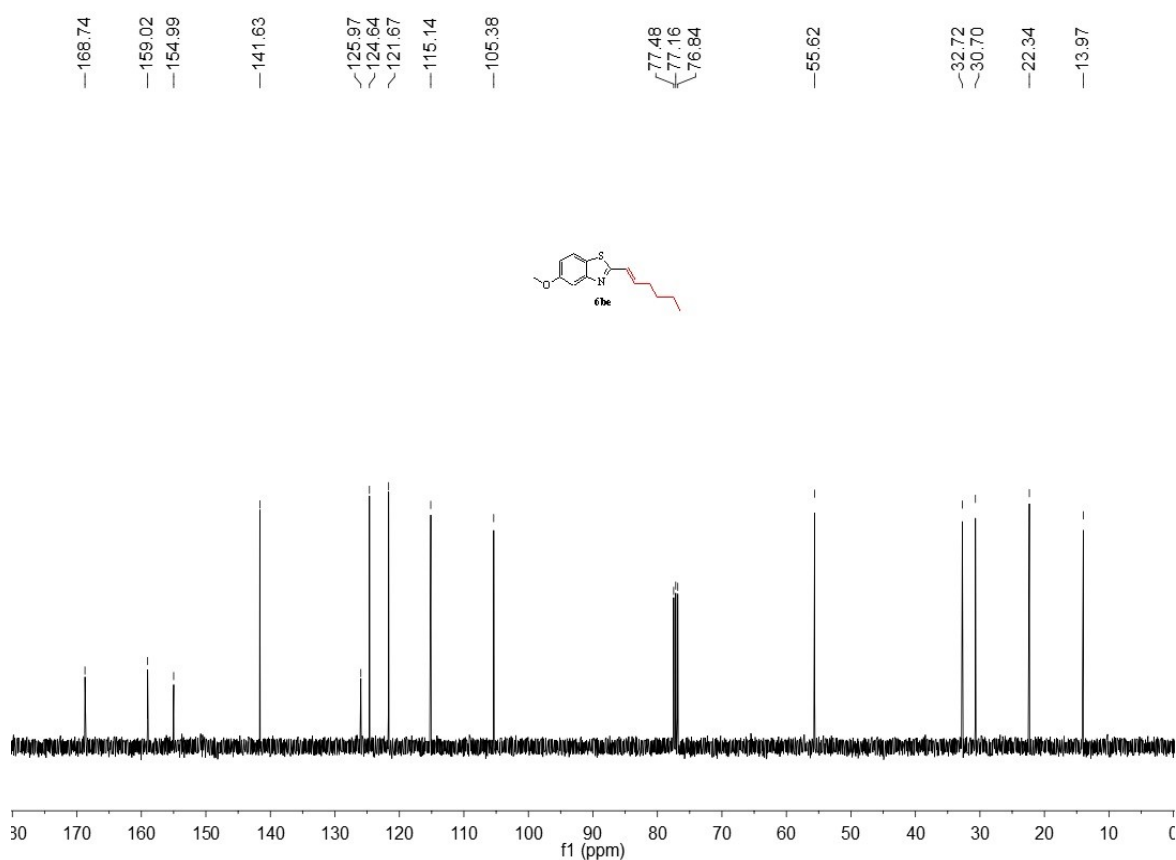
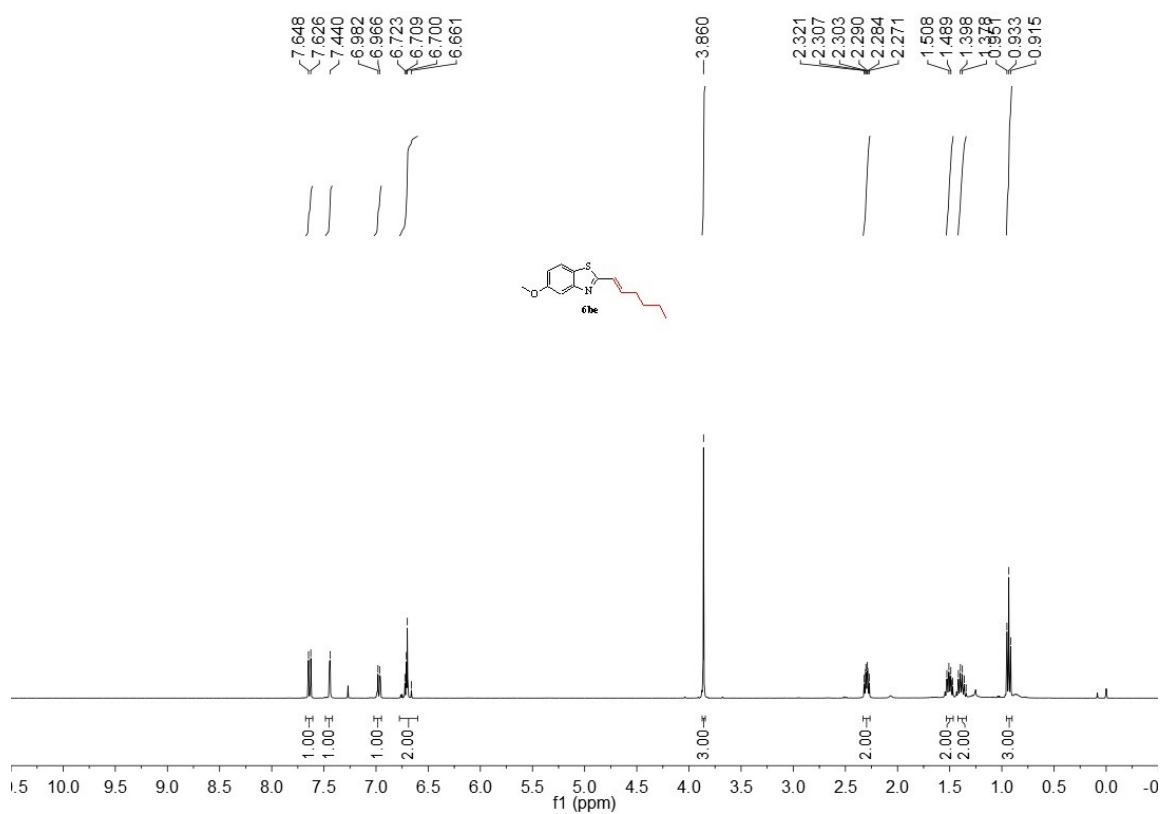




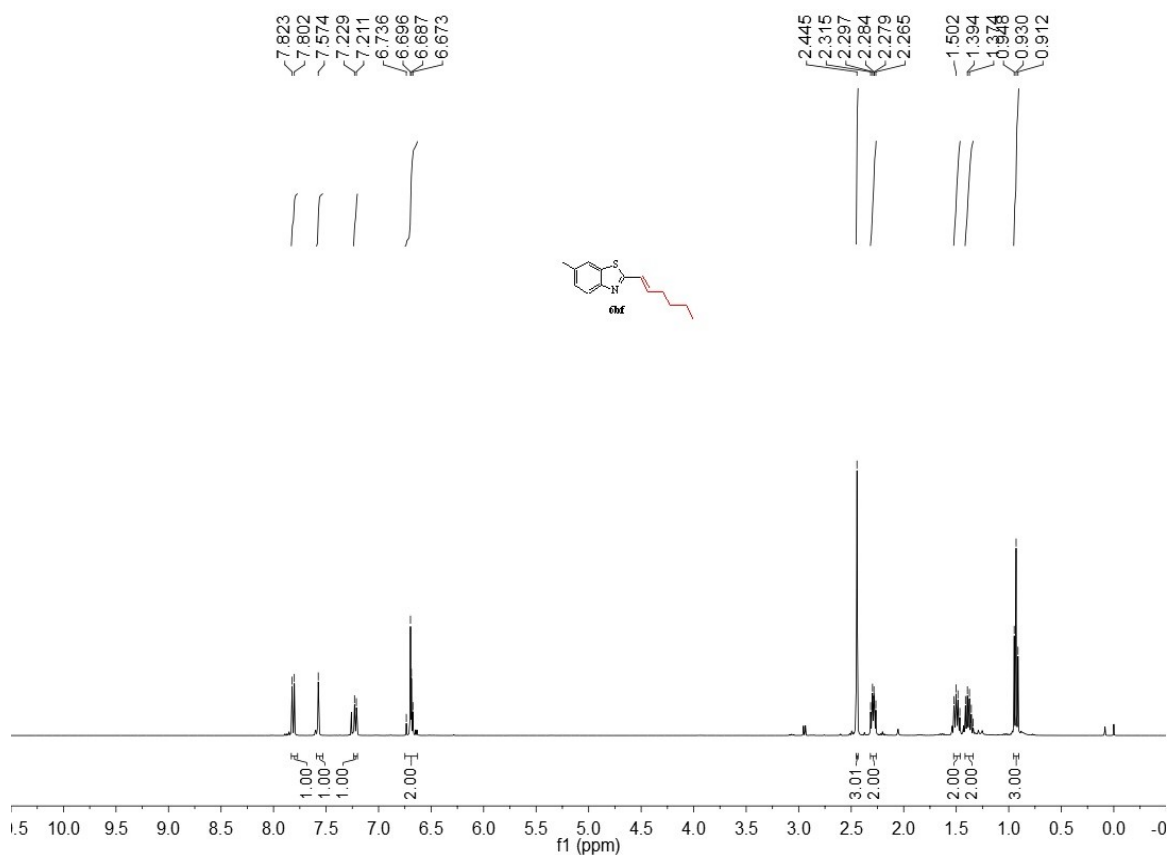
¹H and ¹³C NMR Spectra of (*E*)-2-(hex-1-en-1-yl)benzo[*d*]thiazole(**6bb**)

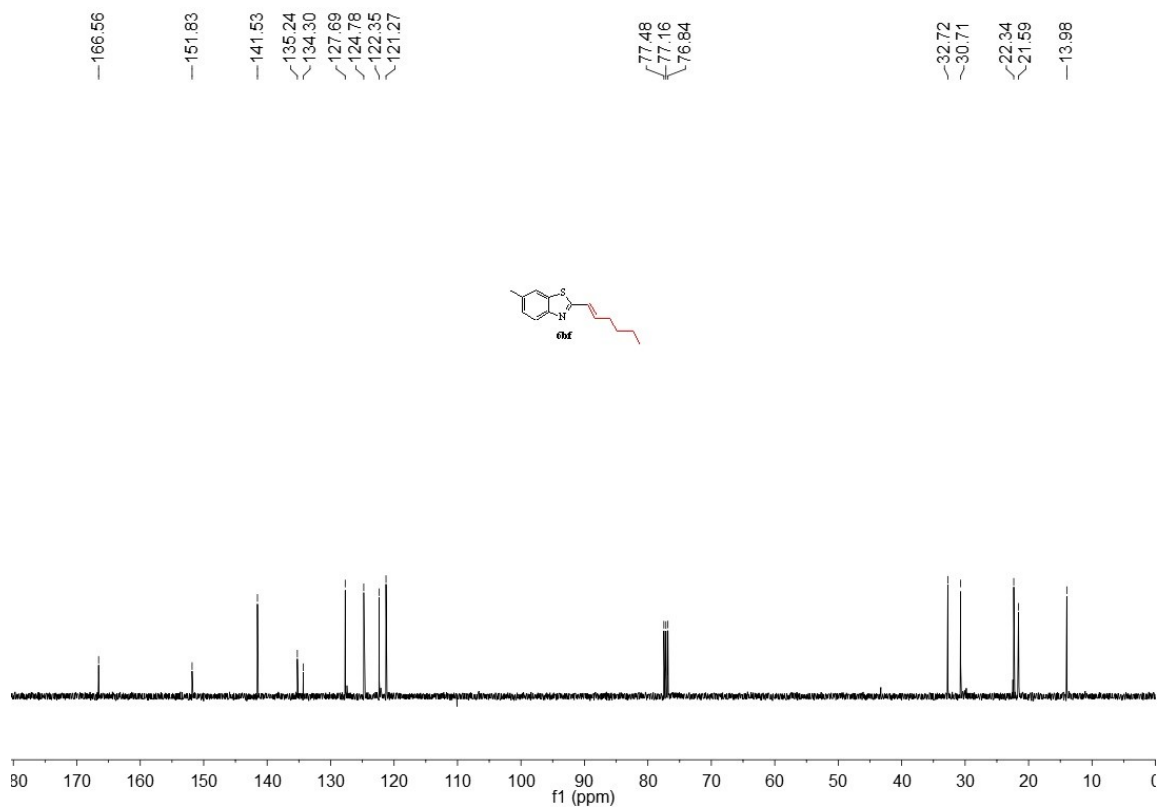


^1H and ^{13}C NMR Spectra of (*E*)-2-(hex-1-en-1-yl)-5-methoxy benzo[*d*]thiazole (**6be**)

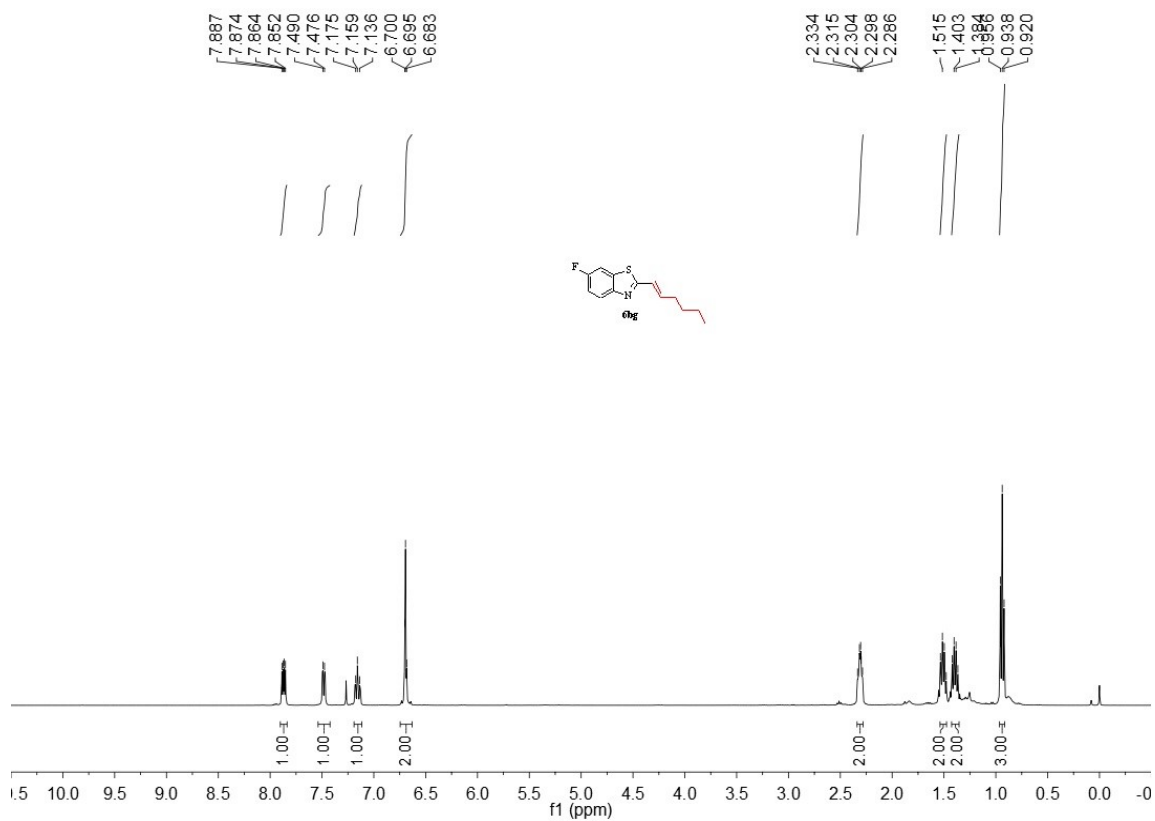


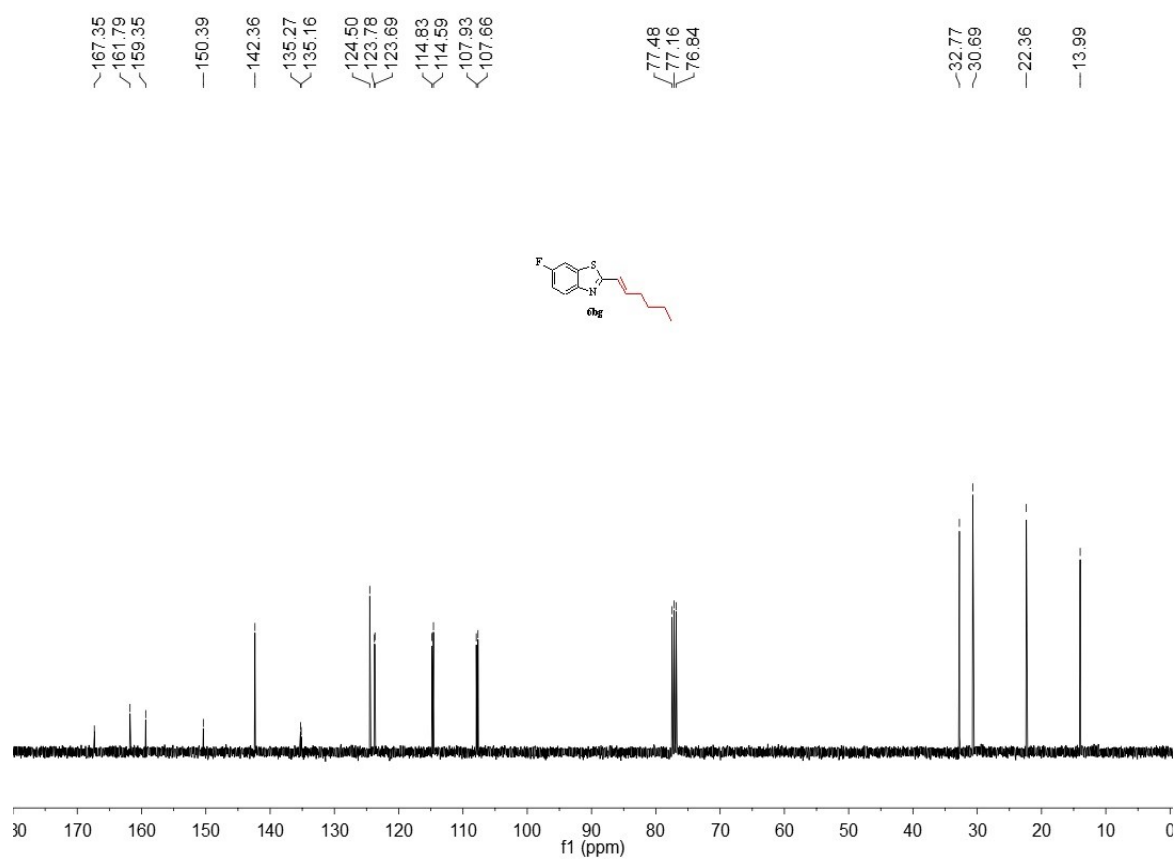
^1H and ^{13}C NMR Spectra of (*E*)-2-(hex-1-en-1-yl)-6-methoxy benzo[*d*]thiazole(**6bf**)



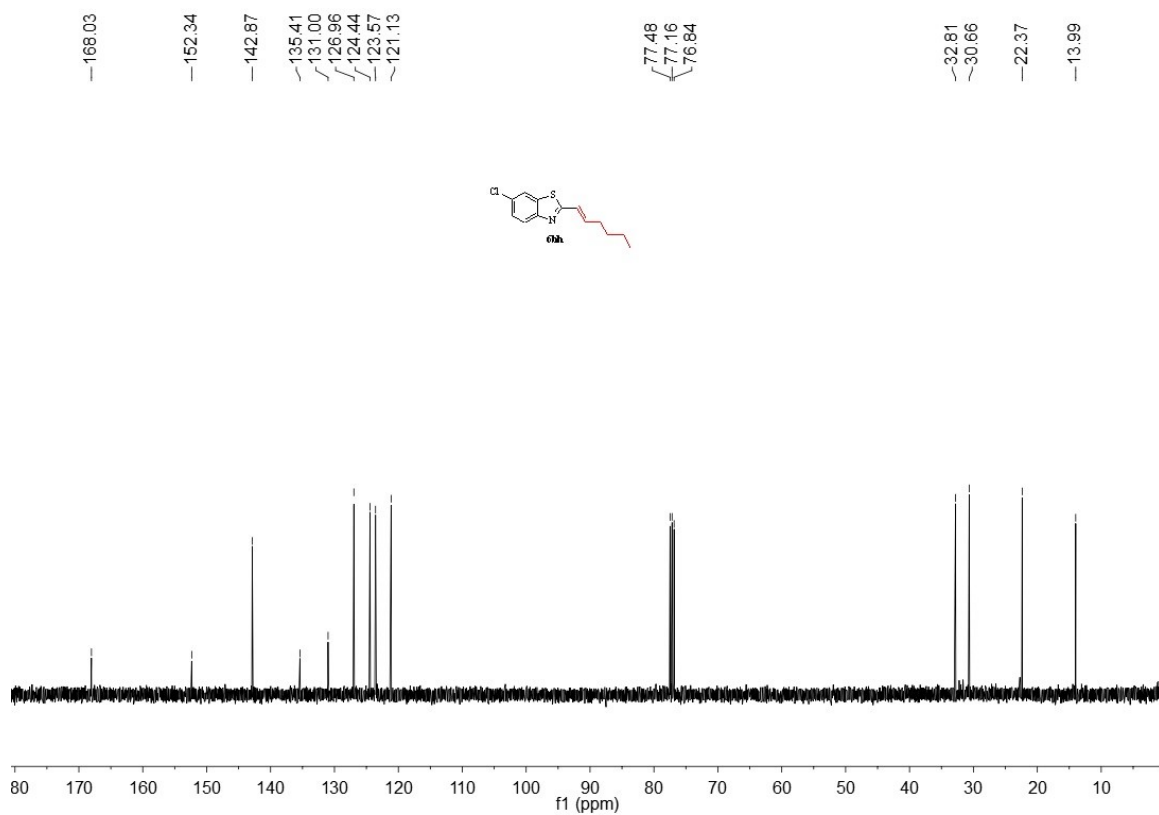
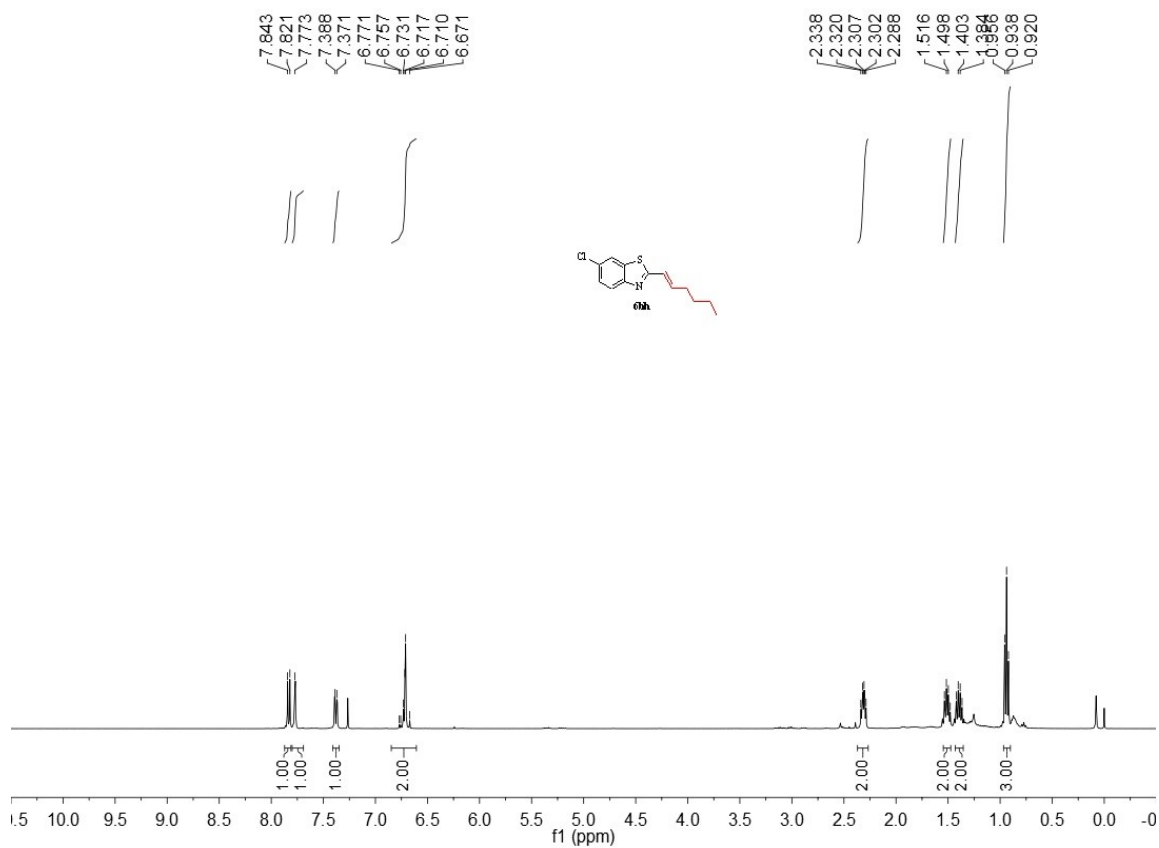


¹H and ¹³C NMR Spectra of (E)-6-fluoro-2-(hex-1-en-1-yl)benzo[d]thiazole (**6bg**)

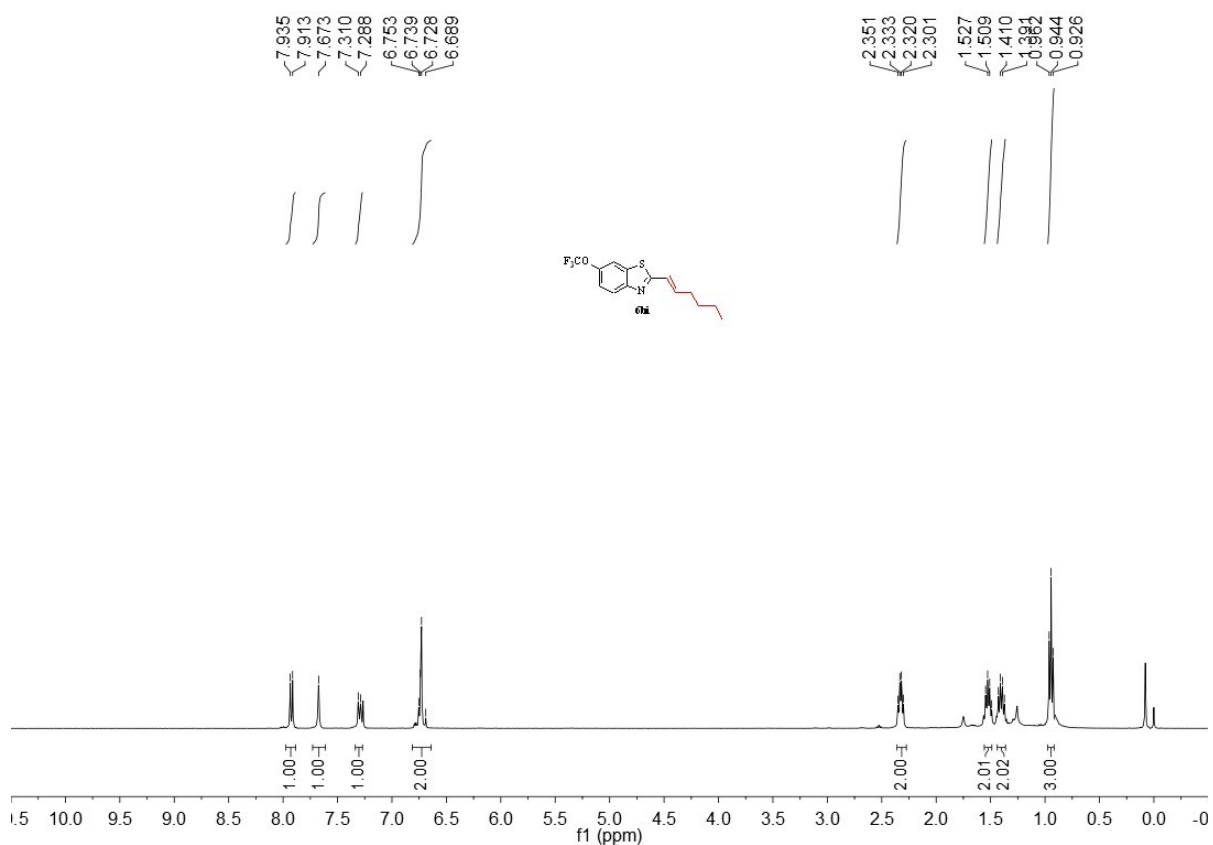


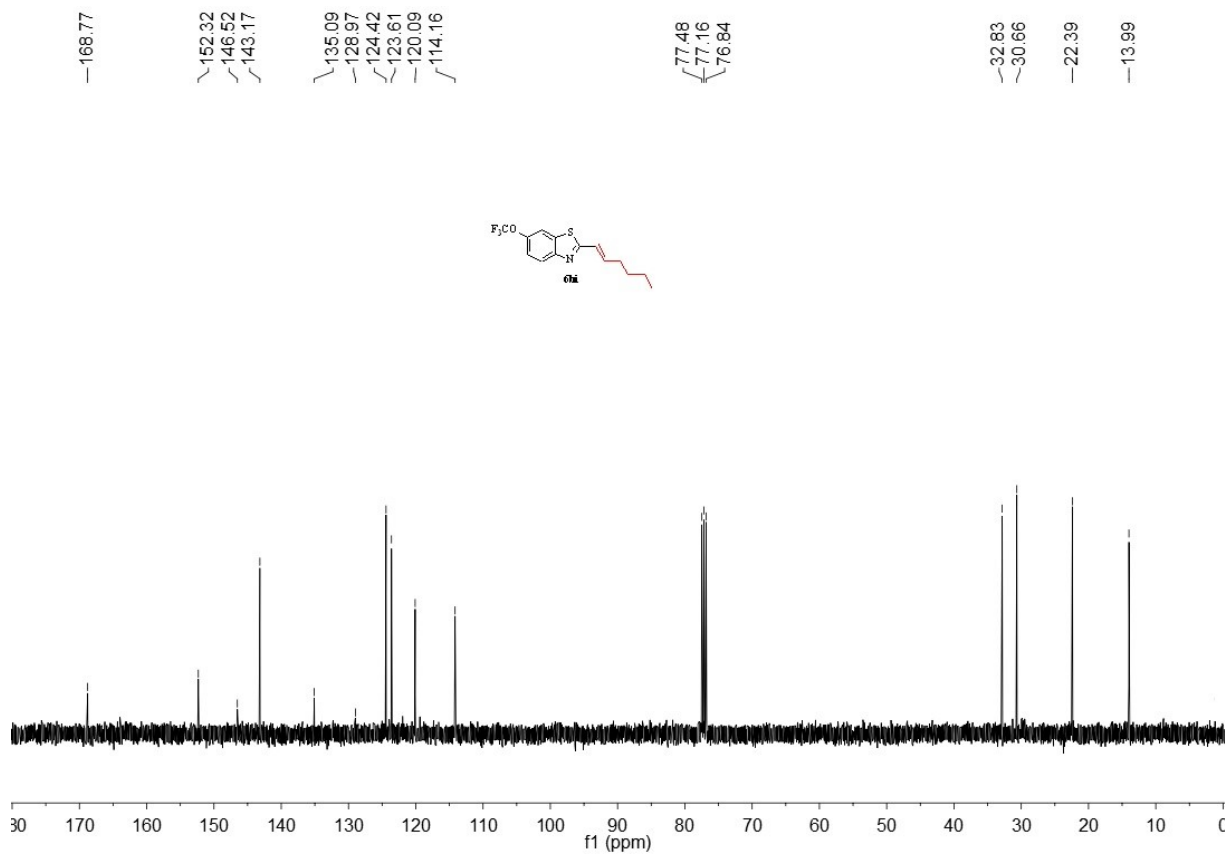


¹H and ¹³C NMR Spectra of (*E*)-6-chloro-2-(hex-1-en-1-yl) benzo[*d*]thiazole(**6bh**)

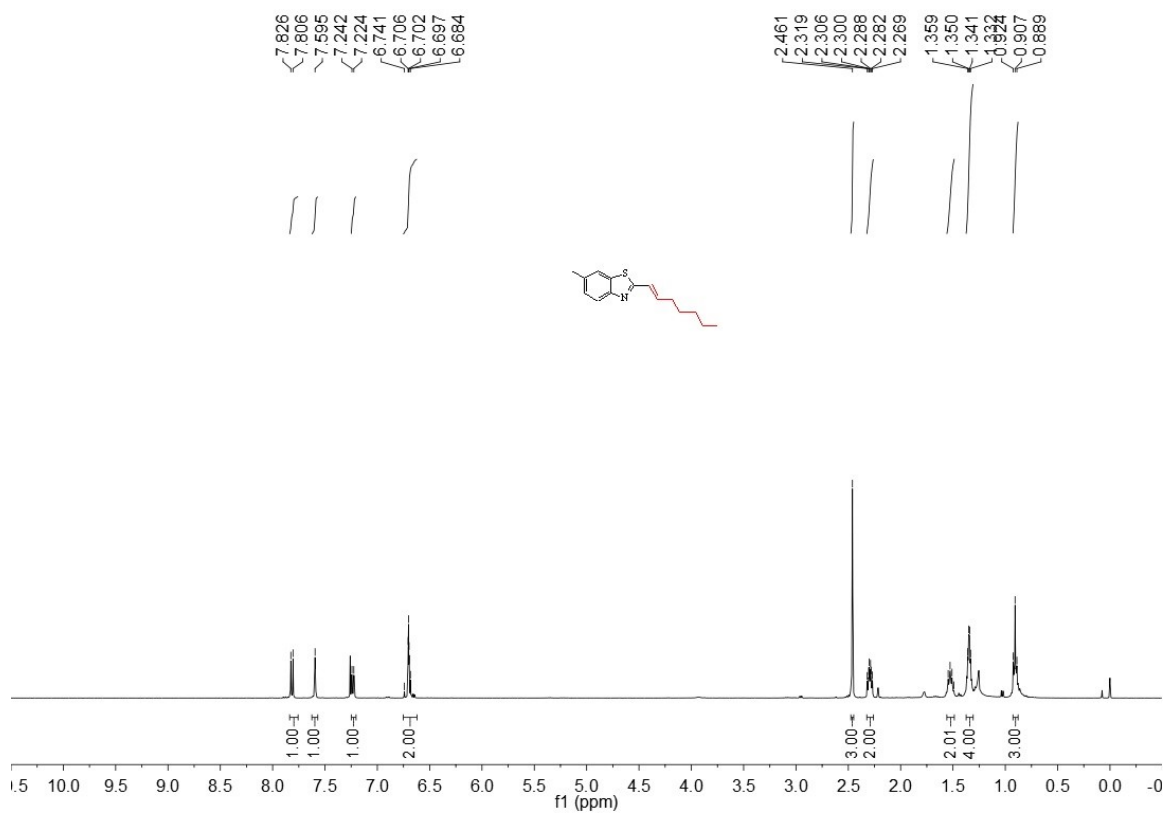


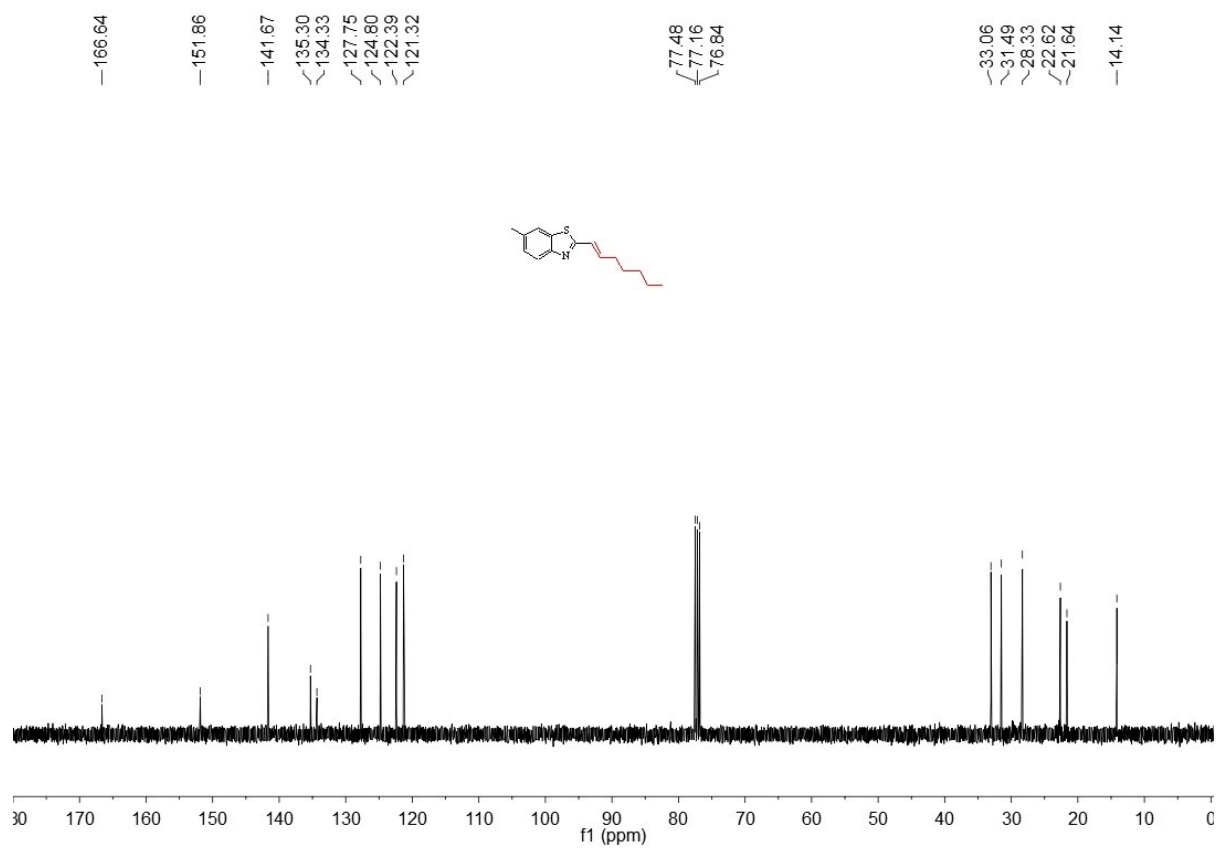
¹H and ¹³C NMR Spectra of (*E*)-2-(hex-1-en-1-yl)-6-(trifluoromethoxy)benzo[*d*]thiazole (**6bi**)



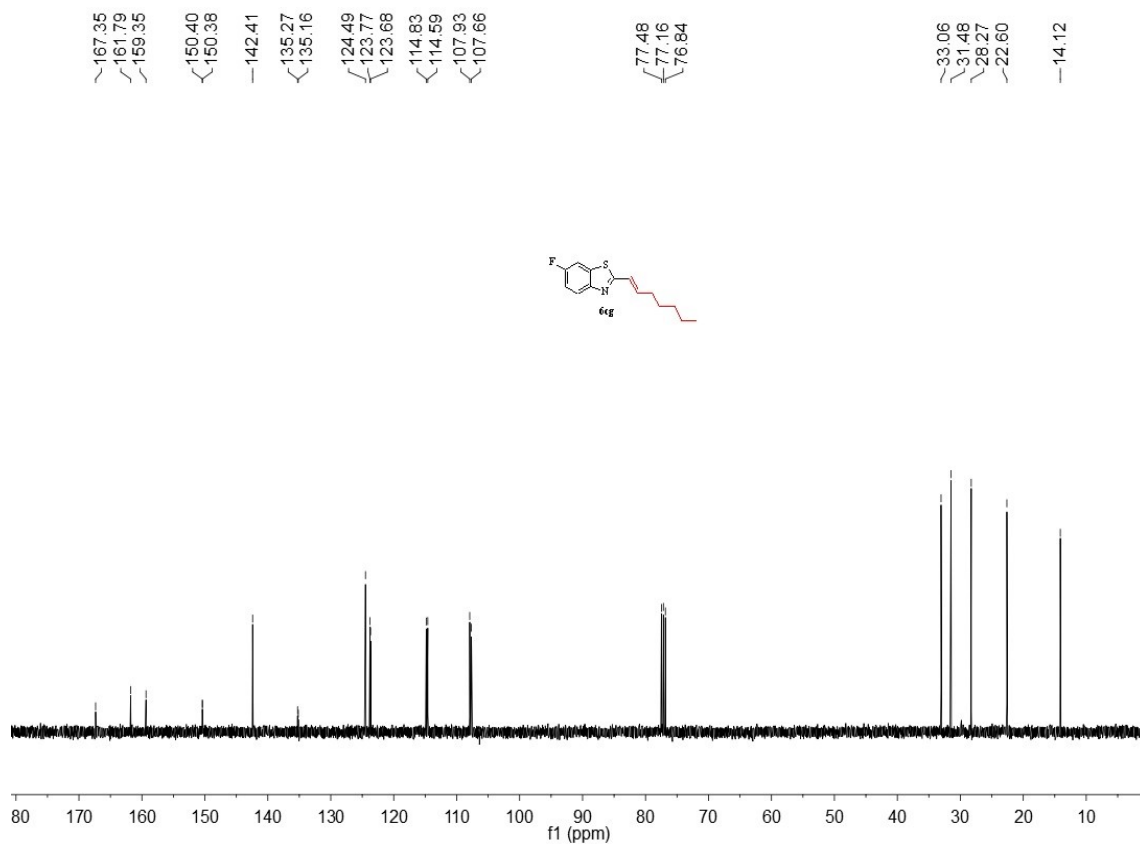
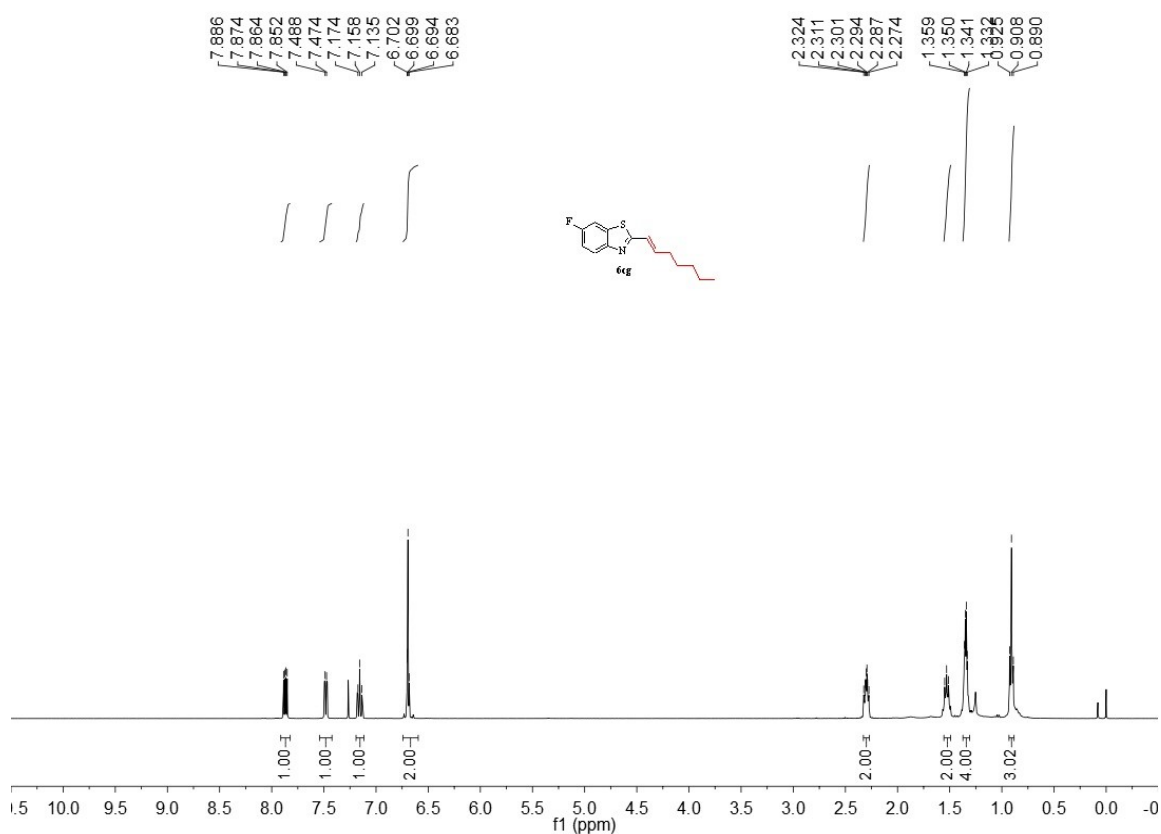


¹H and ¹³C NMR Spectra of (E)-2-(hept-1-en-1-yl)-6-methyl benzo[d]thiazole (6cf)

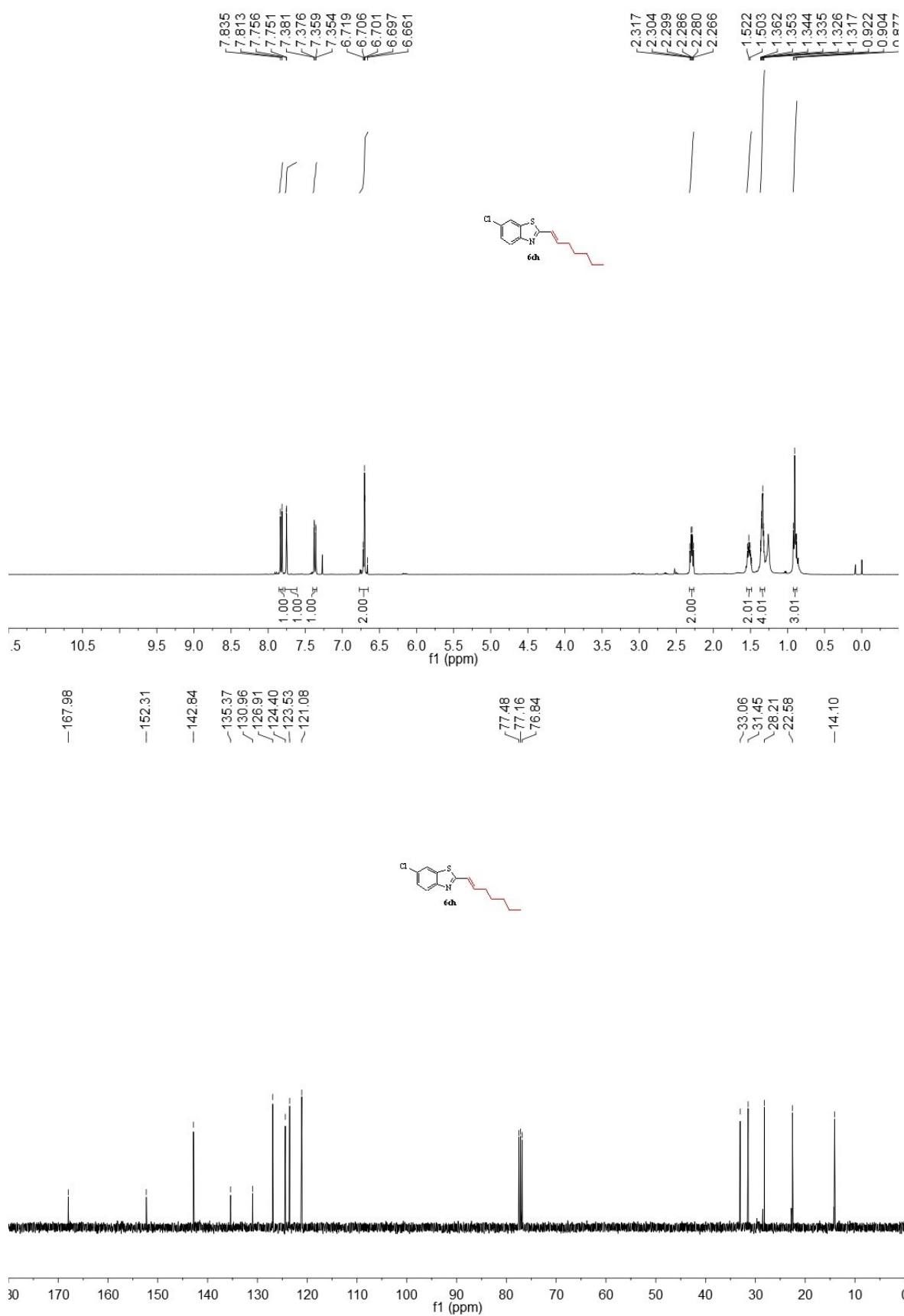




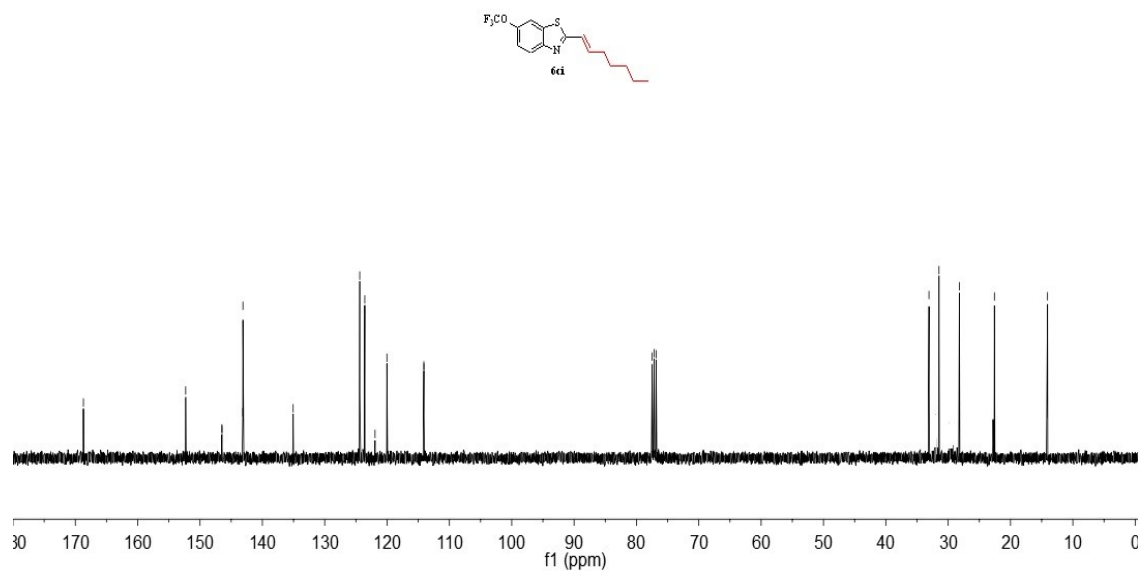
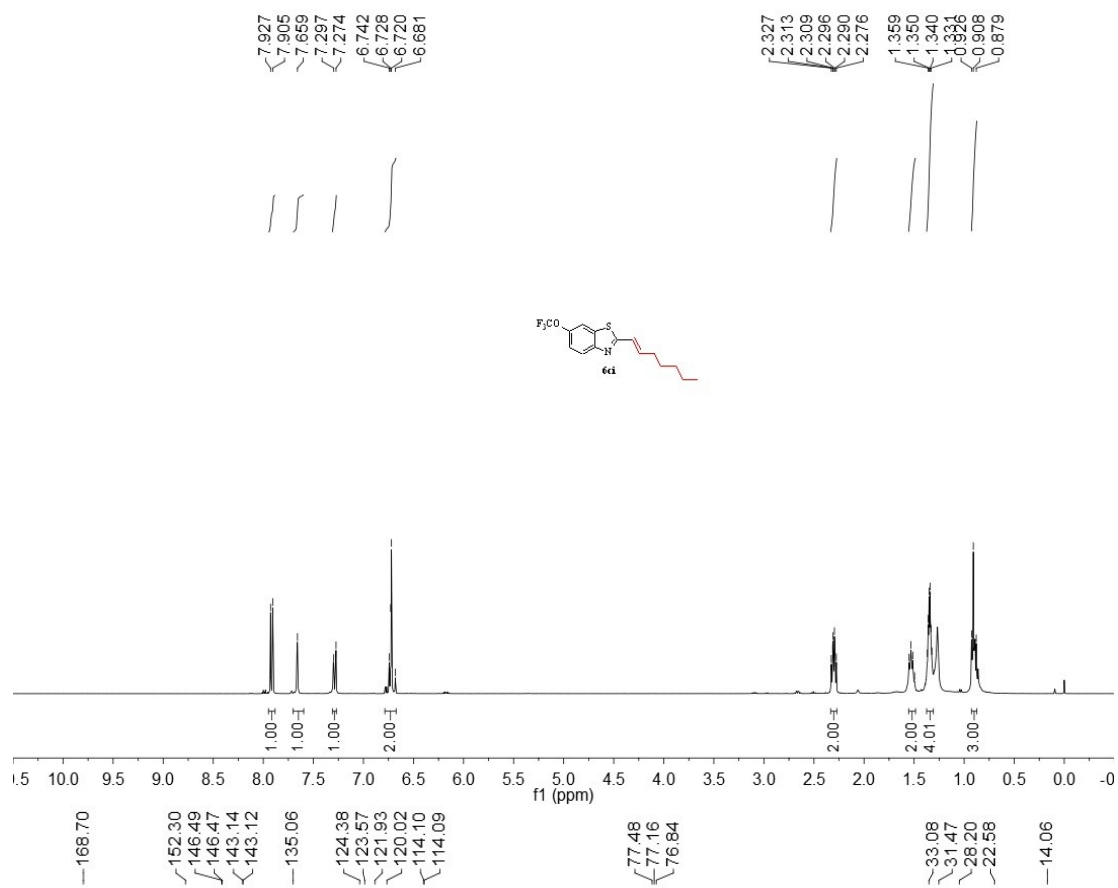
¹H and ¹³C NMR Spectra of (*E*)-6-fluoro-2-(hept-1-en-1-yl) benzo[*d*] thiazole (**6cg**)



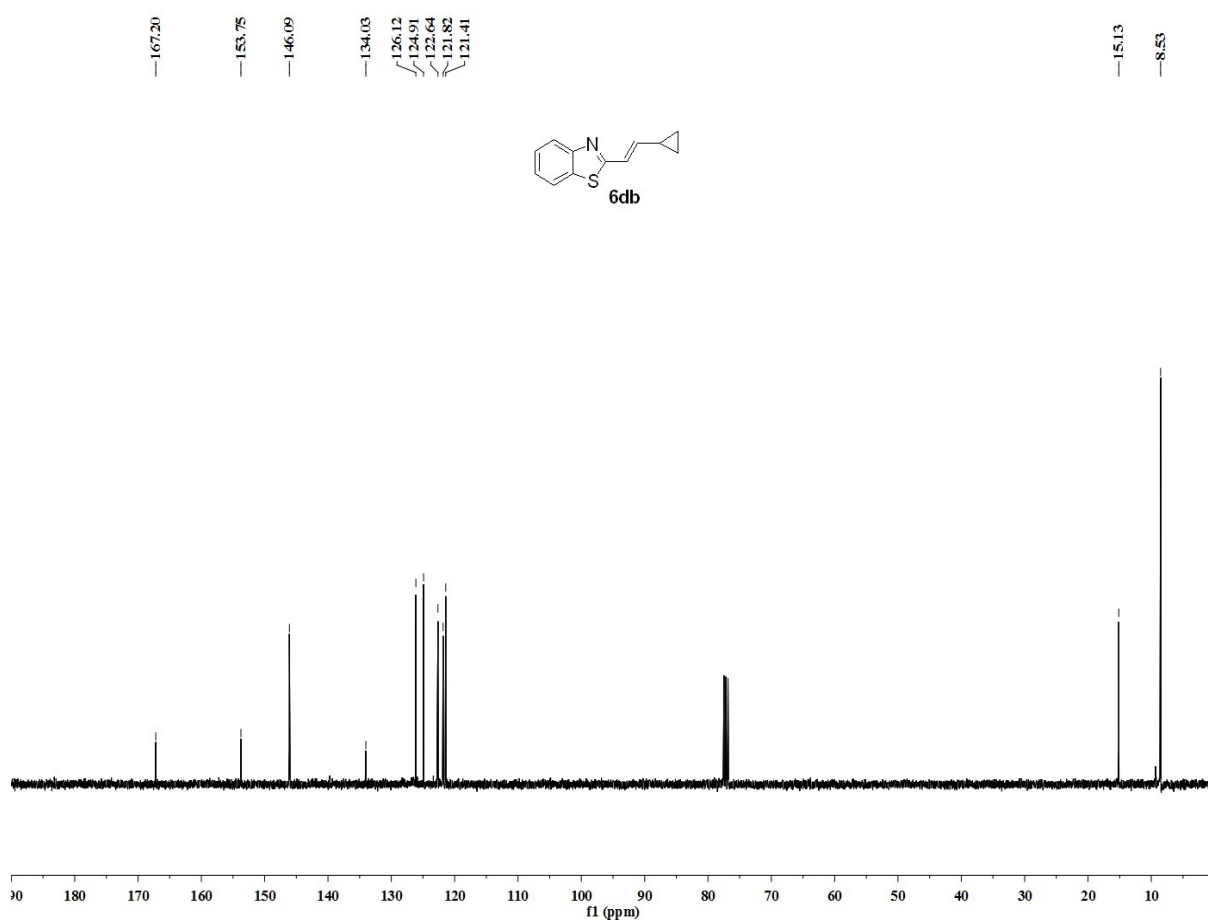
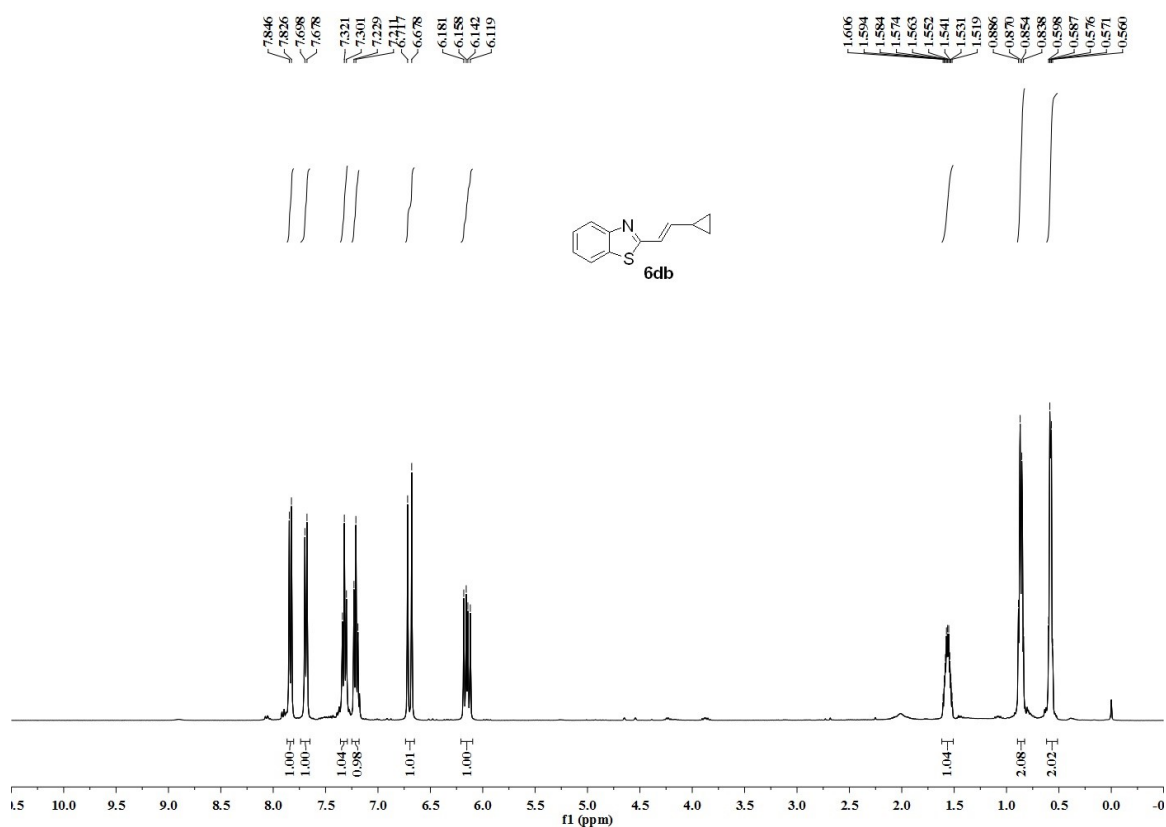
^1H and ^{13}C NMR Spectra of (*E*)-6-chloro-2-(hept-1-en-1-yl) benzo[*d*] thiazole (**6ch**)



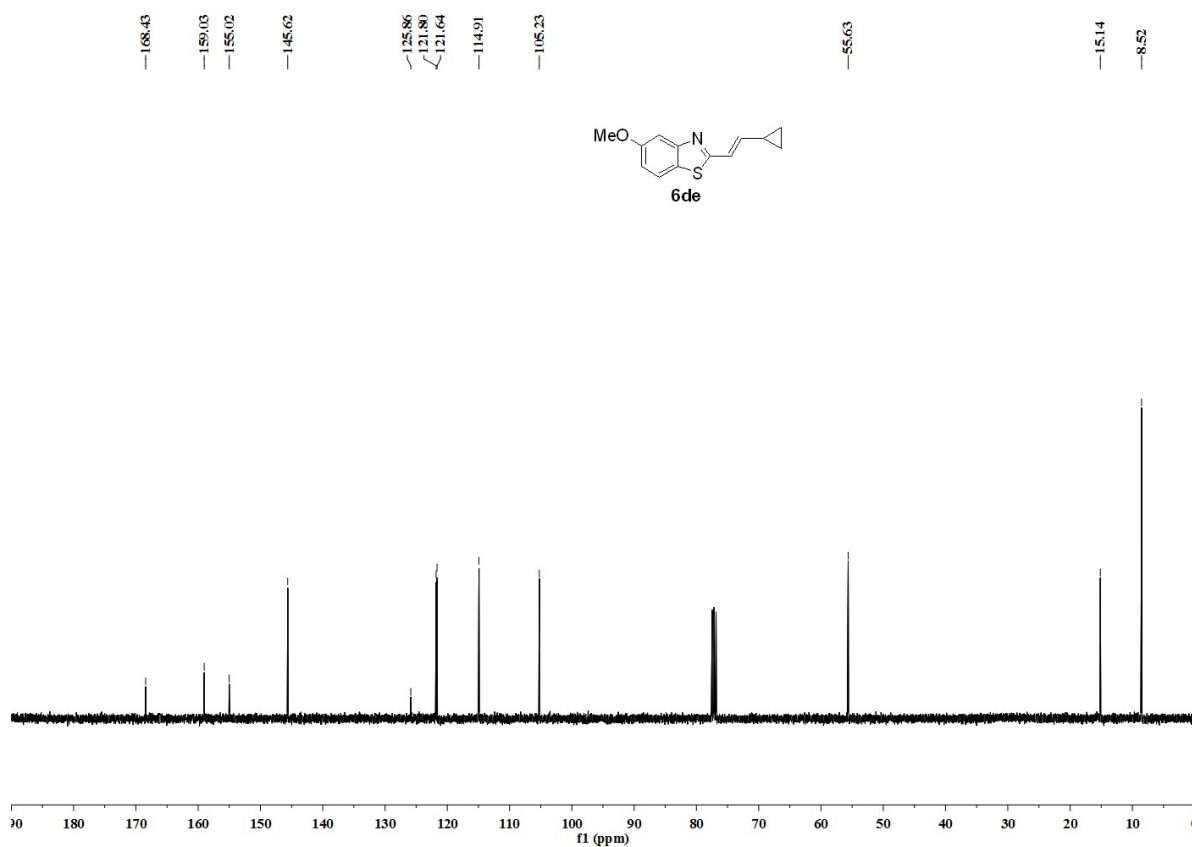
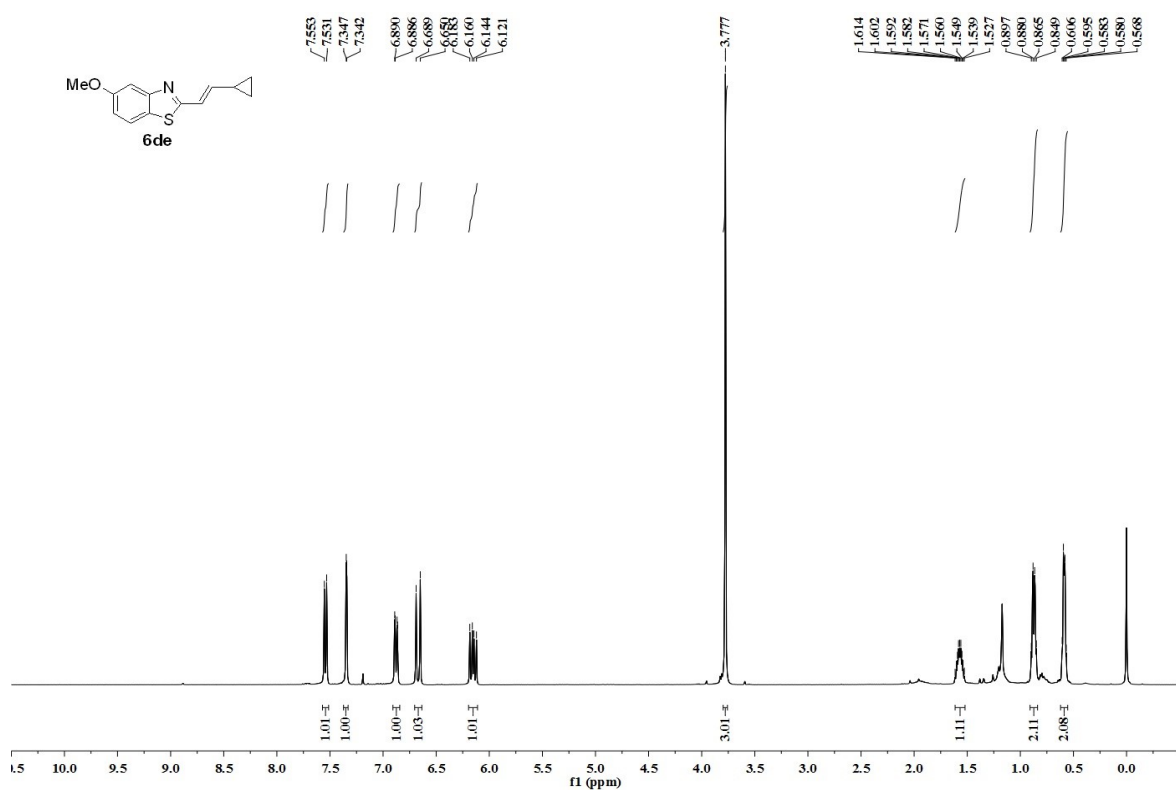
^1H and ^{13}C NMR Spectra of (*E*)-2-(hept-1-en-1-yl)-6-(trifluoromethoxy)benzo[*d*]thiazole (**6ci**)



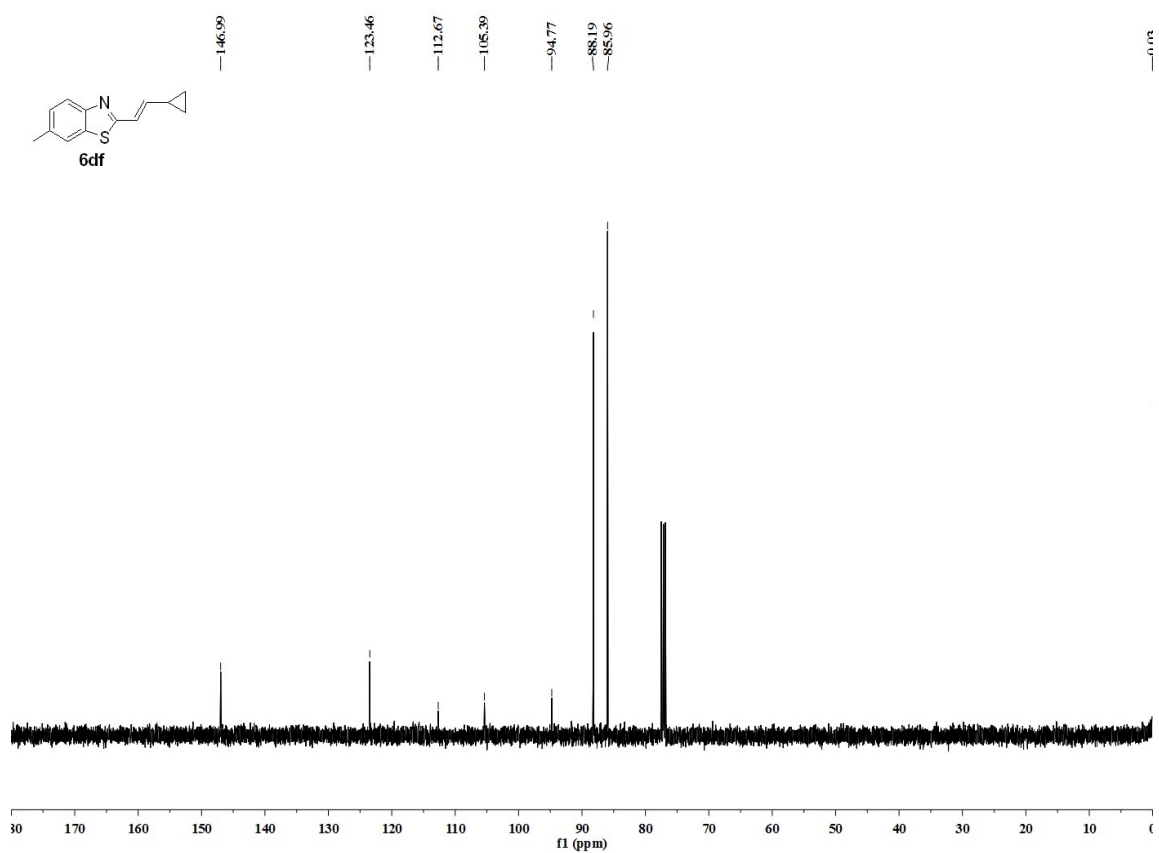
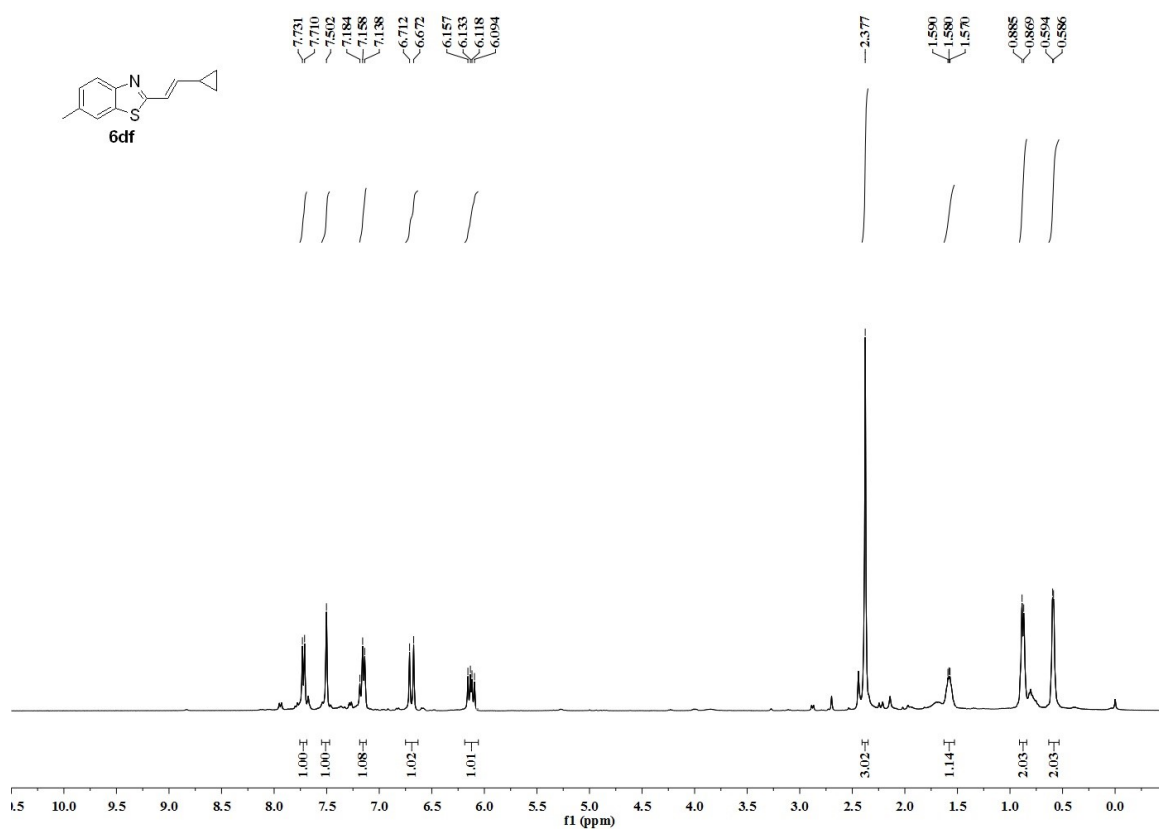
^1H and ^{13}C NMR Spectra of (*E*)-2-(2-cyclopropylvinyl)benzo[d]thiazole(**6db**)



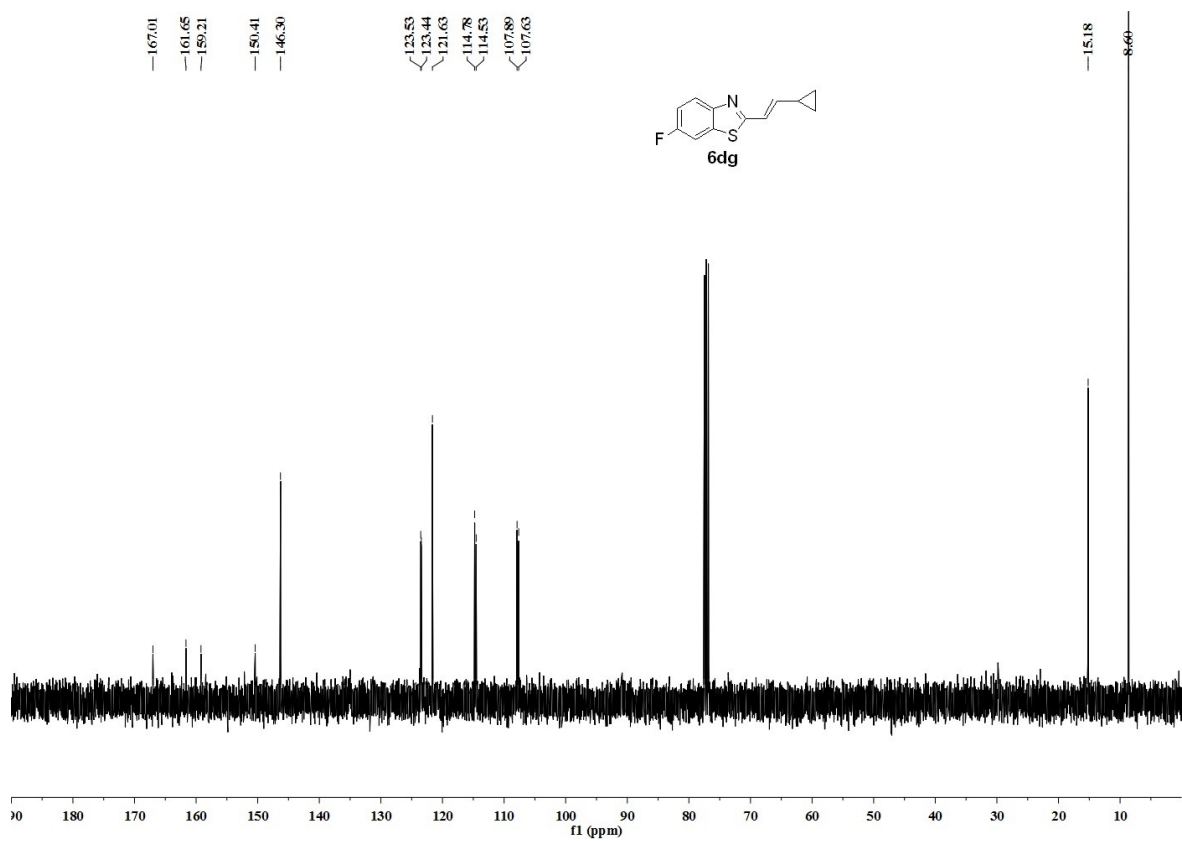
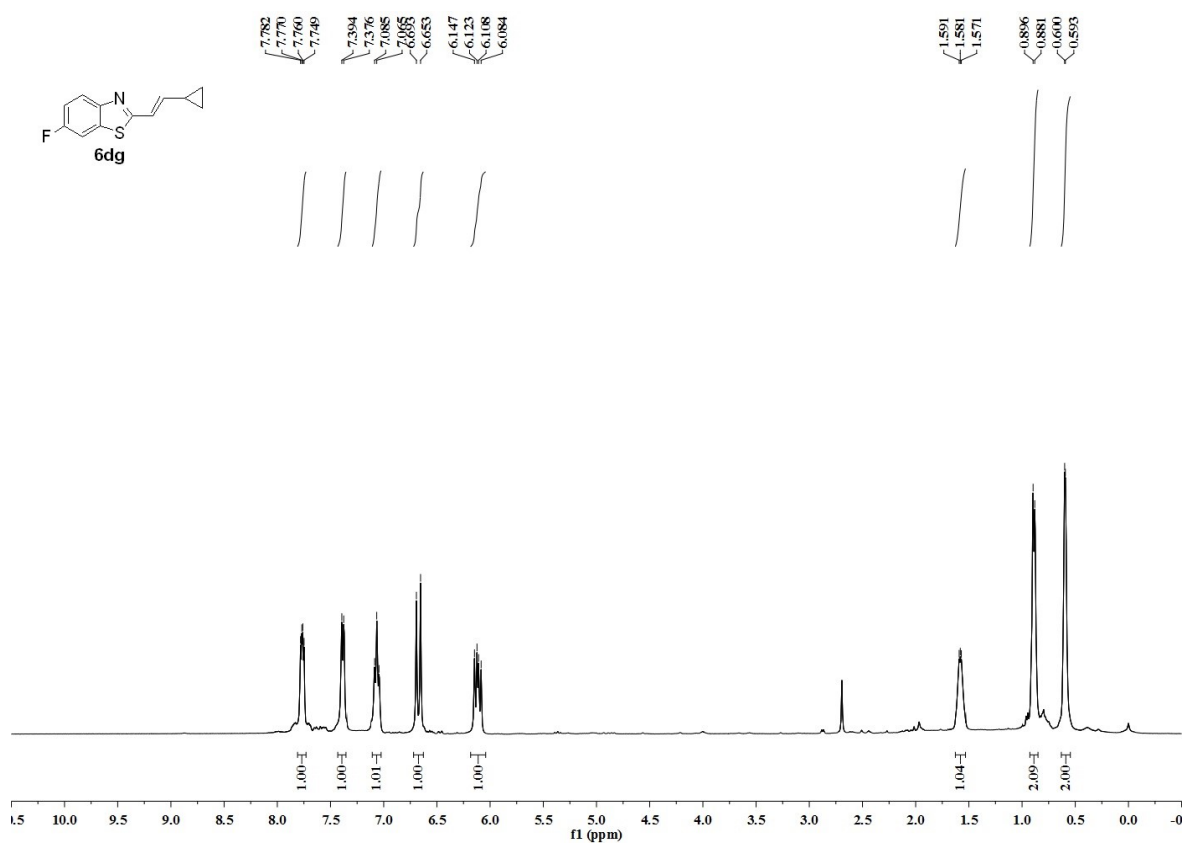
¹H and ¹³C NMR Spectra of (*E*)-2-(2-cyclopropylvinyl)-5-methoxybenzo[d]thiazole (**6de**)



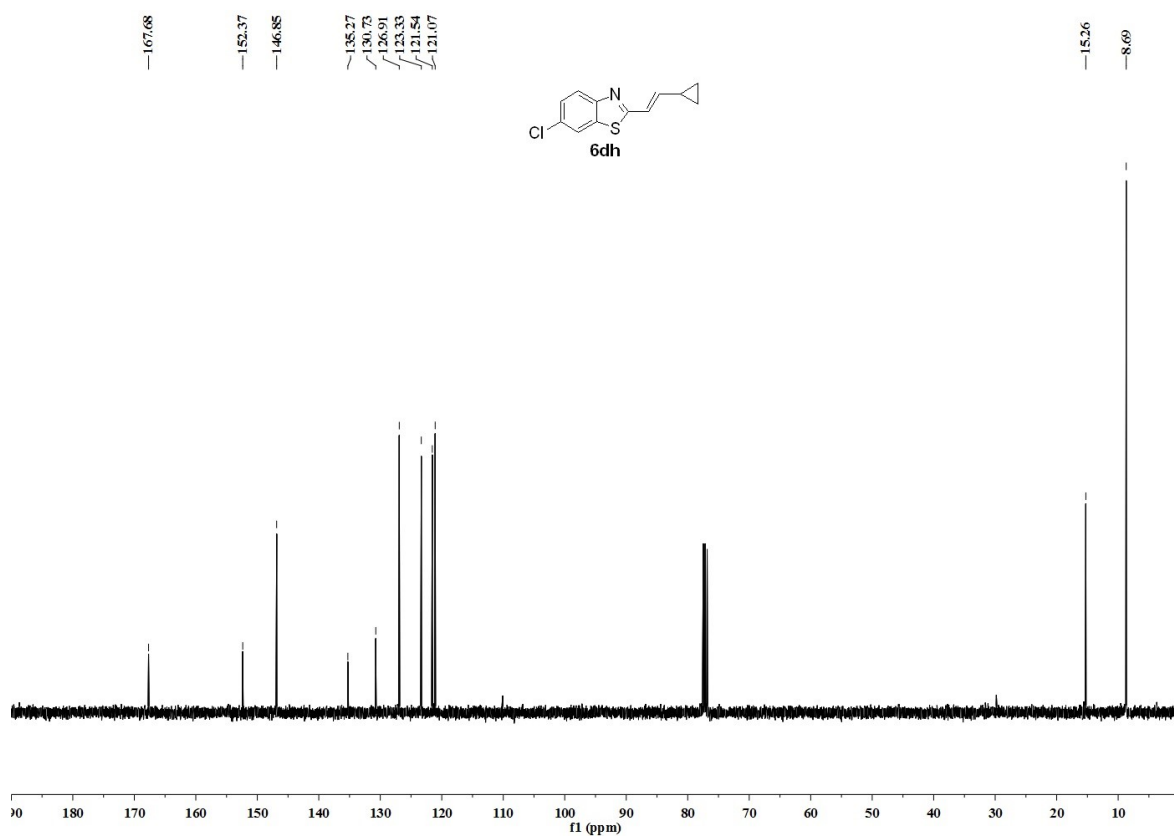
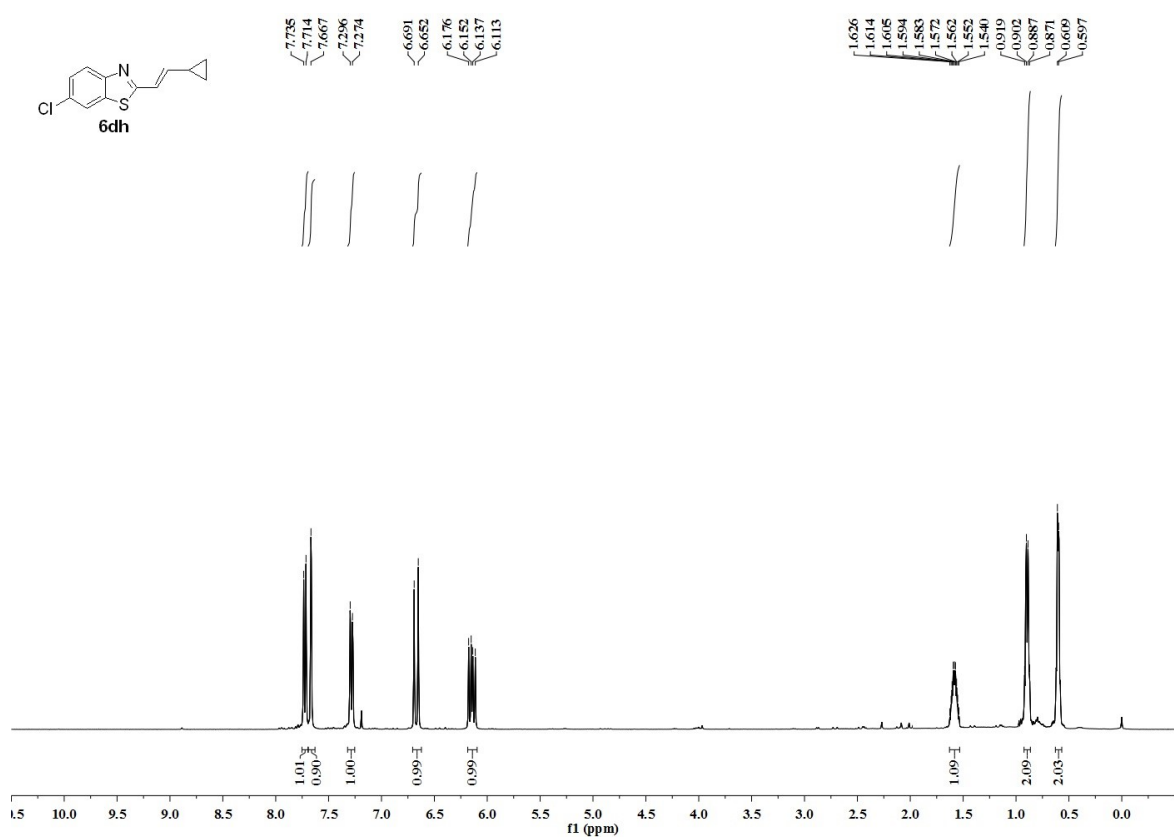
¹H and ¹³C NMR Spectra of (*E*)-2-(2-cyclopropylvinyl)-6-methylbenzo[d]thiazole(**6df**)



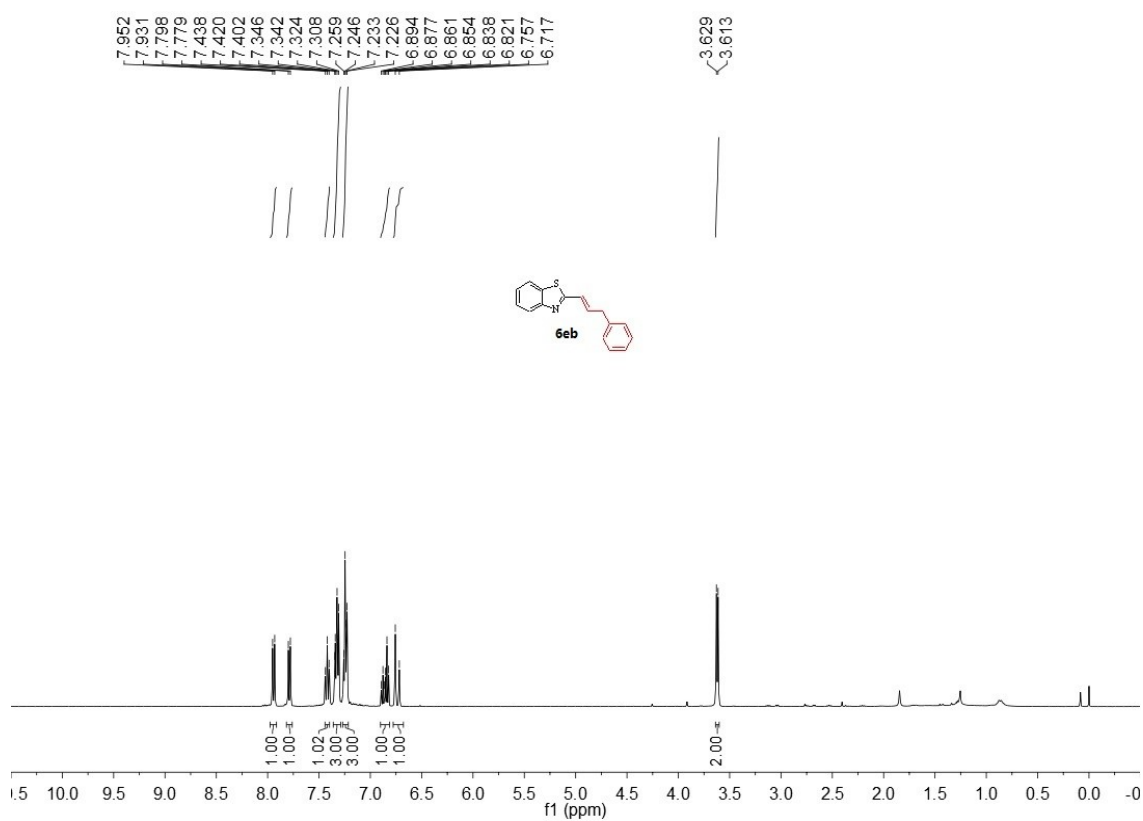
¹H and ¹³C NMR Spectra of (*E*)-2-(2-cyclopropylvinyl)-6-fluorobenzo[d]thiazole(**6dg**)

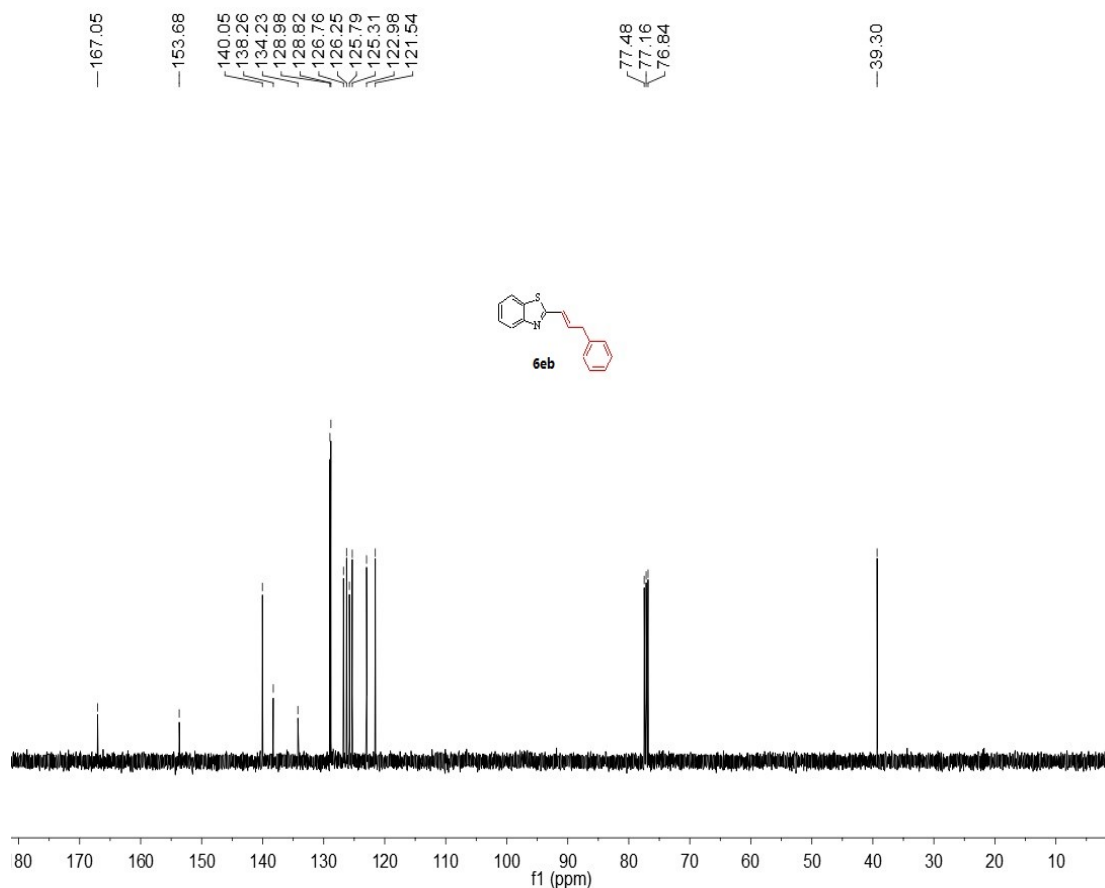


¹H and ¹³C NMR Spectra of (*E*)-6-chloro-2-(2-cyclopropylvinyl)benzo[d]thiazole (**6dh**)

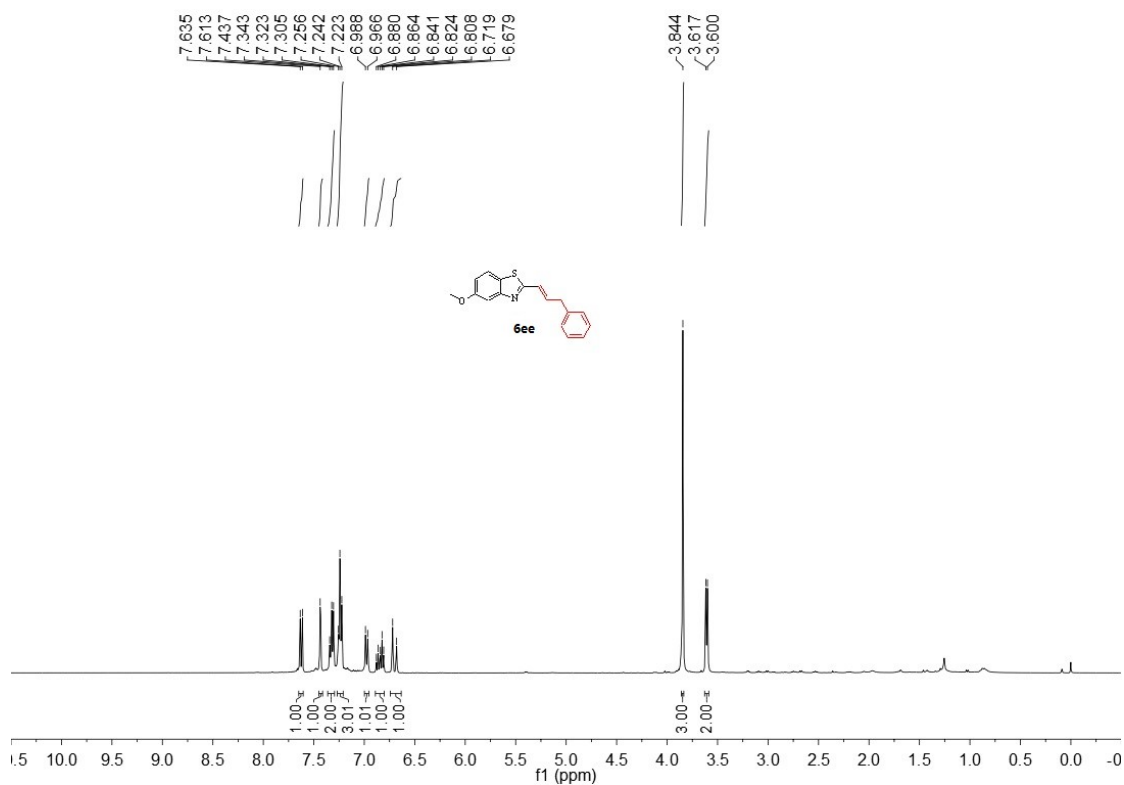


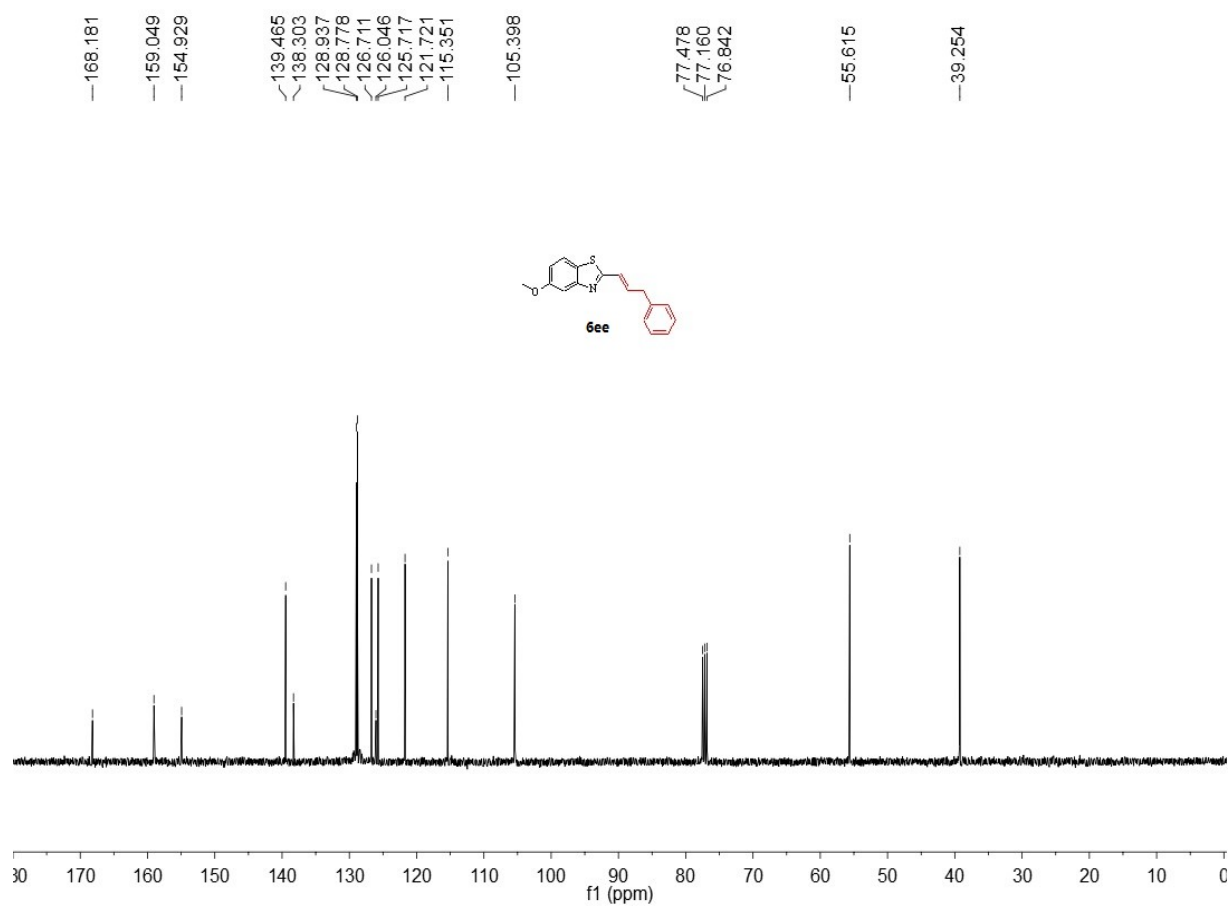
^1H and ^{13}C NMR Spectra of (*E*)-2-(3-phenylprop-1-en-1-yl) benzo[*d*]thiazole (**6eb**)



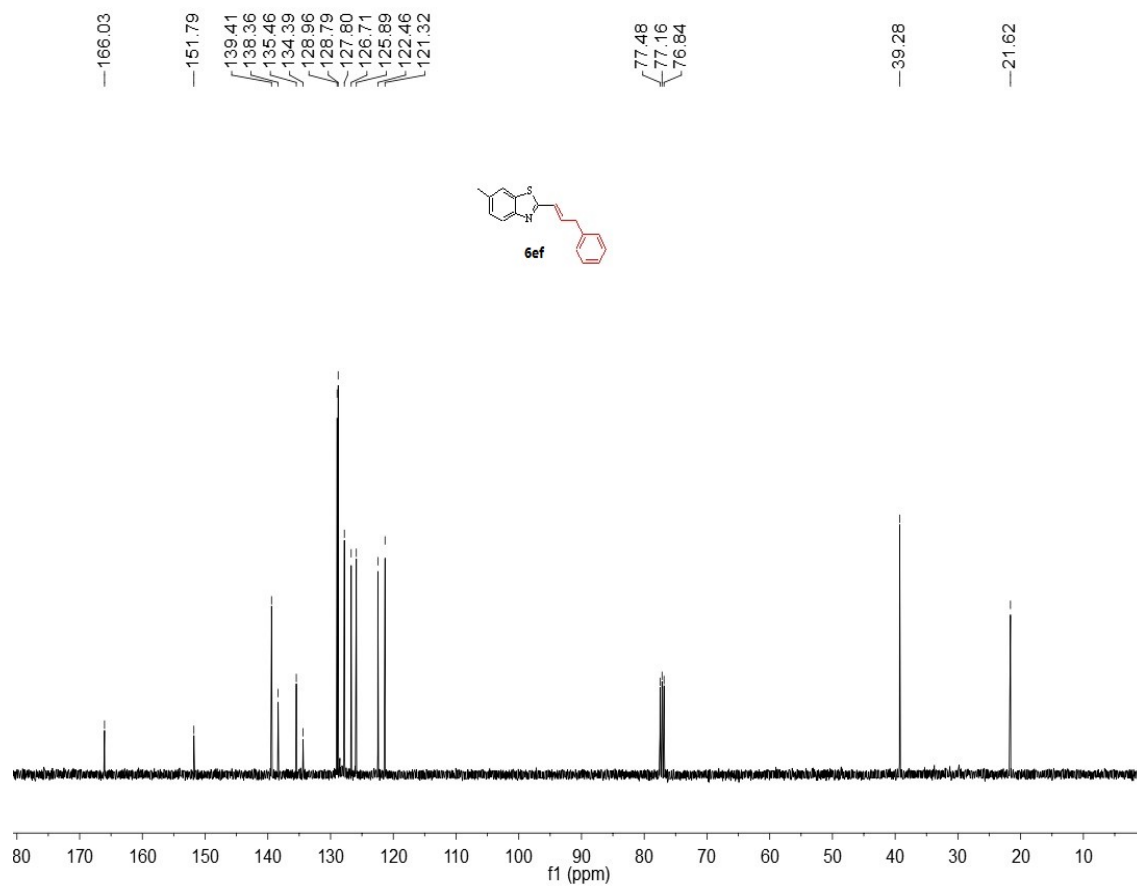
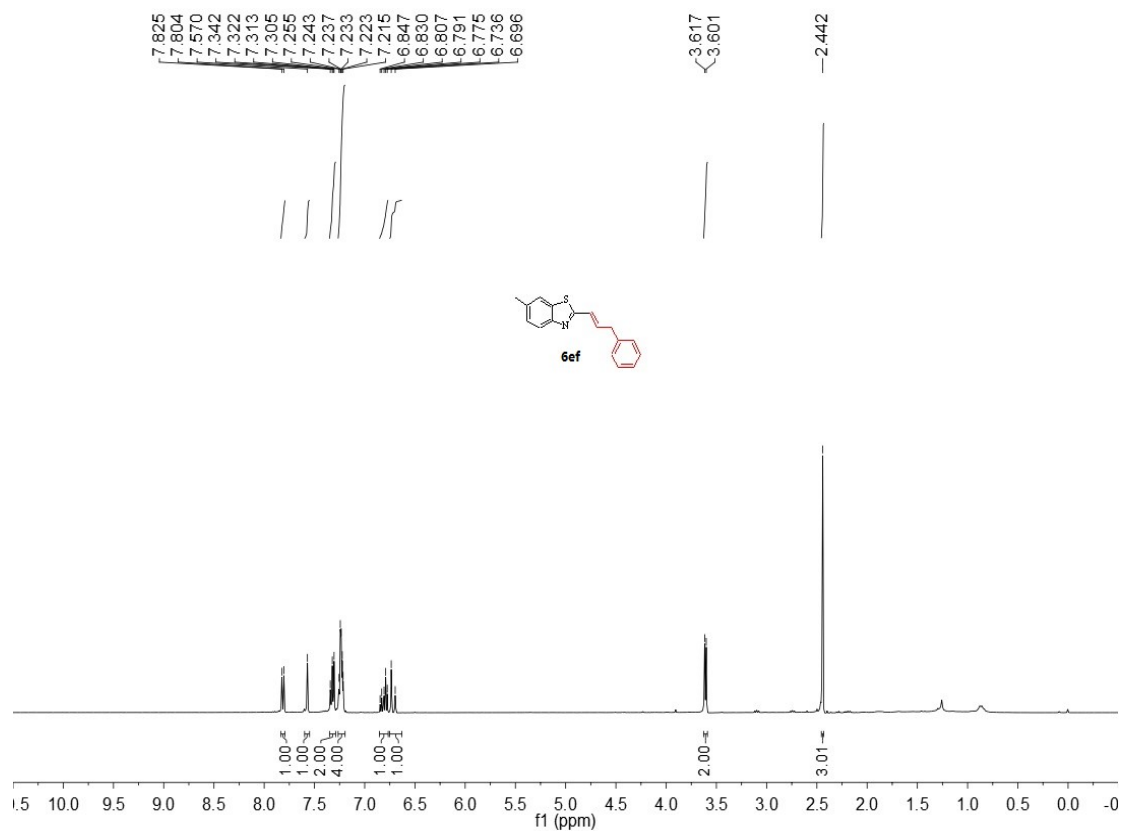


¹H and ¹³C NMR Spectra of (E)-5-methoxy-2-(3-phenylprop-1-en-1-yl) benzo[d] thiazole (6ee)

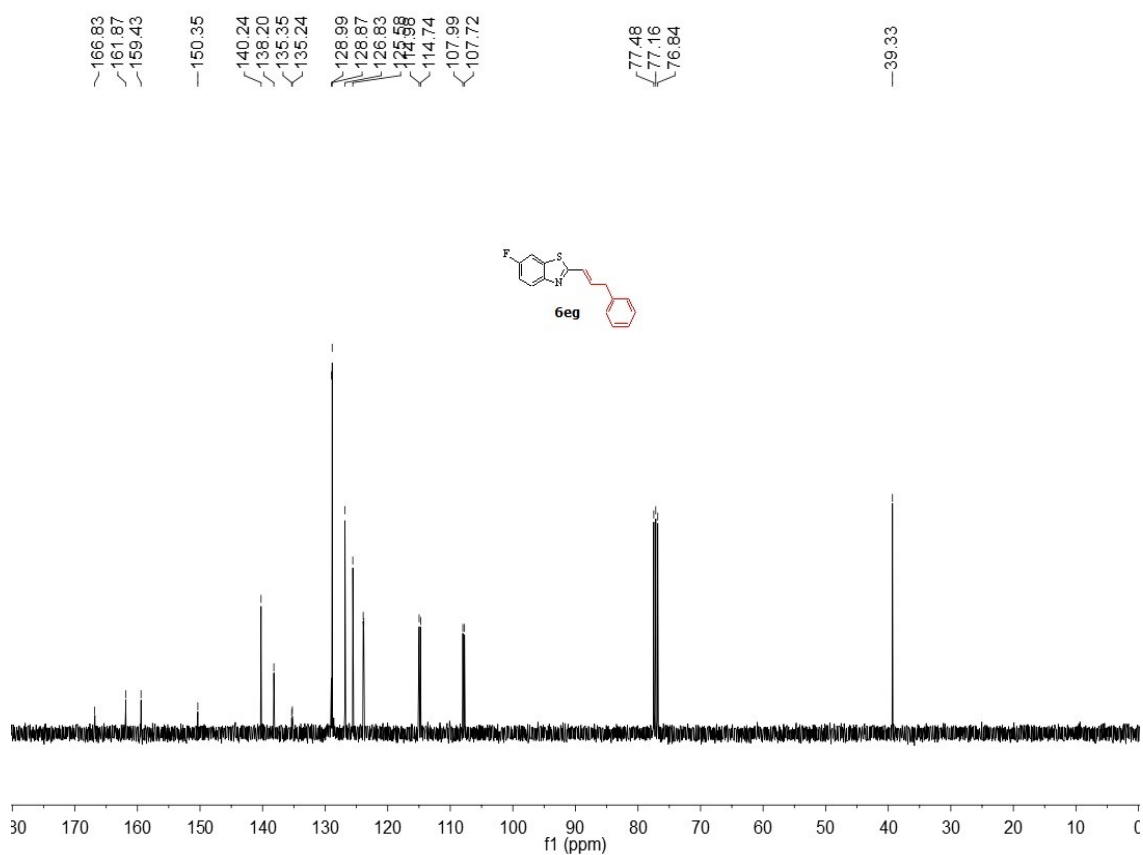
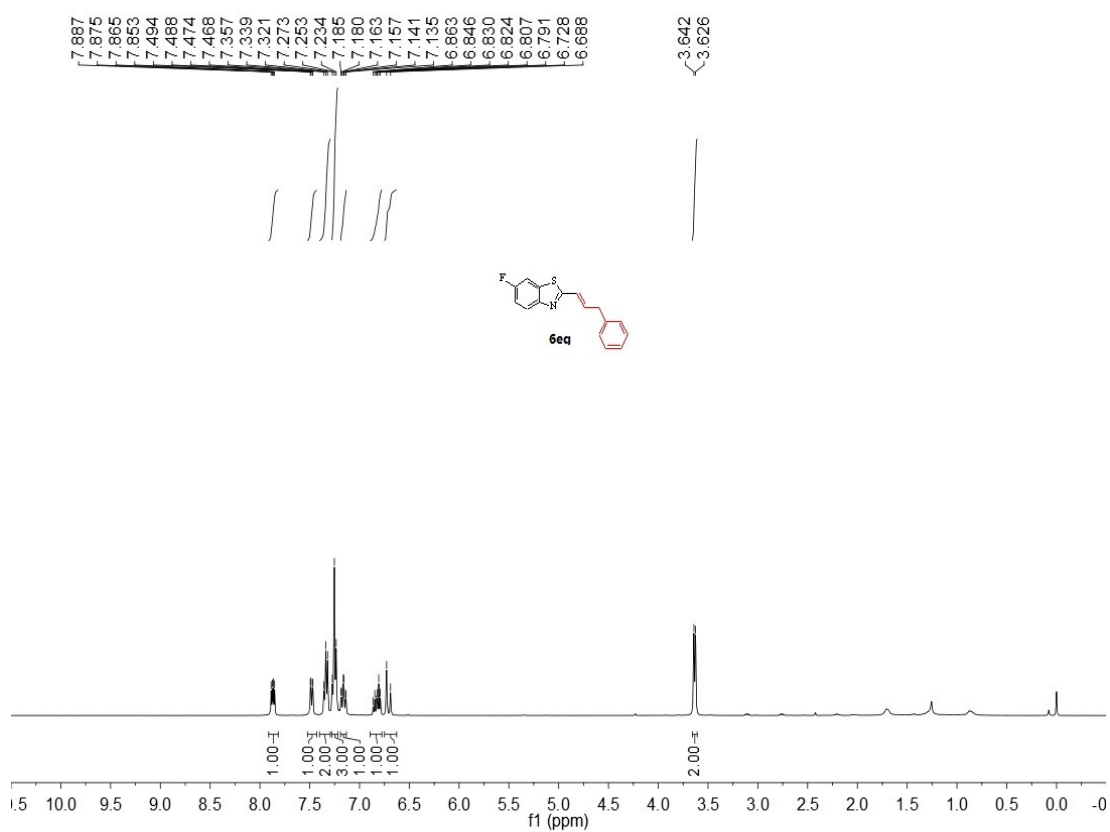




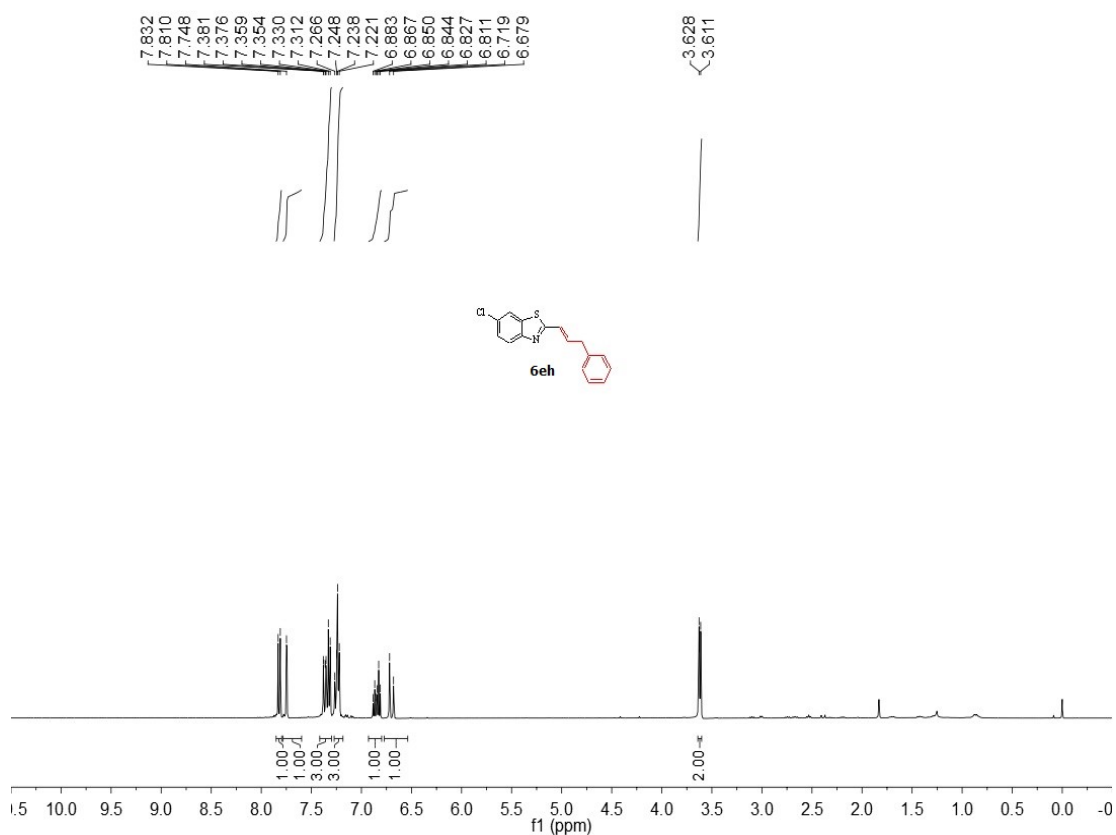
^1H and ^{13}C NMR Spectra of (*E*)-6-methyl-2-(3-phenylprop-1-en-1-yl)benzo[*d*]thiazole (**6ef**)

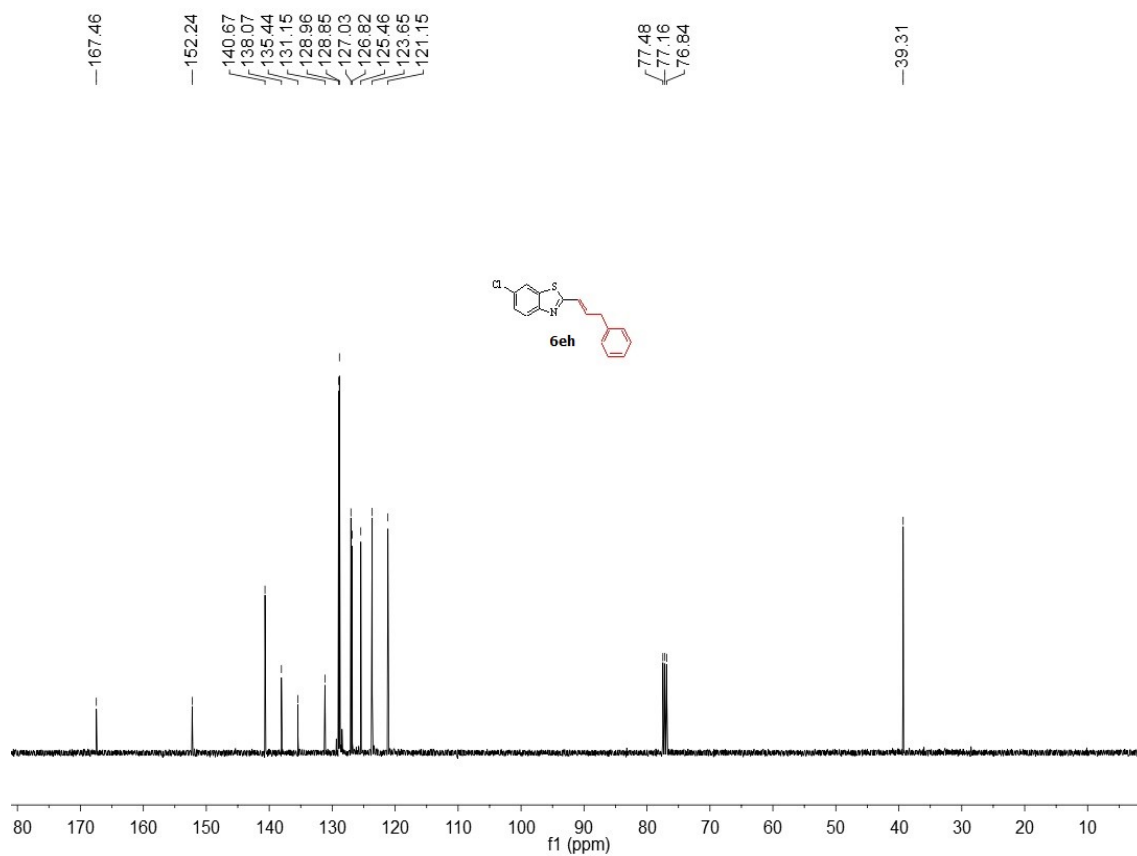


¹H and ¹³C NMR Spectra of (*E*)-6-fluoro-2-(3-phenylprop-1-en-1-yl) benzo[d]thiazole (**6eg**)

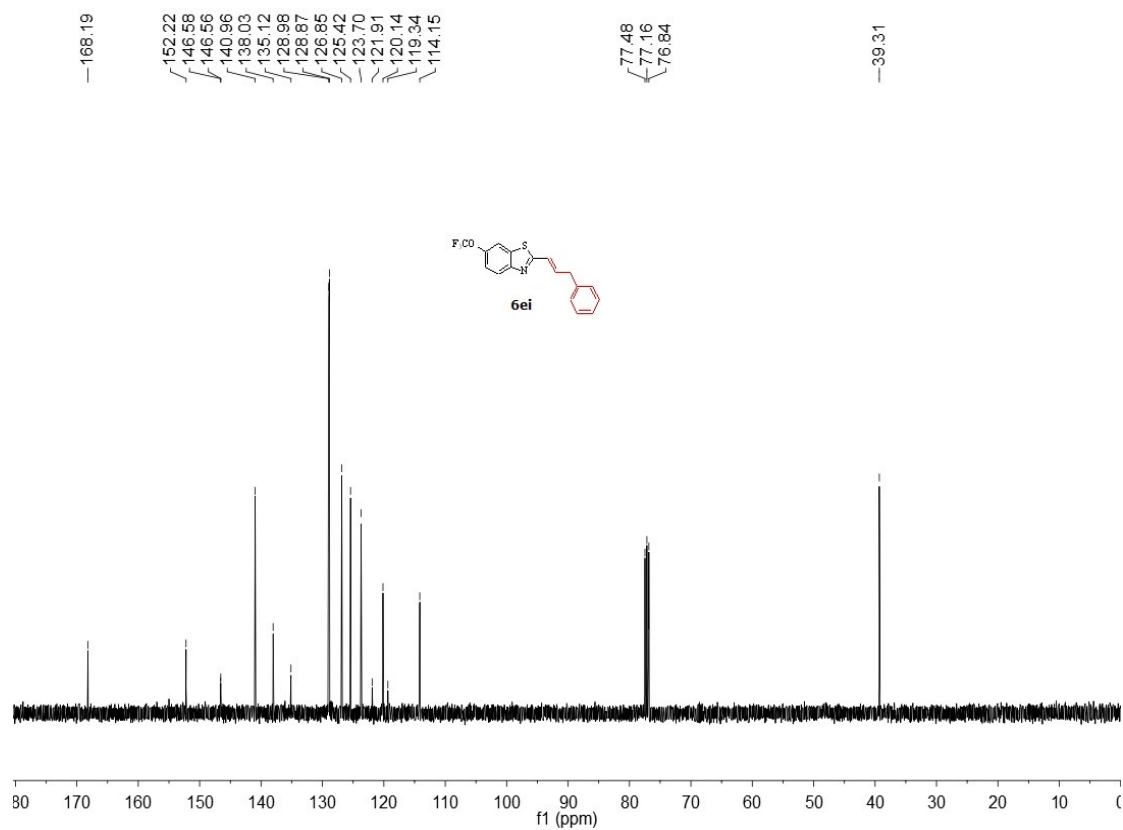
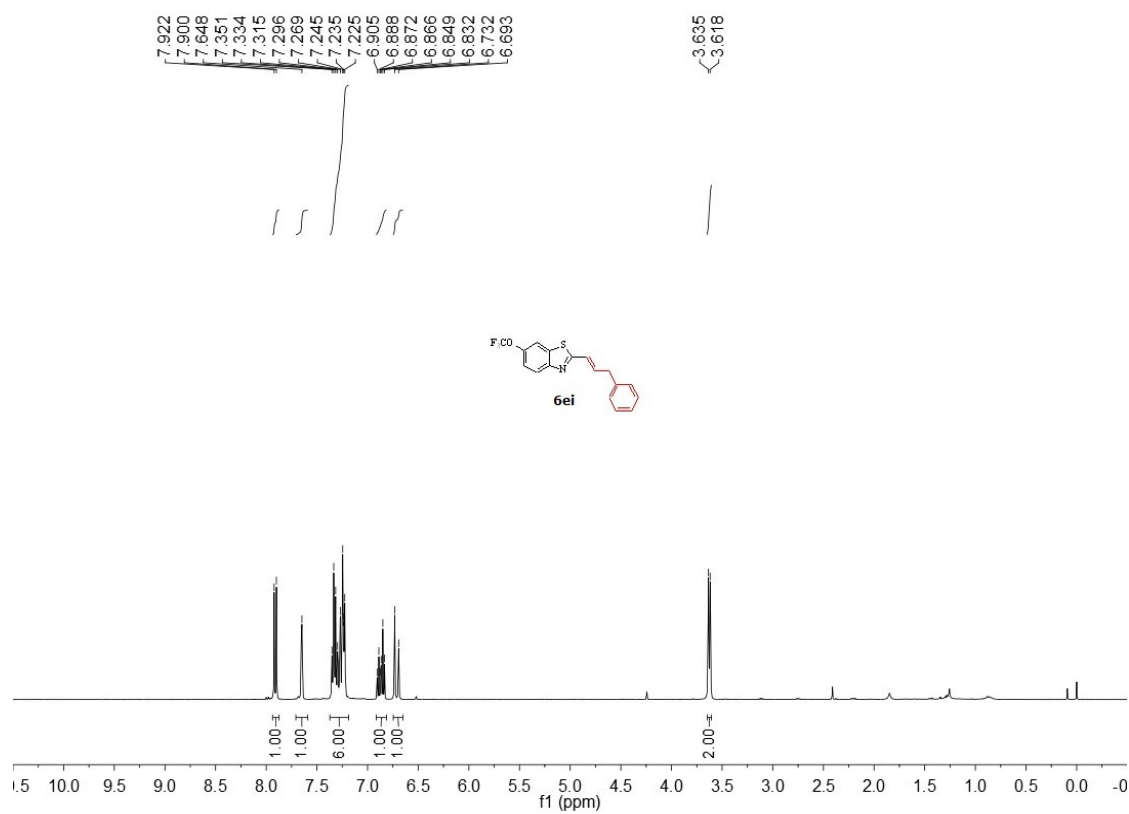


^1H and ^{13}C NMR Spectra of (*E*)-6-chloro-2-(3-phenylprop-1-en-1-yl)benzo[*d*]thiazole (**6eh**)





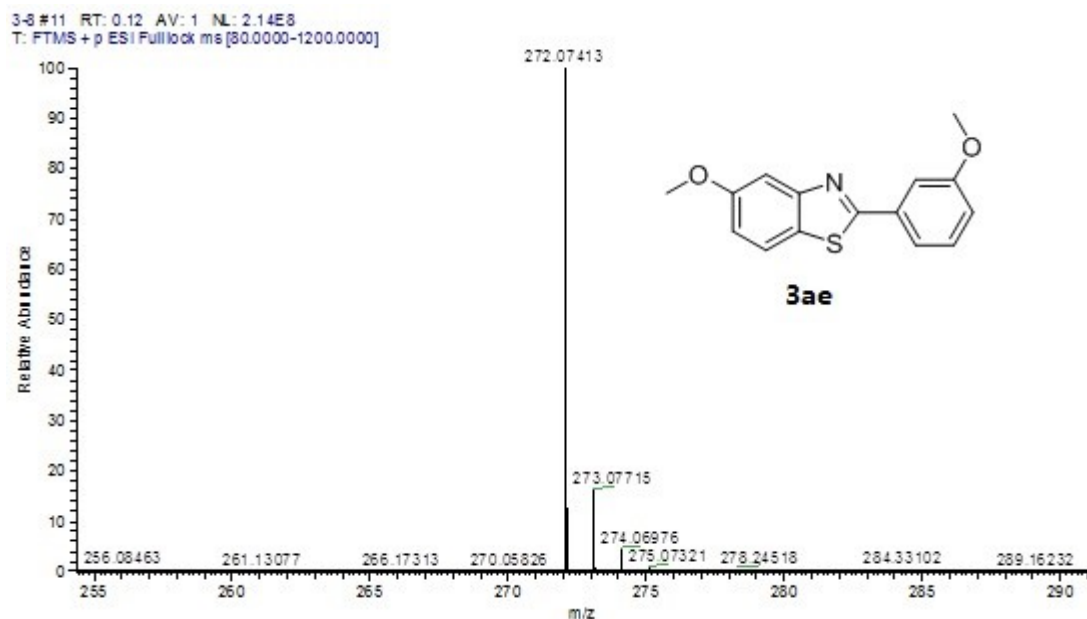
¹H and ¹³C NMR Spectra of (*E*) -2-(3-phenylprop-1-en-1-yl)-6-(trifluoromethoxy)benzo[*d*]thiazole (**6ei**)



III. HRMS Spectrum of some new compounds

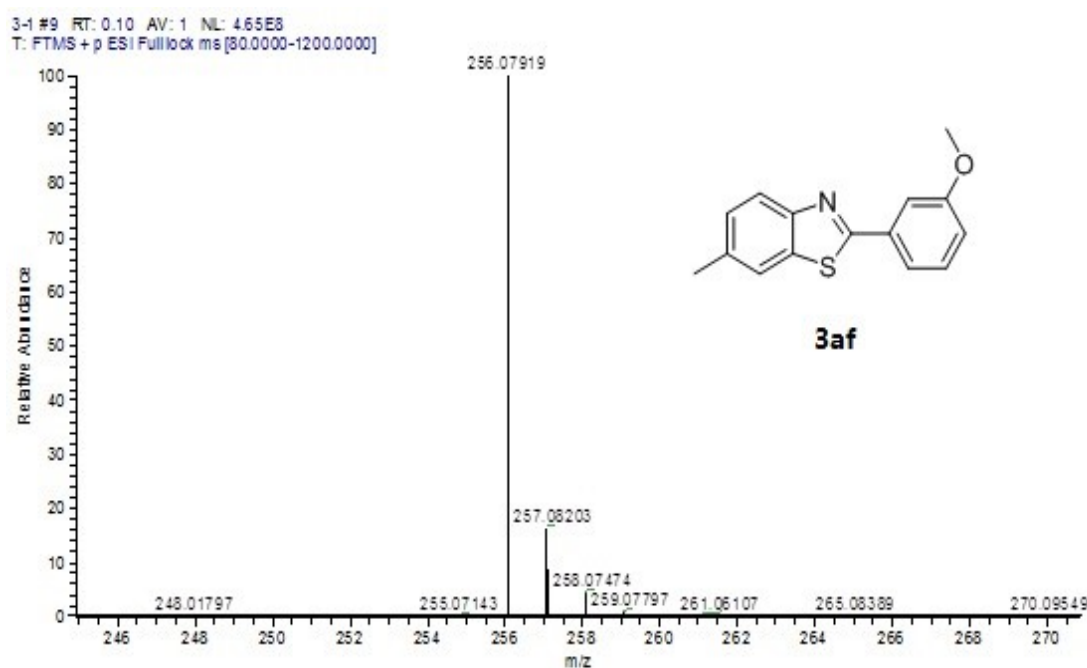
5-methoxy-2-(3-methoxyphenyl)benzo[*d*]thiazole (**3ae**)

HRMS (ESI) m/z calcd for $C_{15}H_{14}NO_2S^+$ ($M+H$) $^+$ 272.07398, found 272.07413.



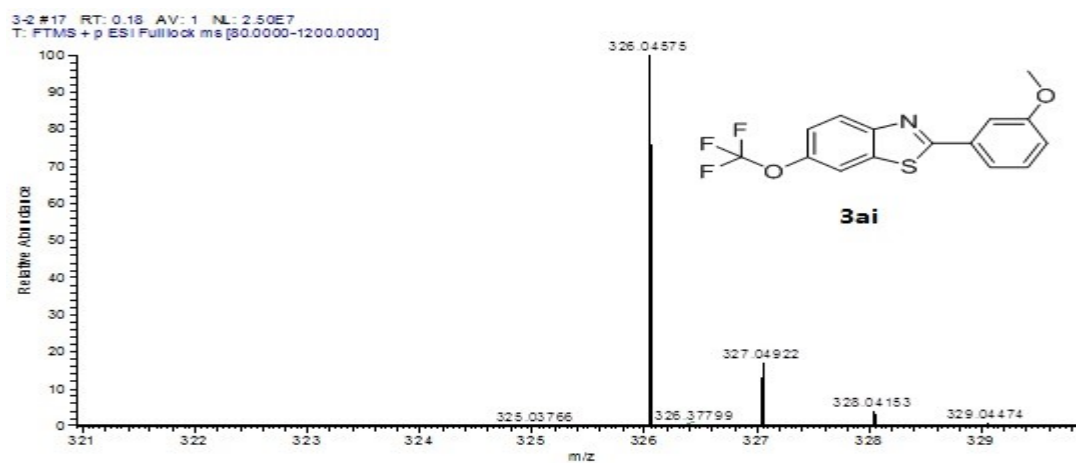
2-(3-methoxyphenyl)-6-methylbenzo[*d*]thiazole (**3af**)

HRMS (ESI) m/z calcd for $C_{15}H_{14}NOS^+$ ($M+H$) $^+$ 256.07906, found 256.07919.



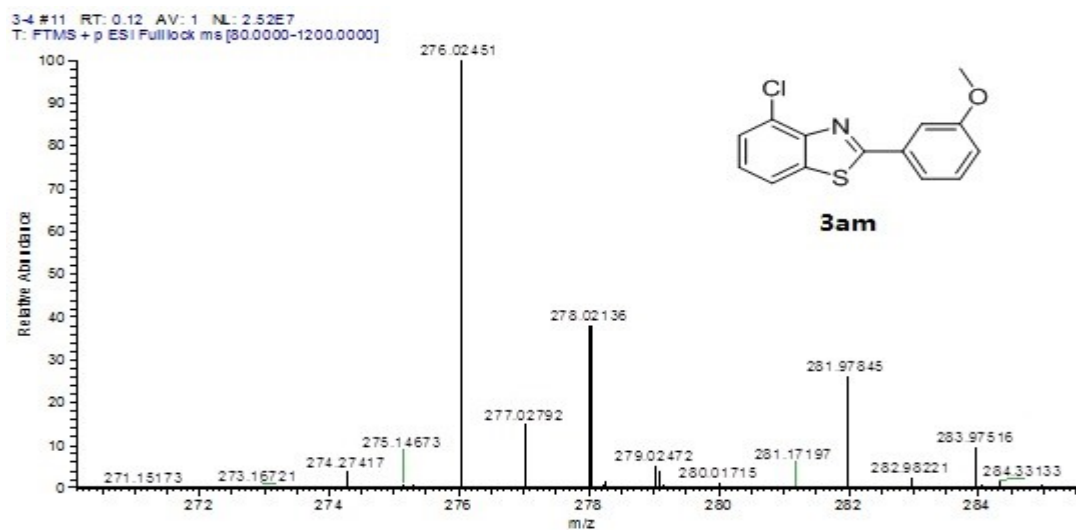
2-(3-methoxyphenyl)-6-(trifluoromethoxy)benzo[*d*]thiazole (**3ai**)

HRMS (ESI) m/z calcd for $C_{15}H_{11}F_3NO_2S^+$ ($M+H$) $^+$ 326.04571, found 326.04575.



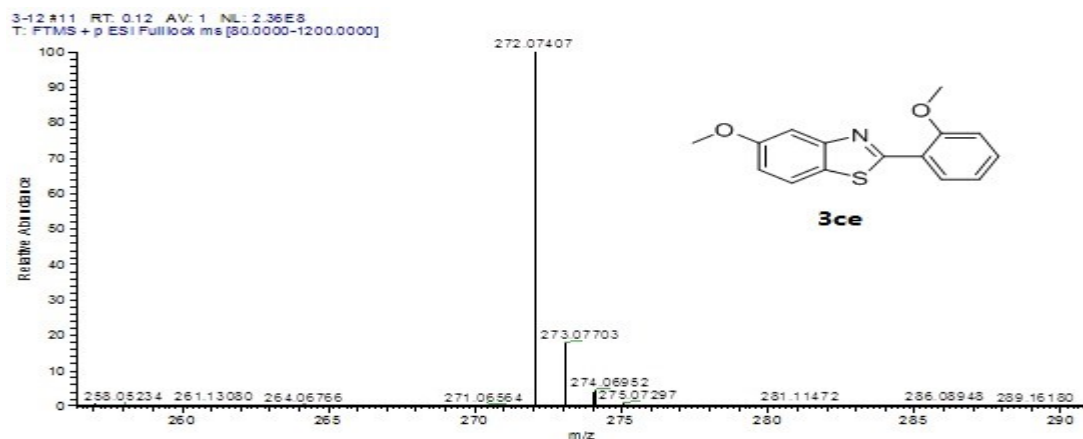
4-chloro-2-(3-methoxyphenyl)benzo[*d*]thiazole (**3am**)

HRMS (ESI) m/z calcd for $C_{14}H_{11}ClNOS^+$ ($M+H$) $^+$ 276.02444, found 276.02451.



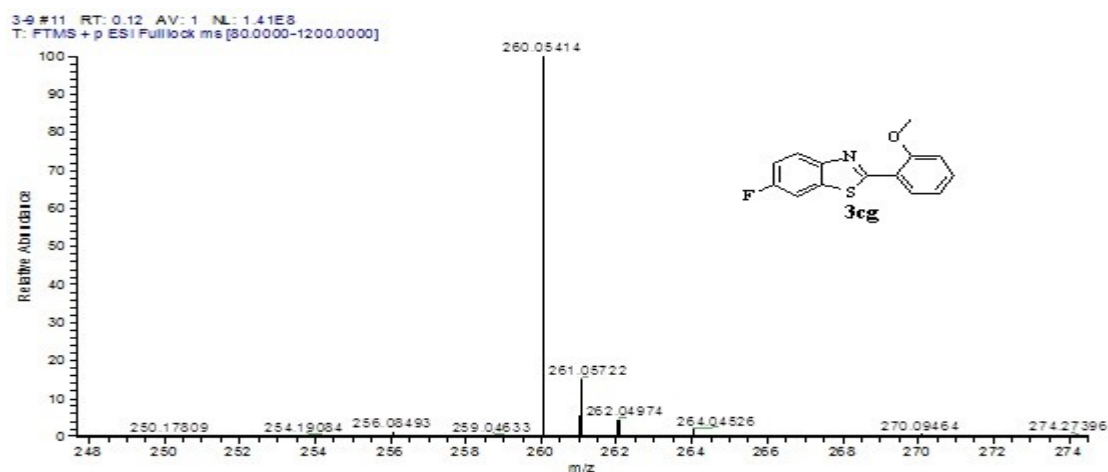
5-methoxy-2-(2-methoxyphenyl)benzo[*d*]thiazole (**3ce**)

HRMS (ESI) m/z calcd for $C_{15}H_{14}NO_2S^+$ ($M+H$) $^+$ 272.07398, found 272.07407.



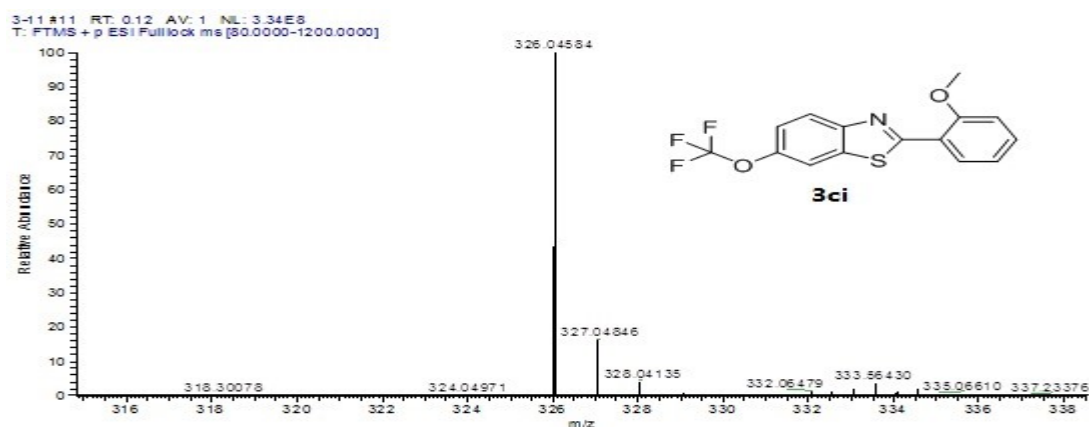
6-fluoro-2-(2-methoxyphenyl)benzo[*d*]thiazole (**3cg**)

HRMS (ESI) m/z calcd for $C_{14}H_{11}FNOS^+$ ($M+H$) $^+$ 260.05399, found 260.05414.



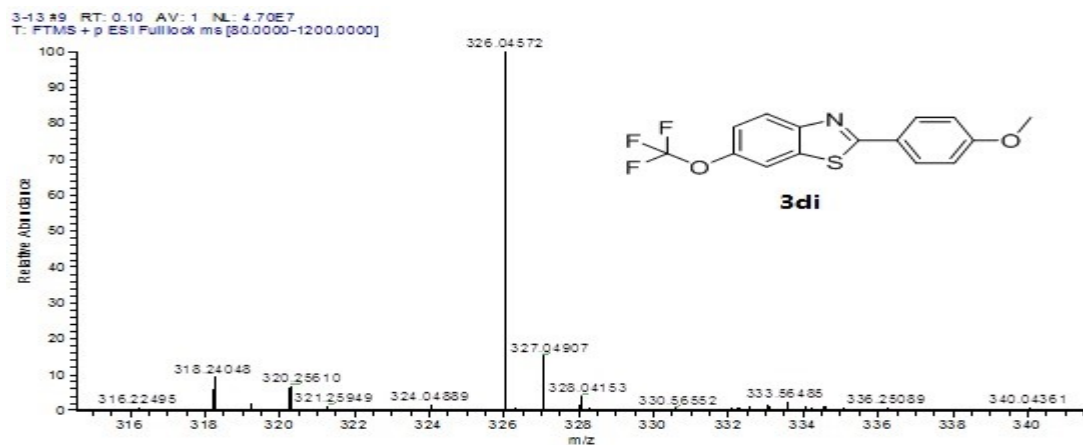
2-(2-methoxyphenyl)-6-(trifluoromethoxy)benzo[*d*]thiazole (**3ci**)

HRMS (ESI) m/z calcd for $C_{15}H_{11}F_3NO_2S^+$ ($M+H$) $^+$ 326.04571, found 326.04584.



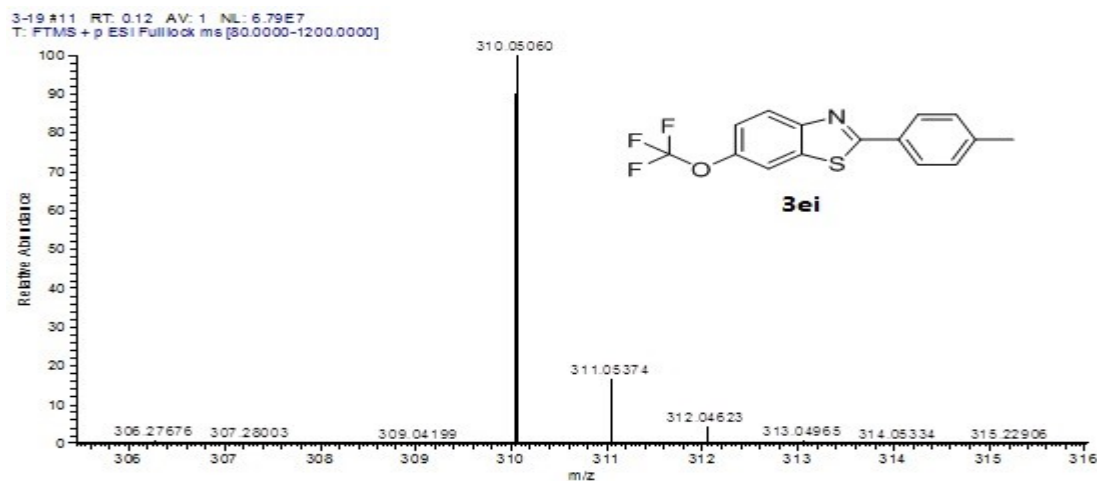
2-(4-methoxyphenyl)-6-(trifluoromethoxy)benzo[*d*]thiazole (**3di**)

HRMS(ESI) m/z calcd for $C_{15}H_{11}F_3NO_2S^+$ ($M+H$) $^+$ 326.04571, found 326.04572.



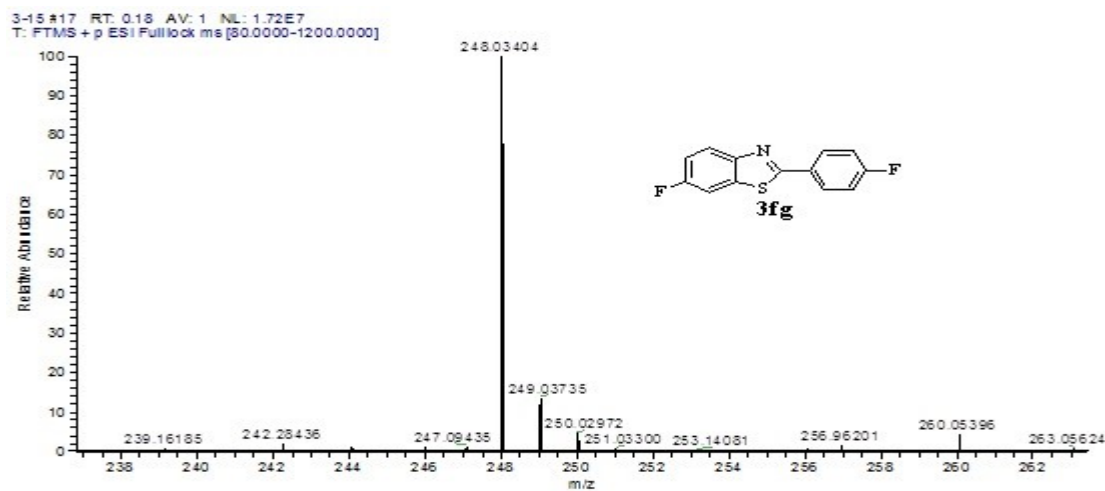
2-(p-tolyl)-6-(trifluoromethoxy)benzo[d]thiazole (**3ei**)

HRMS (ESI) m/z calcd for $C_{15}H_{11}F_3NOS^+$ ($M+H$) $^+$ 310.05080, found 310.05060.



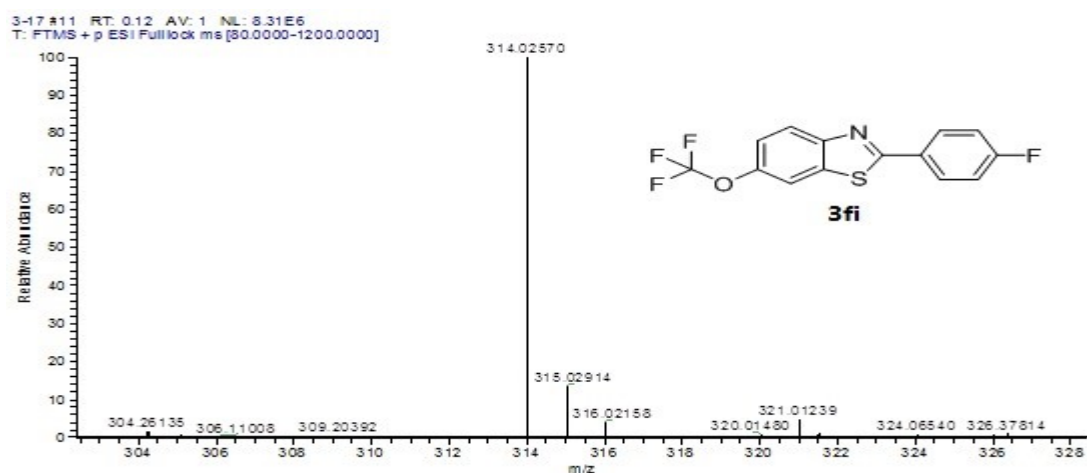
6-fluoro-2-(4-fluorophenyl)benzo[d]thiazole (**3fg**)

HRMS (ESI) m/z calcd for $C_{13}H_8F_2NS^+$ ($M+H$) $^+$ 248.03400, found 248.03404.



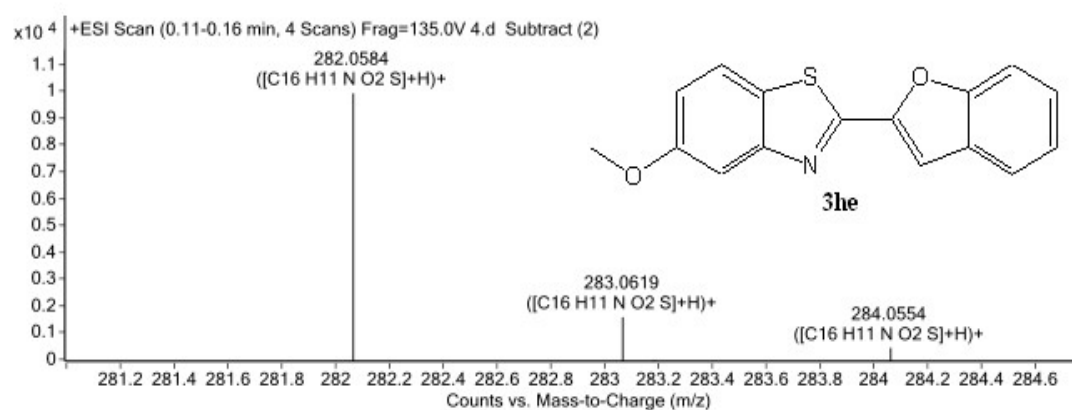
2-(4-fluorophenyl)-6-(trifluoromethoxy)benzo[d]thiazole (**3fi**)

HRMS (ESI) m/z calcd for $C_{14}H_8F_4NOS^+$ ($M+H$) $^+$ 314.02572, found 314.02570.



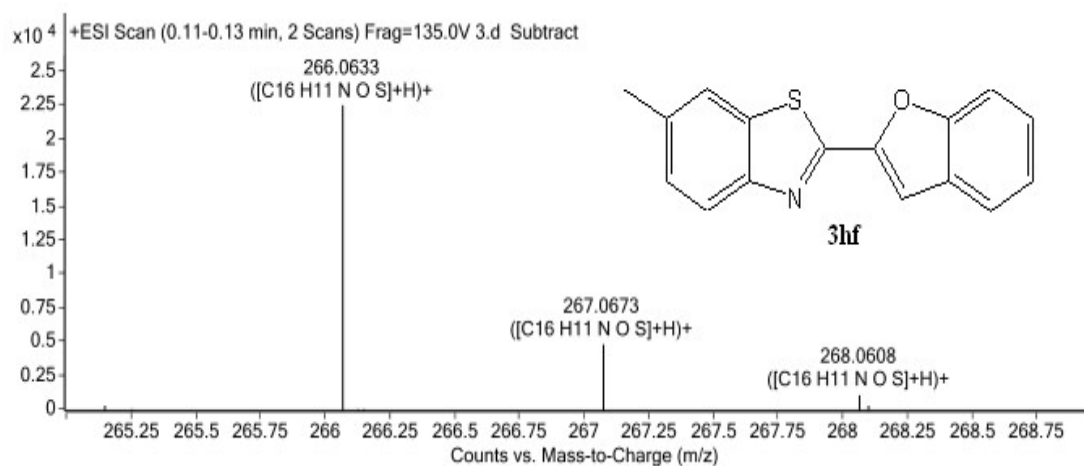
2-(benzofuran-2-yl)-5-methoxybenzo[d]thiazole (**3he**):

HRMS (ESI) m/z calcd for $C_{16}H_{12}NOS^+$ ($M+H$) $^+$ 282.0640, found 282.0584.

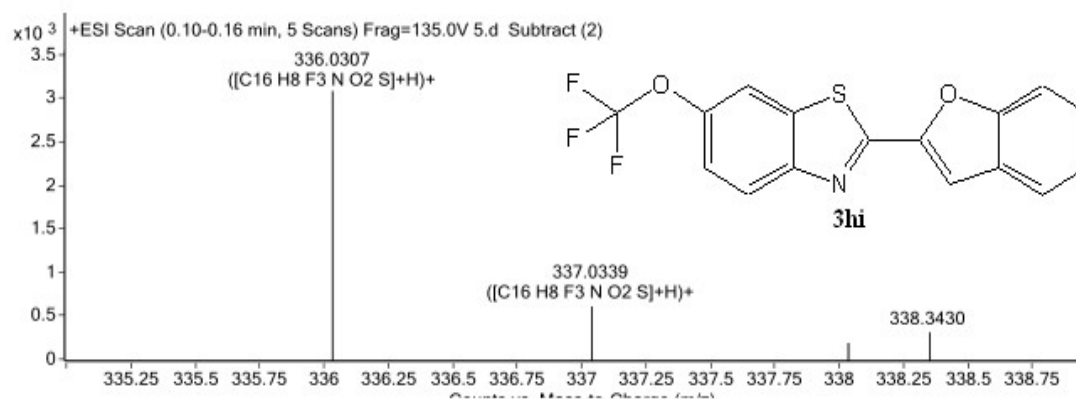


2-(benzofuran-2-yl)-6-methylbenzo[d]thiazole (**3hf**)

HRMS (ESI) m/z calcd for $C_{16}H_{12}NOS^+$ ($M+H$) $^+$ 266.0640, found 266.0633.

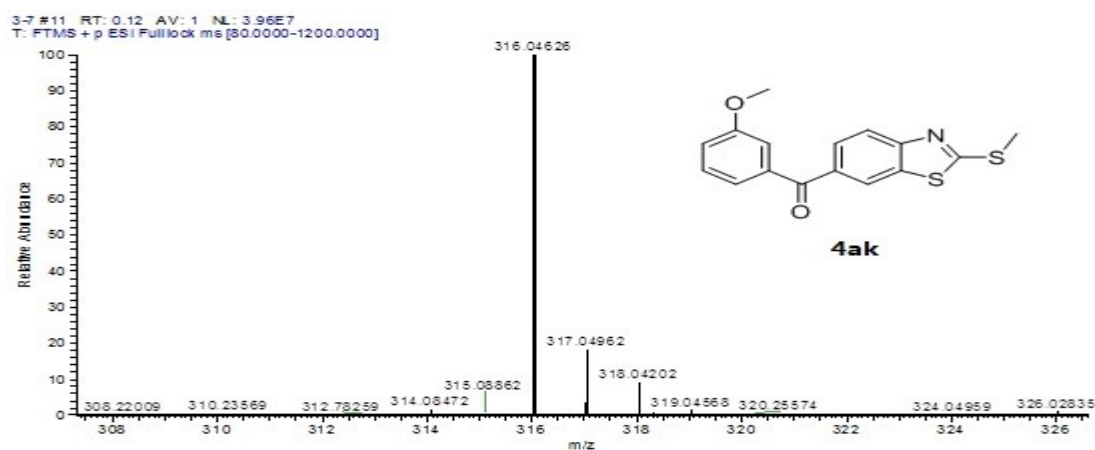


2-(benzofuran-2-yl)-6-(trifluoromethoxy)benzo[d]thiazole (**3hi**) HRMS (ESI) m/z calcd for $C_{16}H_9F_3NO_2S^+$ ($M+H$) $^+$ 336.0301, found 336.0307.



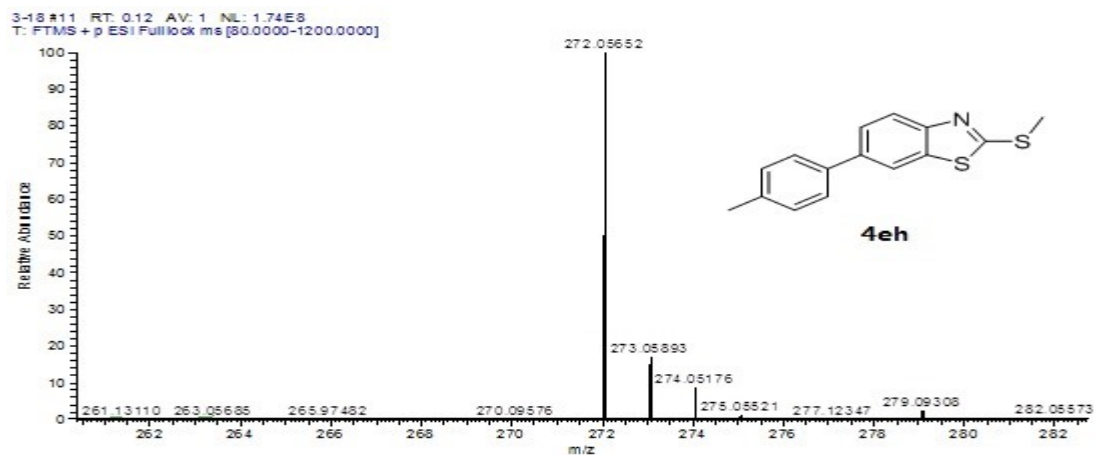
(3-methoxyphenyl)(2-(methylthio)benzo[d]thiazol-6-yl)methanone (**4ak**)

HRMS (ESI) m/z calcd for $C_{16}H_{14}NO_2S_2^+$ ($M+H$) $^+$ 316.04605, found 316.04626.



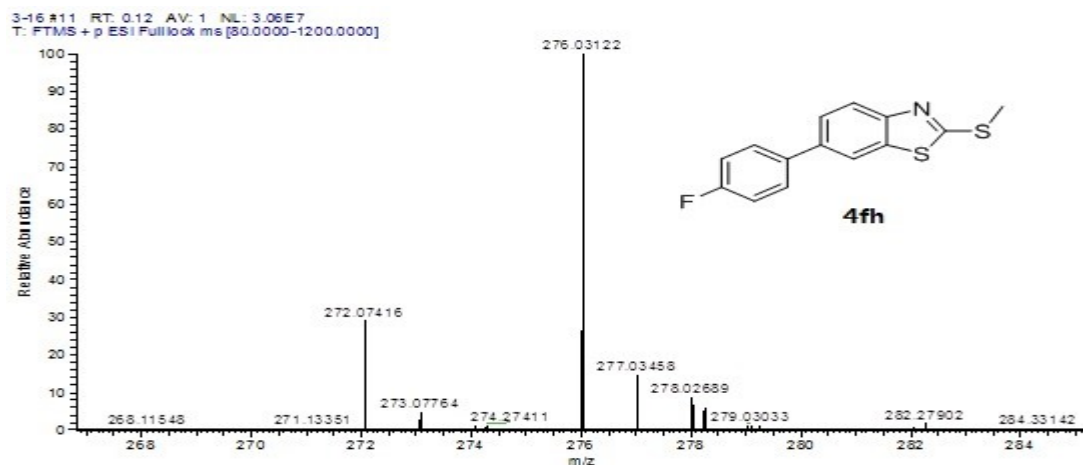
2-(methylthio)-6-(p-tolyl)benzo[d]thiazole (**4eh**)

HRMS (ESI) m/z calcd for $C_{15}H_{14}NS_2^+$ ($M+H$) $^+$ 272.05622, found 272.05652.



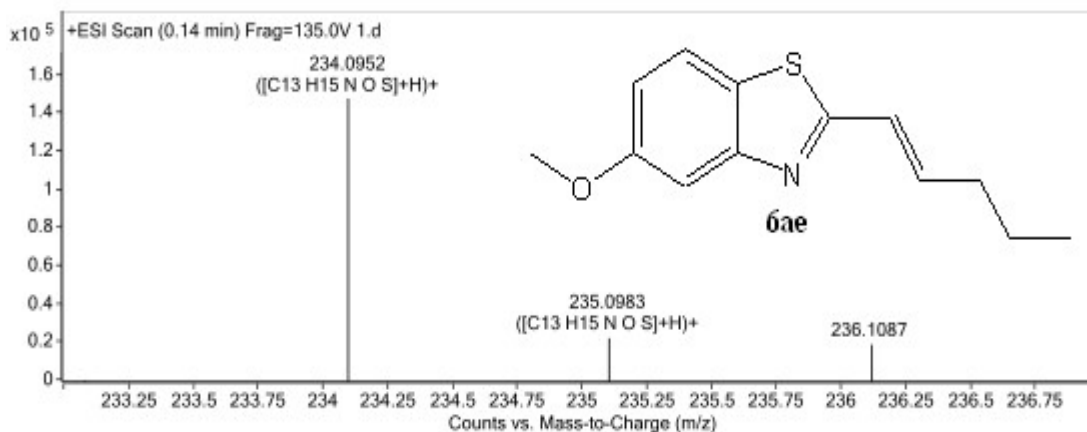
6-(4-fluorophenyl)-2-(methylthio)benzo[d]thiazole (**4fh**)

HRMS (ESI) m/z calcd for $C_{14}H_{11}FNS_2^+$ ($M+H$) $^+$ 276.03115, found 276.03122.



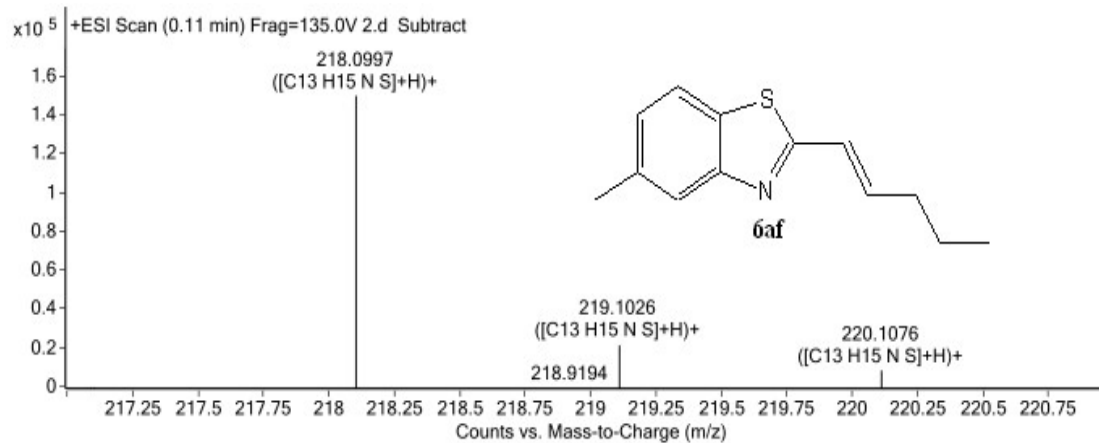
(*E*)-5-methoxy-2-(pent-1-en-1-yl)benzo[d]thiazole (**6ae**)

HRMS (ESI) m/z calcd for $C_{13}H_{16}NOS^+$ ($M+H$) $^+$ 234.0947, found 234.0952.



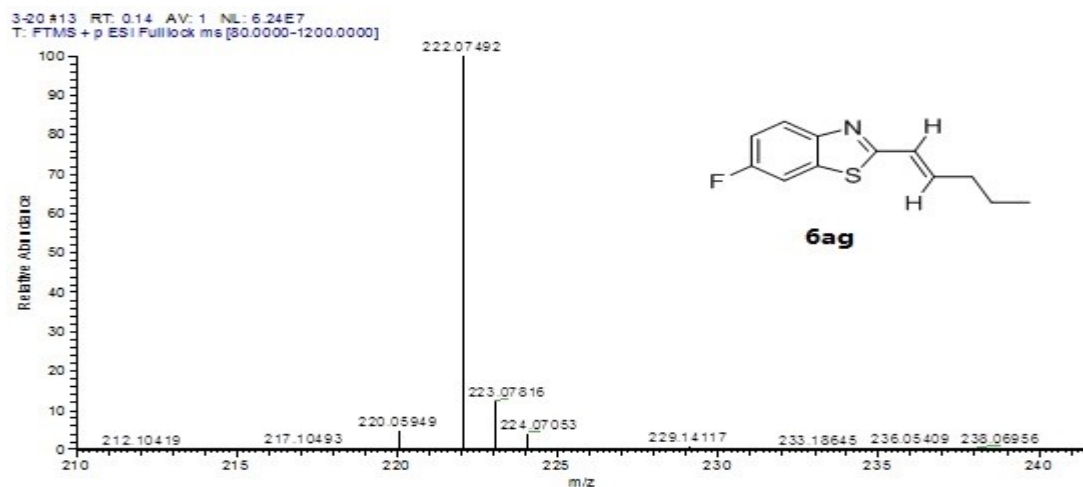
(*E*)-5-methyl-2-(pent-1-en-1-yl)benzo[d]thiazole (**6af**)

HRMS (ESI) m/z calcd for $C_{13}H_{16}NOS^+$ ($M+H$) $^+$ 218.1006, found 218.0997.



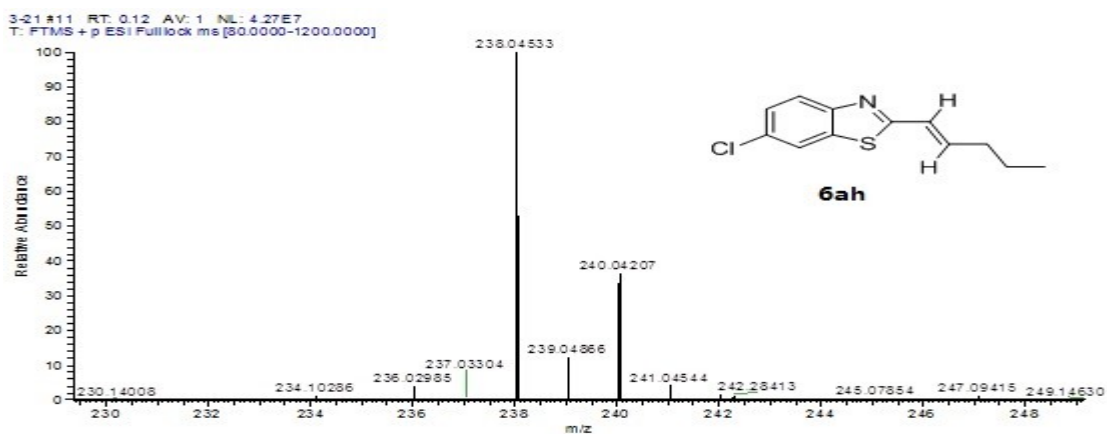
(*E*)-6-fluoro-2-(pent-1-en-1-yl)benzo[*d*]thiazole(**6ag**)

HRMS (ESI) m/z calcd for $C_{12}H_{13}FNS^+$ ($M+H$) $^+$ 222.07472, found 222.07492.



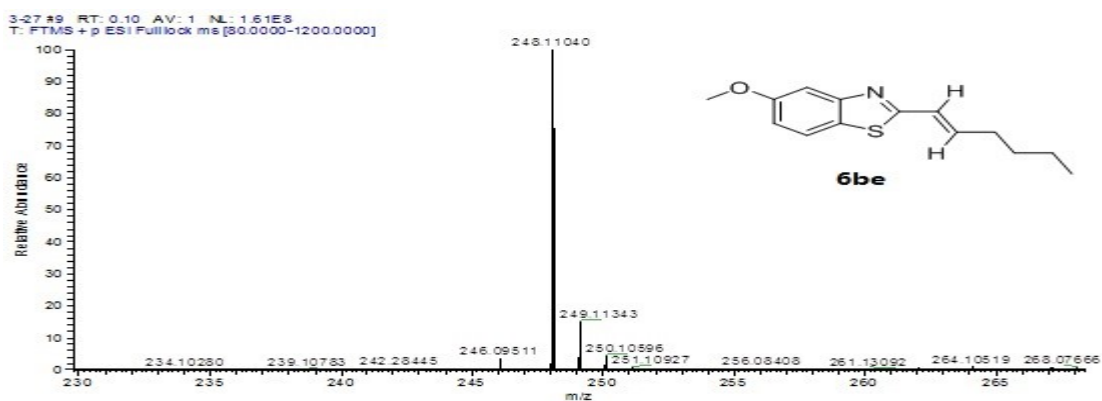
(*E*)-6-chloro-2-(pent-1-en-1-yl)benzo[*d*]thiazole(**6ah**)

HRMS (ESI) m/z calcd for $C_{12}H_{13}ClNS^+$ ($M+H$) $^+$ 238.04517, found 238.04533.



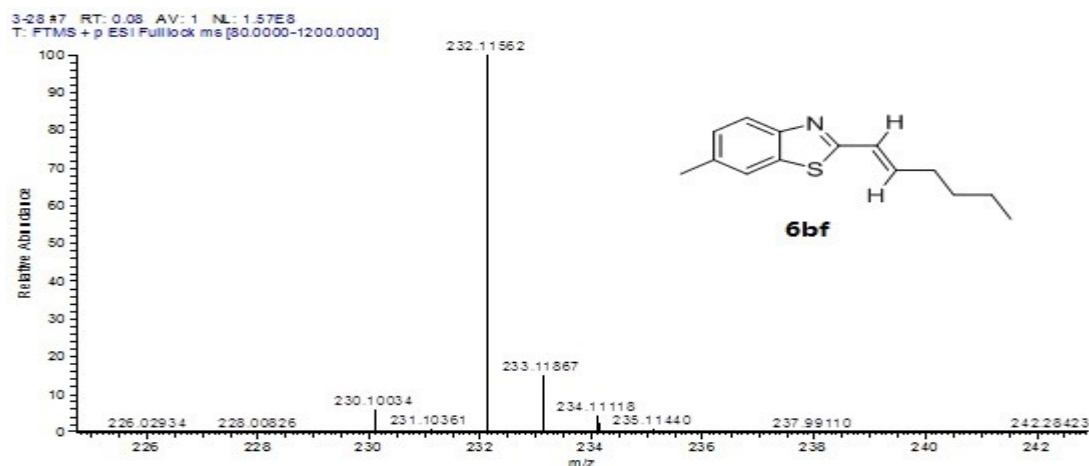
(*E*)-2-(hex-1-en-1-yl)-5-methoxybenzo[*d*]thiazole(**6be**)

HRMS (ESI) m/z calcd for $C_{14}H_{18}NOS^+$ ($M+H$) $^+$ 248.11036, found 248.11040.



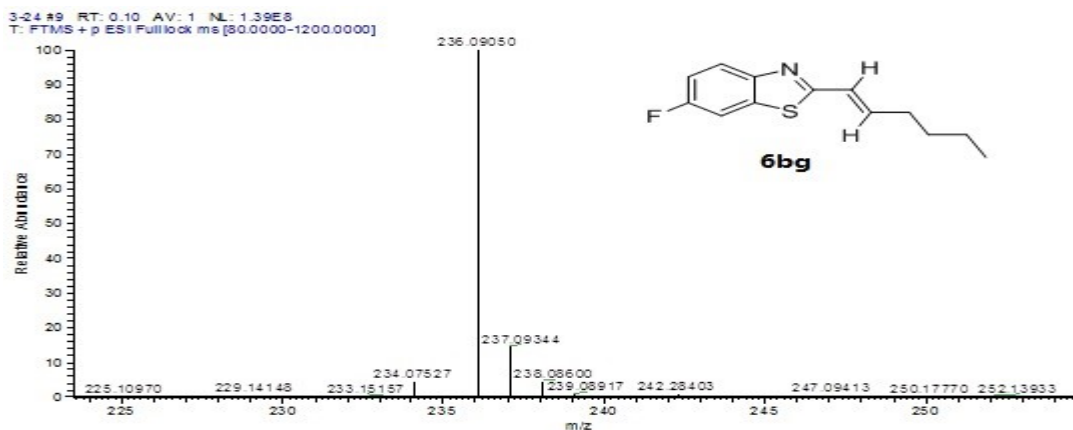
(*E*)-2-(hex-1-en-1-yl)-6-methylbenzo[*d*]thiazole(**6bf**)

HRMS (ESI) m/z calcd for $C_{14}H_{18}NS^+$ ($M+H$) $^+$ 232.11545, found 232.11562.



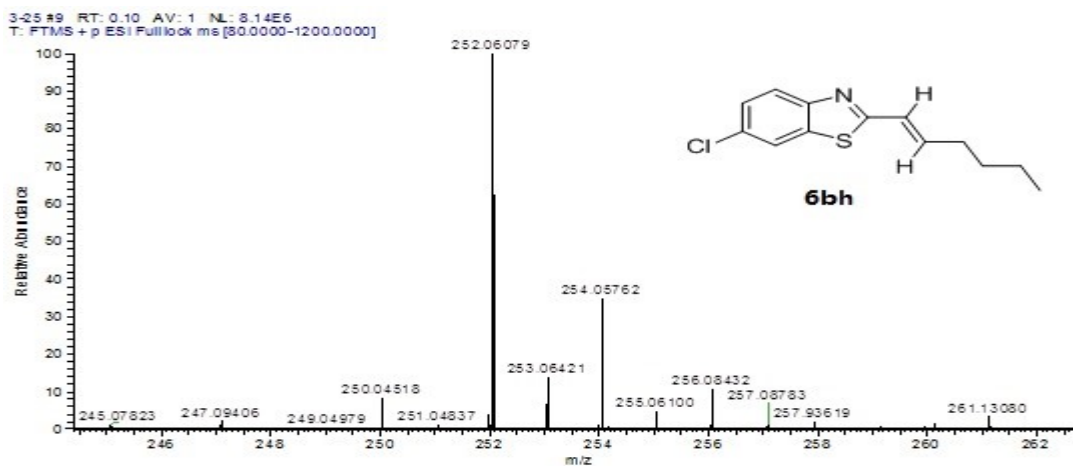
(*E*)-6-fluoro-2-(hex-1-en-1-yl)benzo[*d*]thiazole(**6bg**)

HRMS (ESI) m/z calcd for $C_{13}H_{15}FNS^+$ ($M+H$) $^+$ 236.09037, found 236.09050.



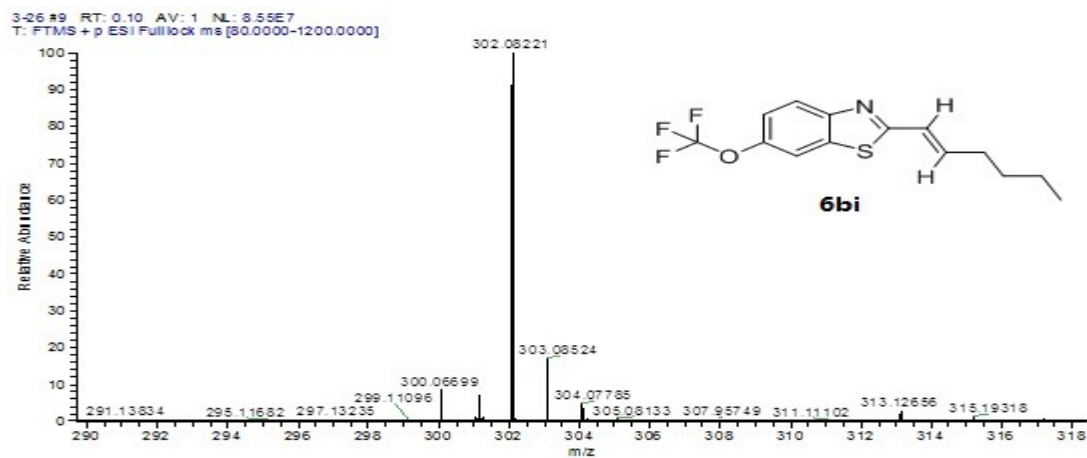
(*E*)-6-chloro-2-(hex-1-en-1-yl)benzo[*d*]thiazole(**6bh**)

HRMS (ESI) m/z calcd for $C_{13}H_{15}ClNS^+$ ($M+H$) $^+$ 252.06082, found 252.06079.



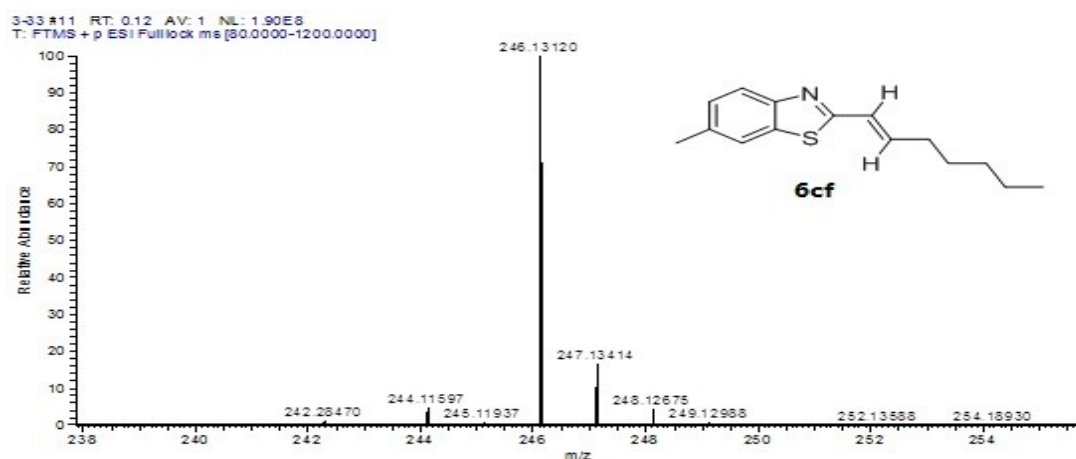
(*E*)-2-(hex-1-en-1-yl)-6-(trifluoromethoxy)benzo[*d*]thiazole(**6bi**)

HRMS (ESI) m/z calcd for $C_{14}H_{15}F_3NOS^+$ ($M+H$) $^+$ 302.08210, found 302.08221.



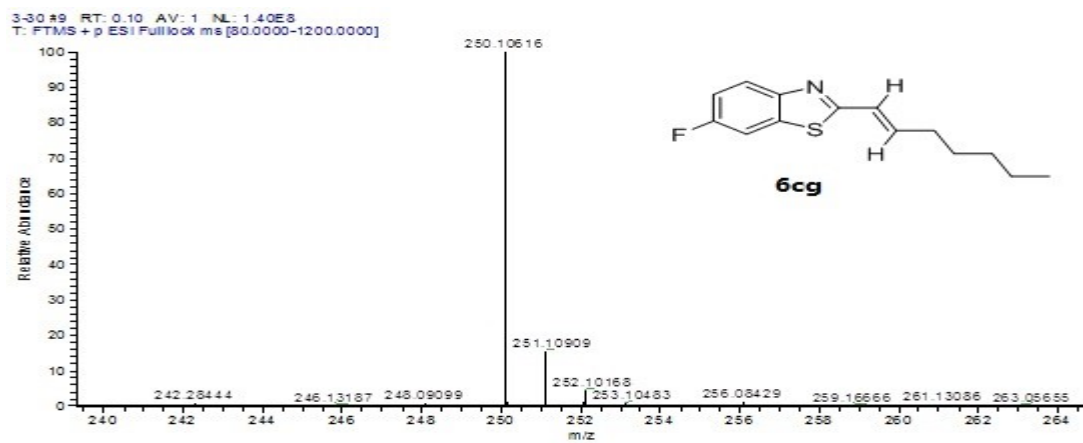
(*E*)-2-(hept-1-en-1-yl)-6-methylbenzo[*d*]thiazole(**6cf**)

HRMS (ESI) m/z calcd for $C_{15}H_{20}NS^+$ ($M+H$) $^+$ 246.13110, found 246.13120.



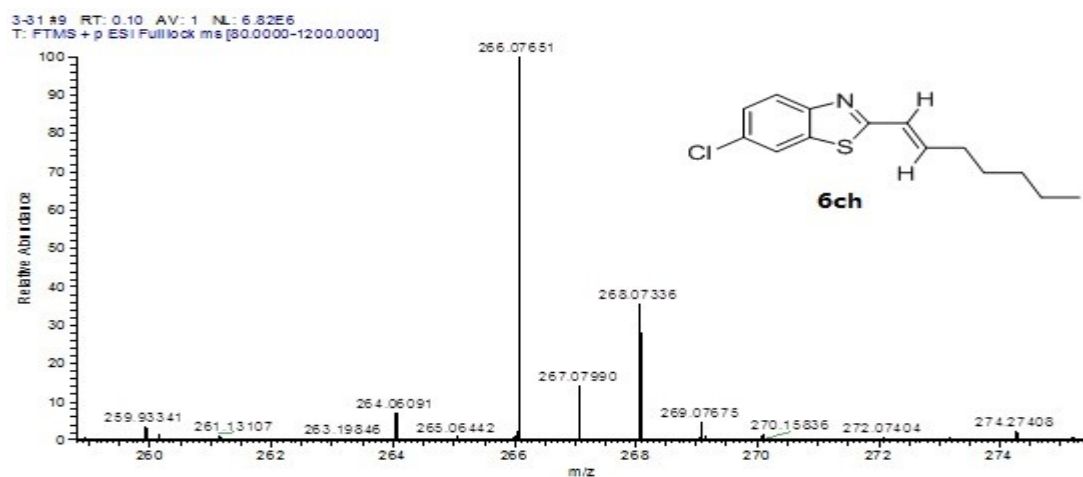
(*E*)-6-fluoro-2-(hept-1-en-1-yl)benzo[*d*]thiazole(**6cg**)

HRMS (ESI) m/z calcd for $C_{14}H_{17}FNS^+$ ($M+H$) $^+$ 250.10602, found 250.10616.



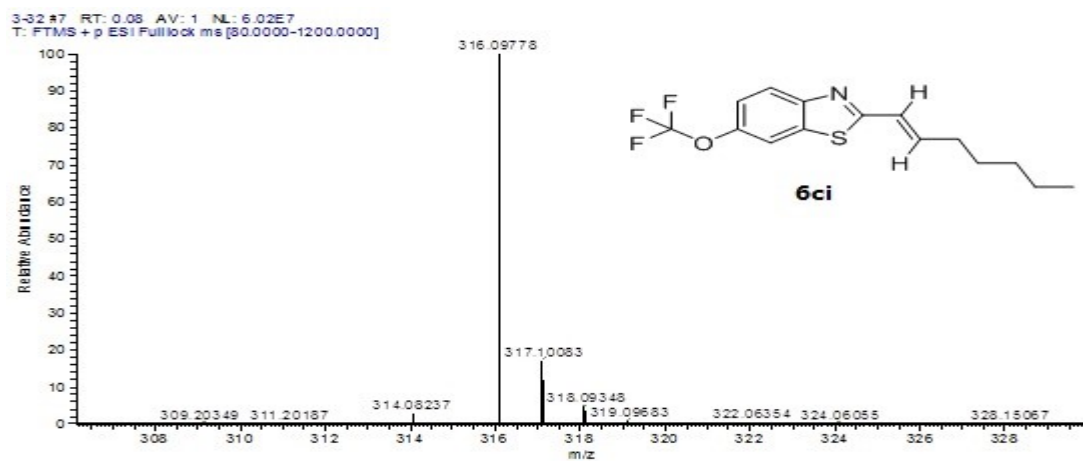
(*E*)-6-chloro-2-(hept-1-en-1-yl)benzo[*d*]thiazole(**6ch**)

HRMS (ESI) m/z calcd for $C_{14}H_{17}ClNS^+$ ($M+H$) $^+$ 266.07647, found 266.07651.



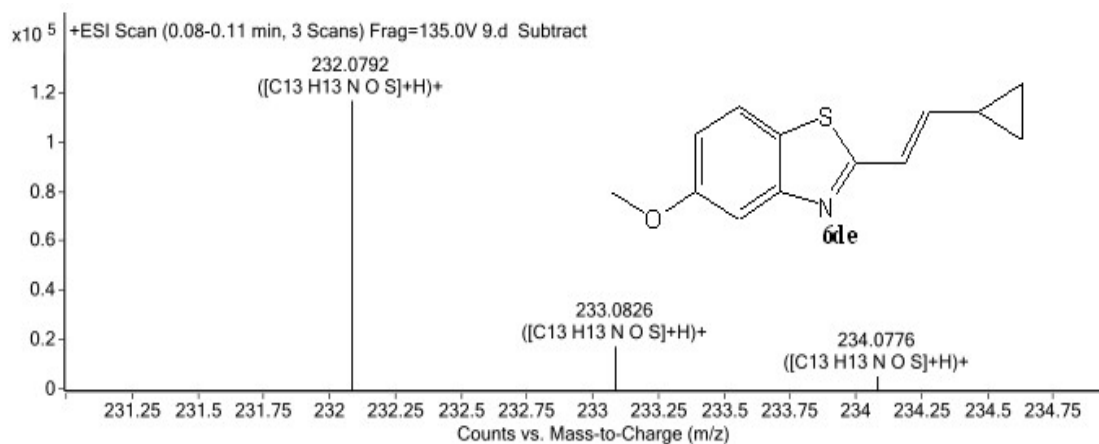
(*E*)-2-(hept-1-en-1-yl)-6-(trifluoromethoxy)benzo[*d*]thiazole (**6ci**)

HRMS (ESI) m/z calcd for $C_{15}H_{17}F_3NOS^+$ ($M+H$) $^+$ 316.09775, found 316.09778.



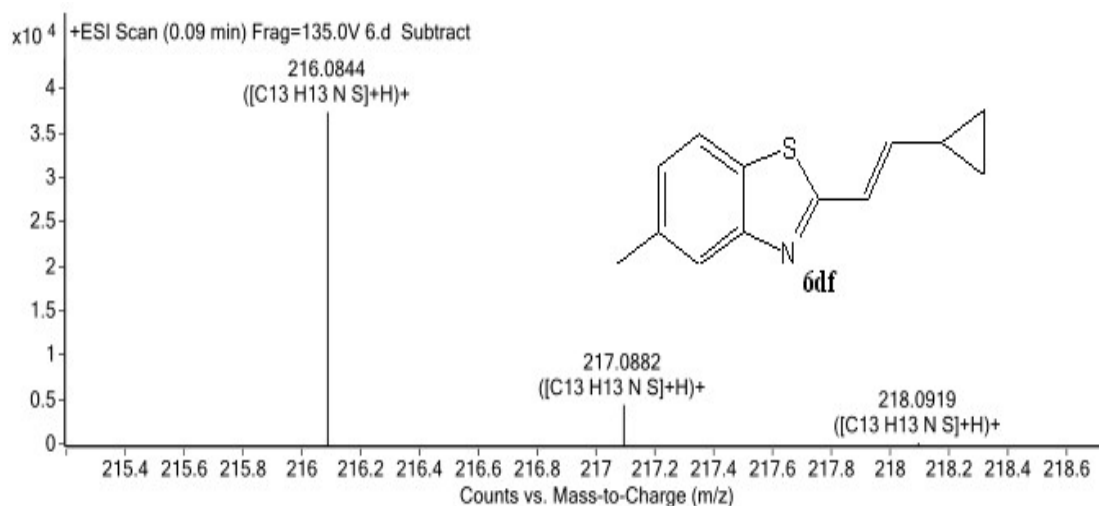
(E)-2-(2-cyclopropylvinyl)-5-methoxybenzo[d]thiazole (**6de**)

HRMS (ESI) m/z calcd for $C_{13}H_{14}NOS^+$ ($M+H$) $^+$ 232.0791, found 232.0792.



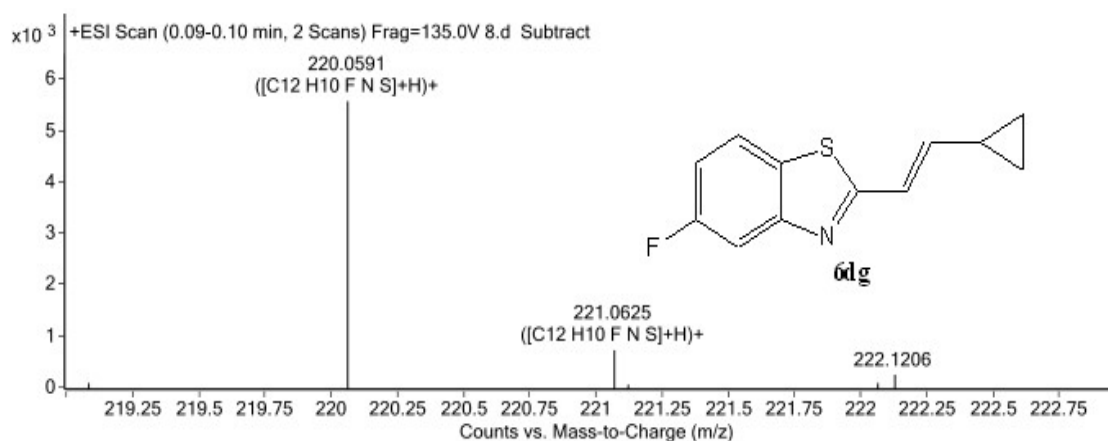
(E)-2-(2-cyclopropylvinyl)-5-methylbenzo[d]thiazole(**6df**)

HRMS (ESI) m/z calcd for $C_{13}H_{14}NS^+$ ($M+H$) $^+$ 216.0841, found 216.0844.



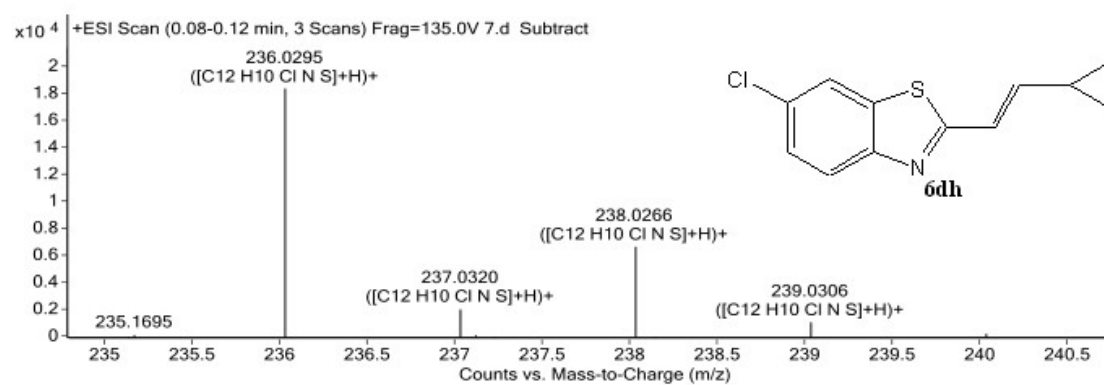
(E)-2-(2-cyclopropylvinyl)-5-fluorobenzo[d]thiazole(**6dg**)

HRMS (ESI) m/z calcd for $C_{12}H_{10}FNS^+$ ($M+H$) $^+$ 220.0596, found 220.0591.



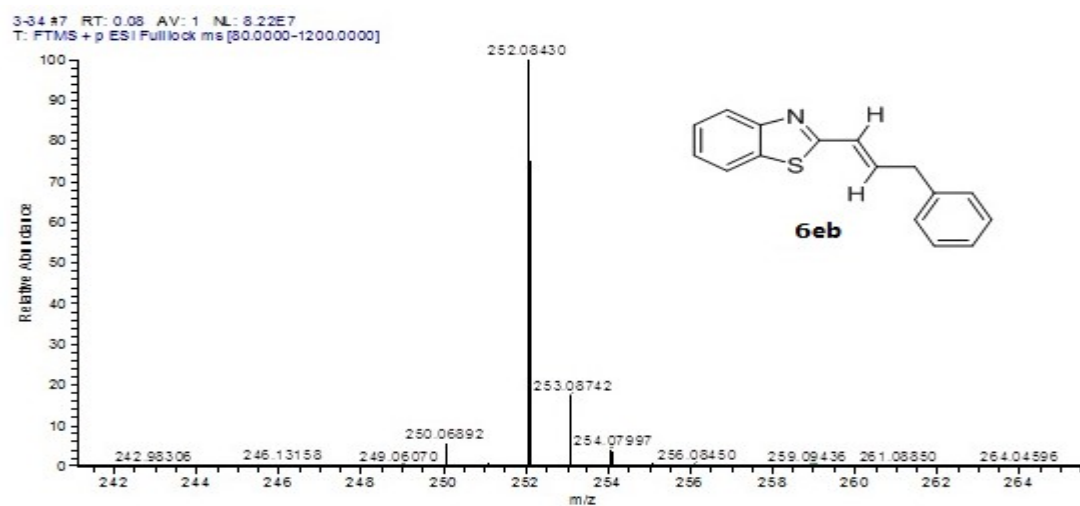
(*E*)-6-chloro-2-(2-cyclopropylvinyl)benzo[d]thiazole(**6dh**)

HRMS (ESI) m/z calcd for C₁₂H₁₁ClNS⁺ (M+H)⁺ 236.0301, found 236.0295.



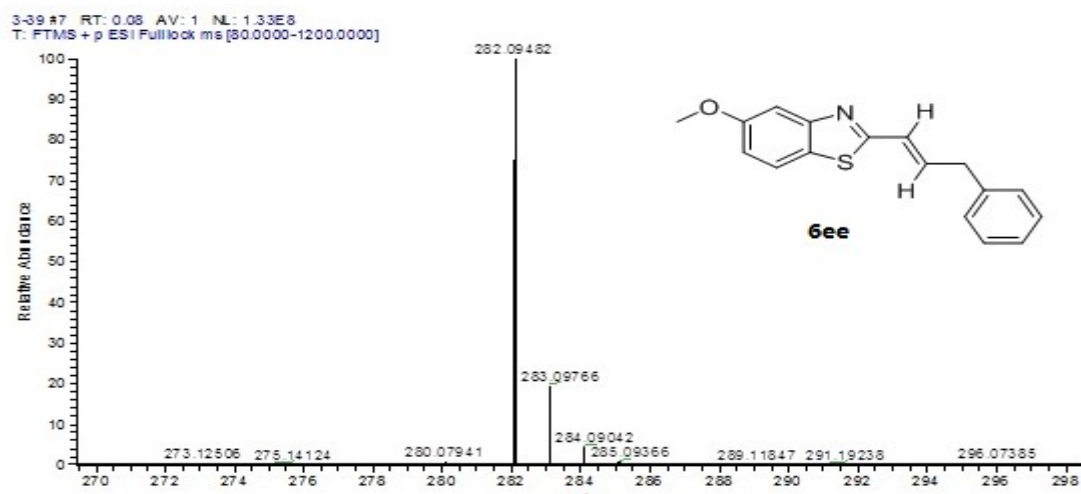
(*E*)-2-(3-phenylprop-1-en-1-yl)benzo[d]thiazole(**6eb**)

HRMS (ESI) m/z calcd for C₁₆H₁₄NS⁺ (M+H)⁺ 252.08415, found 252.08430.



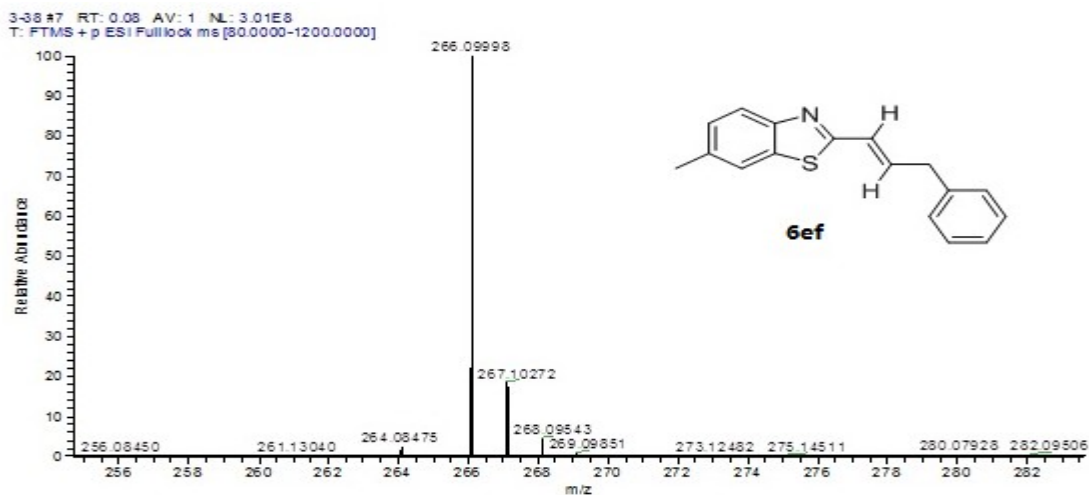
(*E*)-5-methoxy-2-(3-phenylprop-1-en-1-yl)benzo[d]thiazole(**6ee**)

HRMS (ESI) m/z calcd for $C_{17}H_{16}NOS^+$ ($M+H$) $^+$ 282.09471, found 282.09482.



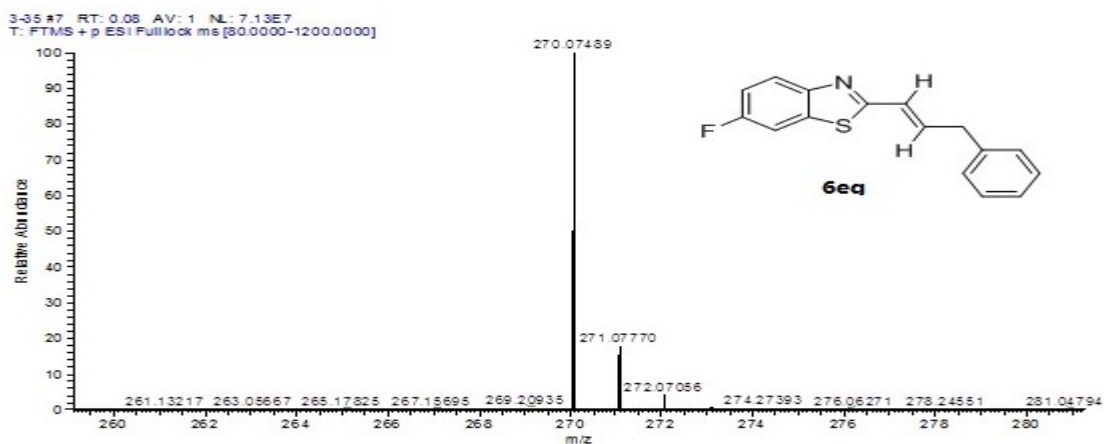
(*E*)-6-methyl-2-(3-phenylprop-1-en-1-yl)benzo[*d*]thiazole(**6ef**)

HRMS (ESI) m/z calcd for $C_{17}H_{16}NS^+$ ($M+H$) $^+$ 266.09980, found 266.09998.



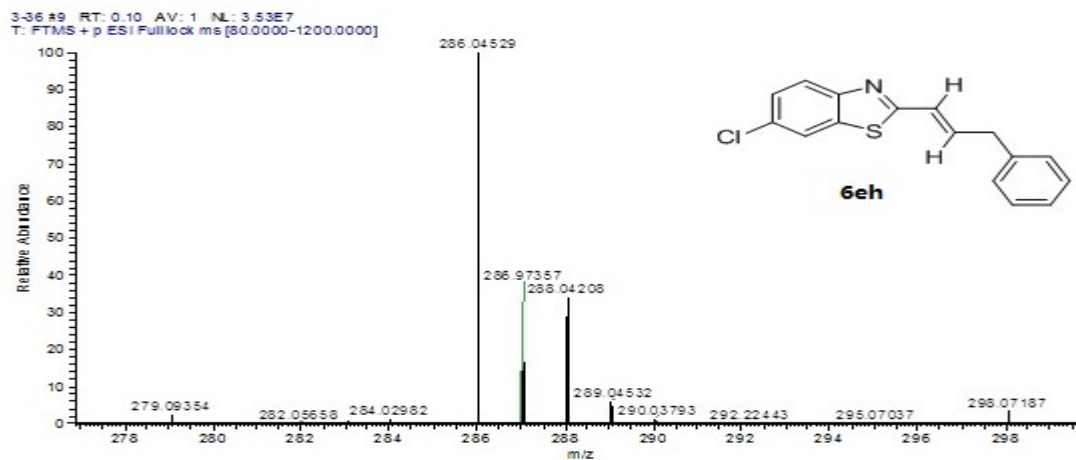
(*E*)-6-fluoro-2-(3-phenylprop-1-en-1-yl)benzo[*d*]thiazole(**6eq**)

HRMS (ESI) m/z calcd for $C_{16}H_{13}FNS^+$ ($M+H$) $^+$ 270.07472, found 270.07489.



(*E*)-6-chloro-2-(3-phenylprop-1-en-1-yl)benzo[*d*]thiazole(**6eh**)

HRMS (ESI) m/z calcd for $C_{16}H_{13}ClNS^+$ ($M+H$) $^+$ 286.04517, found 286.04529.



(*E*)-2-(3-phenylprop-1-en-1-yl)-6-(trifluoromethoxy)benzo[*d*]thiazole (**6ei**)

HRMS (ESI) m/z calcd for $C_{17}H_{13}F_3NOS^+$ ($M+H$) $^+$ 336.06645, found 336.06647.

