Supporting Information

Efficient and reusable amine-functionalized polyacrylonitrile fiber catalysts for Knoevenagel condensation in water

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Detailed Procedures for the Synthesis of the Different Fiber Catalysts

$PAN_{ED}F$ (Table 1, entry 3)

Dried PANF (1.000 g), ethylenediamine (10 mL) and deionized water (20 mL) were added to a three-necked flask and the mixture was stirred at reflux for 4.25 h. Then the fiber was filtered out and repeatedly washed with water (60-70 °C) until neutral. The fiber was then dried overnight under vacuum at 70 °C to give the fiber catalyst ($PAN_{ED}F$). The weight gain of $PAN_{ED}F$ based on PANF was 13%.

$PAN_{DT}F$ (Table 1, entry 4)

Dried PANF (1.000 g), diethylenetriamine (10 mL) and deionized water (20 mL) were added to a three-necked flask and the mixture was stirred at 100 °C for 9.5 h. Then the fiber was filtered out and repeatedly washed with water (60-70 °C) until neutral. The fiber was then dried overnight under vacuum at 70 °C to give the fiber catalyst ($PAN_{DT}F$). The weight gain of $PAN_{DT}F$ based on PANF was 20%.

$PAN_{TT}F$ (Table 1, entry 5)

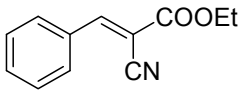
Dried PANF (1.000 g), triethylenetetramine (20 mL) and deionized water (10 mL) were added to a three-necked flask and the mixture was stirred at 110 °C for 4 h. Then the fiber was filtered out and repeatedly washed with water (60-70 °C) until neutral. The fiber was then dried overnight under vacuum at 70 °C to give the fiber catalyst ($PAN_{TT}F$). The weight gain of $PAN_{TT}F$ based on PANF was 26%.

$PAN_{TP}F$ (Table 1, entry 6)

Dried PANF (1.000 g), tetraethylenepentamine (20 mL) and deionized water (10 mL) were added to a three-necked flask and the mixture was stirred at reflux for 4 h. Then the fiber was filtered out and repeatedly washed with water (60-70 °C) until neutral. The fiber was then dried overnight under vacuum at 70 °C to give the fiber catalyst ($PAN_{TP}F$). The weight gain of $PAN_{TP}F$ based on PANF was 40%.

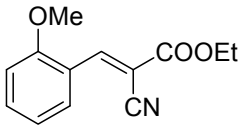
Physical Data and NMR Data of All Compounds

Table 7, entry 1



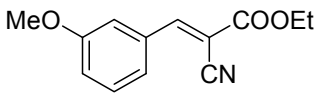
Ethyl (*E*)-2-cyano-3-phenyl-2-propenoate. White solid; melting point 47-48 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.25 (s, 1H), 7.99 (d, J = 7.3 Hz, 2H), 7.60-7.45 (m, 3H), 4.39 (q, J = 7.1 Hz, 2H), 1.40 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 162.46, 155.02, 133.30, 131.48, 131.07, 129.28, 115.48, 103.04, 62.73, 14.16.

Table 7, entry 2



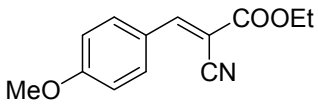
Ethyl (*E*)-2-cyano-3-(2-methoxyphenyl)-2-propenoate. Light yellow solid; melting point 70-72 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.75 (s, 1H), 8.28 (d, J = 7.8 Hz, 1H), 7.55 – 7.48 (m, 1H), 7.05 (t, J = 7.6 Hz, 1H), 6.96 (d, J = 8.4 Hz, 1H), 4.38 (q, J = 7.1 Hz, 2H), 3.90 (s, 3H), 1.39 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 162.80, 159.22, 149.73, 135.00, 129.31, 120.93, 120.68, 115.91, 111.18, 102.33, 62.47, 55.76, 14.18.

Table 7, entry 3



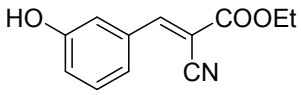
Ethyl (*E*)-2-cyano-3-(3-methoxyphenyl)-2-propenoate. White solid; melting point 51-53 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.21 (s, 1H), 7.59 (s, 1H), 7.51 (d, J = 7.7 Hz, 1H), 7.40 (t, J = 8.0 Hz, 1H), 7.10 (dd, J = 8.2, 1.9 Hz, 1H), 4.39 (q, J = 7.1 Hz, 2H), 3.86 (s, 3H), 1.40 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 162.44, 159.96, 154.98, 132.65, 130.22, 124.19, 120.06, 115.52, 114.54, 103.15, 62.73, 55.45, 14.16.

Table 7, entry 4



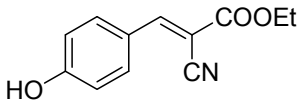
Ethyl (*E*)-2-cyano-3-(4-methoxyphenyl)-2-propenoate. White solid; melting point 76-77 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.16 (s, 1H), 8.00 (d, J = 8.8 Hz, 2H), 6.99 (d, J = 8.8 Hz, 2H), 4.36 (q, J = 7.1 Hz, 2H), 3.89 (s, 3H), 1.39 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 163.78, 163.09, 154.35, 133.63, 124.35, 116.21, 114.76, 99.34, 62.41, 55.62, 14.19.

Table 7, entry 5



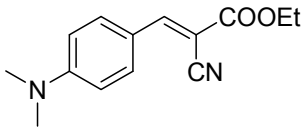
Ethyl (*E*)-2-cyano-3-(3-hydroxyphenyl)-2-propenoate. White solid; melting point 82-84 °C; ^{1}H NMR (400 MHz, DMSO-d_6): δ = 10.02 (s, 1H), 8.29 (s, 1H), 7.51 (s, 1H), 7.46 (d, J = 7.7 Hz, 1H), 7.39 (t, J = 7.9 Hz, 1H), 7.06 (d, J = 8.0 Hz, 1H), 4.32 (q, J = 7.1 Hz, 2H), 1.32 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, DMSO-d_6): δ = 162.33, 158.28, 155.63, 132.93, 130.80, 122.94, 121.25, 116.82, 115.97, 102.67, 62.78, 14.41.

Table 7, entry 6



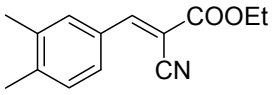
Ethyl (*E*)-2-cyano-3-(4-hydroxyphenyl)-2-propenoate. Light yellow solid; melting point 169-170 °C; ^{1}H NMR (400 MHz, DMSO-d_6): δ = 10.85 (s, 1H), 8.23 (s, 1H), 8.00 (d, J = 8.7 Hz, 2H), 6.97 (d, J = 8.7 Hz, 2H), 4.30 (q, J = 7.1 Hz, 2H), 1.31 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, DMSO-d_6): δ = 163.36, 163.05, 155.07, 134.40, 122.97, 116.88, 116.82, 97.53, 62.37, 14.47.

Table 7, entry 7



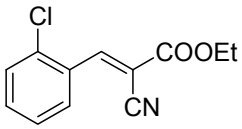
Ethyl (*E*)-2-cyano-3-(4-dimethylaminophenyl)-2-propenoate. Orange solid; melting point 118-119 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.06 (s, 1H), 7.96-7.87 (m, 2H), 6.68 (d, J = 8.7 Hz, 2H), 4.33 (q, J = 7.1 Hz, 2H), 3.10 (s, 6H), 1.37 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 164.26, 154.49, 153.57, 134.03, 119.32, 117.58, 111.48, 93.94, 61.85, 39.99, 14.30.

Table 7, entries 8 and 9



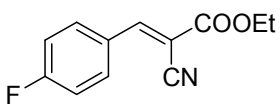
Ethyl (*E*)-2-cyano-3-(3,4-dimethylphenyl)-2-propenoate. White solid; melting point 59-60 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.18 (s, 1H), 7.82-7.69 (m, 2H), 7.26 (t, J = 5.7 Hz, 1H), 4.37 (q, J = 7.1 Hz, 2H), 2.32 (d, J = 7.2 Hz, 6H), 1.39 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 162.85, 155.14, 143.50, 137.74, 132.39, 130.57, 129.29, 128.82, 115.82, 101.27, 62.52, 20.19, 19.70, 14.19.

Table 7, entries 10 and 11



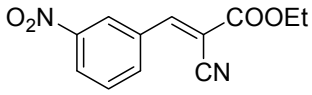
Ethyl (*E*)-2-cyano-3-(2-chlorophenyl)-2-propenoate. White solid; melting point 45-47 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.69 (s, 1H), 8.24 (d, J = 7.8 Hz, 1H), 7.46 (ddt, J = 16.1, 14.8, 7.7 Hz, 3H), 4.41 (q, J = 7.1 Hz, 2H), 1.41 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 161.80, 151.12, 136.43, 133.68, 130.33, 129.89, 129.85, 127.47, 114.81, 106.20, 62.95, 14.13.

Table 7, entry 12



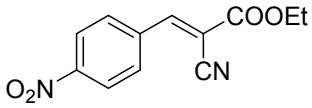
Ethyl (*E*)-2-cyano-3-(4-fluorophenyl)-2-propenoate. White solid; melting point 90-92 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.21 (s, 1H), 8.04 (dd, J = 8.6, 5.4 Hz, 2H), 7.20 (t, J = 8.5 Hz, 2H), 4.39 (q, J = 7.1 Hz, 2H), 1.40 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 166.67, 162.37, 153.45, 133.63, 133.54, 127.88, 116.81, 116.59, 115.43, 102.60, 62.77, 14.14.

Table 7, entry 13



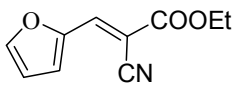
Ethyl (*E*)-2-cyano-3-(3-nitrophenyl)-2-propenoate. White solid; melting point 130-132 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.72 (s, 1H), 8.42 (t, J = 6.2 Hz, 2H), 8.33 (s, 1H), 7.76 (t, J = 8.1 Hz, 1H), 4.43 (q, J = 7.1 Hz, 2H), 1.43 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 161.47, 151.87, 148.59, 135.24, 132.90, 130.56, 127.06, 125.86, 114.56, 106.62, 63.26, 14.11.

Table 7, entry 14



Ethyl (*E*)-2-cyano-3-(4-nitrophenyl)-2-propenoate. Yellow solid; melting point 165-167 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.42-8.27 (m, 3H), 8.14 (d, J = 8.7 Hz, 2H), 4.43 (q, J = 7.1 Hz, 2H), 1.43 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 161.40, 151.72, 149.72, 136.92, 131.51, 124.31, 114.53, 107.40, 63.34, 14.10.

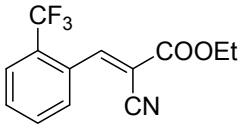
Table 7, entry 15



Ethyl (*E*)-2-cyano-3-(2-furyl)-2-propenoate. Yellow solid; melting point 85-87 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.02 (s, 1H), 7.76 (s, 1H), 7.40 (d, J = 3.5 Hz, 1H), 6.67 (d, J = 2.0 Hz, 1H), 4.36 (q, J = 7.1 Hz, 2H), 1.38 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 162.54, 148.73, 148.27, 139.43,

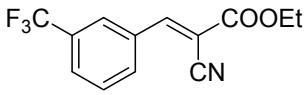
121.72, 115.32, 113.86, 98.63, 62.54, 14.15.

Table 7, entries 16 and 17



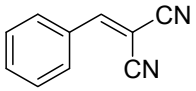
Ethyl (*E*)-2-cyano-3-(2-trifluoromethylphenyl)-2-propenoate. Light yellow solid; melting point 69-70 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.65 (s, 1H), 8.12 (d, J = 7.7 Hz, 1H), 7.80 (d, J = 7.7 Hz, 1H), 7.71 (t, J = 7.6 Hz, 1H), 7.64 (t, J = 7.6 Hz, 1H), 4.42 (q, J = 7.1 Hz, 2H), 1.42 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 161.26, 151.52, 132.45, 131.78, 129.93, 129.53, 126.53, 124.84, 122.11, 114.34, 108.57, 63.11, 14.05.

Table 7, entries 18 and 19



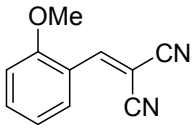
Ethyl (*E*)-2-cyano-3-(3-trifluoromethylphenyl)-2-propenoate. White solid; melting point 75-76 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.29 (d, J = 4.5 Hz, 2H), 8.13 (s, 1H), 7.82 (d, J = 7.8 Hz, 1H), 7.68 (t, J = 7.9 Hz, 1H), 4.42 (q, J = 7.1 Hz, 2H), 1.42 (t, J = 7.1 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 161.80, 152.93, 133.04, 132.13, 129.98, 129.40, 128.06, 124.74, 122.03, 114.81, 105.41, 63.05, 14.09.

Table 7, entry 20



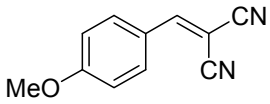
2-(Phenylmethylene)malononitrile. White solid; melting point 79-80 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 7.91 (d, J = 7.7 Hz, 2H), 7.79 (s, 1H), 7.64 (t, J = 7.4 Hz, 1H), 7.54 (t, J = 7.6 Hz, 2H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 160.06, 134.68, 130.96, 130.77, 129.66, 113.77, 112.62, 82.79.

Table 7, entry 21



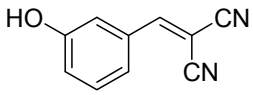
2-(2-Methoxyphenylmethylene)malononitrile. Yellow solid; melting point 79-81 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.30 (s, 1H), 8.17 (d, J = 7.9 Hz, 1H), 7.59 (t, J = 7.9 Hz, 1H), 7.07 (t, J = 7.7 Hz, 1H), 7.00 (d, J = 8.5 Hz, 1H), 3.93 (s, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 158.99, 154.52, 136.60, 128.85, 121.22, 120.18, 114.38, 113.06, 111.58, 81.32, 56.00.

Table 7, entry 22



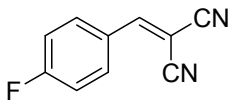
2-(4-Methoxyphenylmethylene)malononitrile. Yellow solid; melting point 110-112 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 7.91 (d, J = 8.8 Hz, 2H), 7.66 (s, 1H), 7.02 (d, J = 8.9 Hz, 2H), 3.92 (s, 3H); ^{13}C NMR (101 MHz, $CDCl_3$): δ = 164.87, 158.96, 133.49, 124.03, 115.17, 114.49, 113.41, 78.43, 55.84.

Table 7, entry 23



2-(3-Hydroxyphenylmethylene)malononitrile. Light yellow solid; melting point 150-151 °C; ^{1}H NMR (400 MHz, DMSO-d_6): δ = 10.13 (s, 1H), 8.44 (s, 1H), 7.39 (dd, J = 13.9, 7.6 Hz, 3H), 7.10 (d, J = 7.5 Hz, 1H); ^{13}C NMR (101 MHz, DMSO-d_6): δ = 162.07, 158.36, 132.86, 131.04, 122.50, 122.28, 116.58, 114.74, 113.64, 81.58.

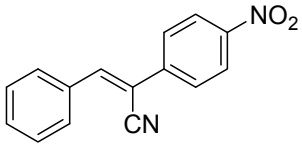
Table 7, entry 24



2-(4-Fluorophenylmethylene)malononitrile. White solid; melting point 123-125 °C; ^{1}H NMR (400 MHz, $CDCl_3$): δ = 7.97 (dd, J = 8.7, 5.2 Hz, 2H), 7.77 (s, 1H), 7.25 (dd, J = 14.2, 5.8 Hz, 2H); ^{13}C NMR (101

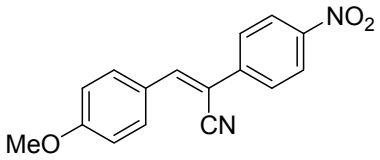
MHz, $CDCl_3$): δ = 164.82, 158.42, 133.51, 133.42, 127.41, 117.32, 117.10, 113.62, 112.55, 82.36.

Table 7, entry 25



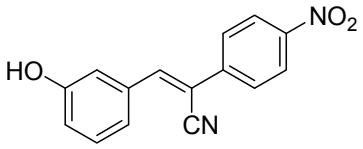
(*Z*)-2-(4-nitrophenyl)-3-phenylacrylonitrile. Light yellow solid; melting point 169-171 °C; ^{1}H NMR (400 MHz, DMSO-d_6): δ = 8.44-8.24 (m, 3H), 8.02 (dd, J = 16.3, 7.2 Hz, 4H), 7.58 (d, J = 4.8 Hz, 3H); ^{13}C NMR (101 MHz, DMSO-d_6): δ = 147.84, 146.98, 140.50, 133.70, 131.97, 130.05, 129.56, 127.46, 124.77, 117.76, 108.91.

Table 7, entry 26



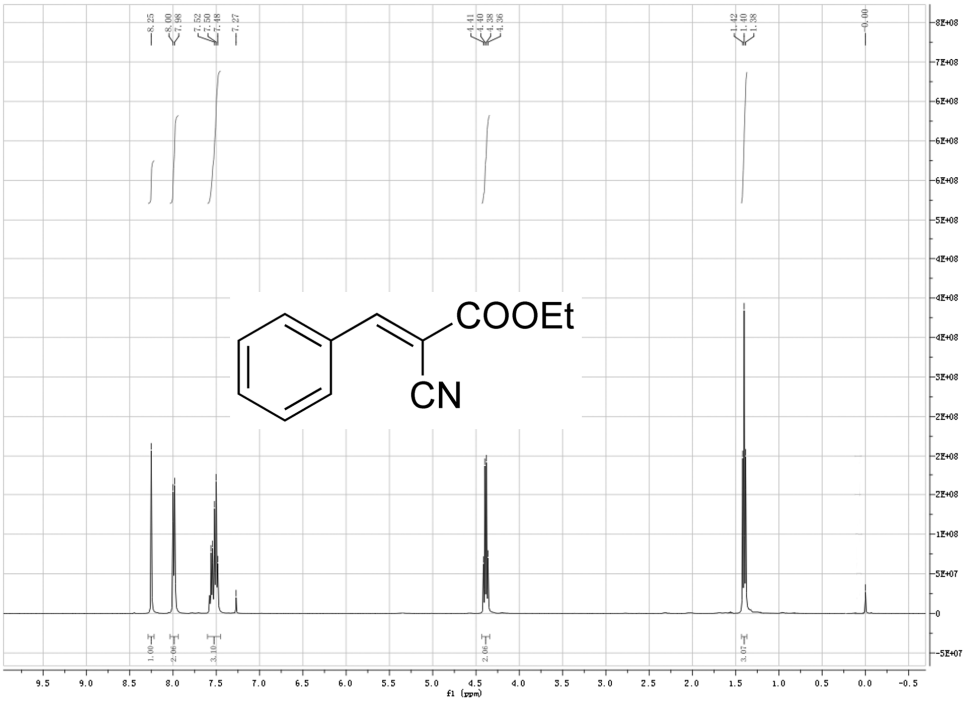
(*Z*)-3-(4-Methoxyphenyl)-2-(4-nitrophenyl)acrylonitrile. Yellow solid; melting point 147 °C; ^{1}H NMR (400 MHz, DMSO-d_6): δ = 8.30 (d, J = 8.5 Hz, 2H), 8.19 (s, 1H), 7.99 (dd, J = 16.1, 8.5 Hz, 4H), 7.13 (d, J = 8.5 Hz, 2H), 3.86 (s, 3H); ^{13}C NMR (101 MHz, DMSO-d_6): δ = 162.40, 147.34, 146.34, 141.01, 132.33, 132.23, 129.91, 126.89, 126.20, 124.69, 124.45, 118.25, 115.08, 114.93, 105.28, 55.98.

Table 7, entry 27

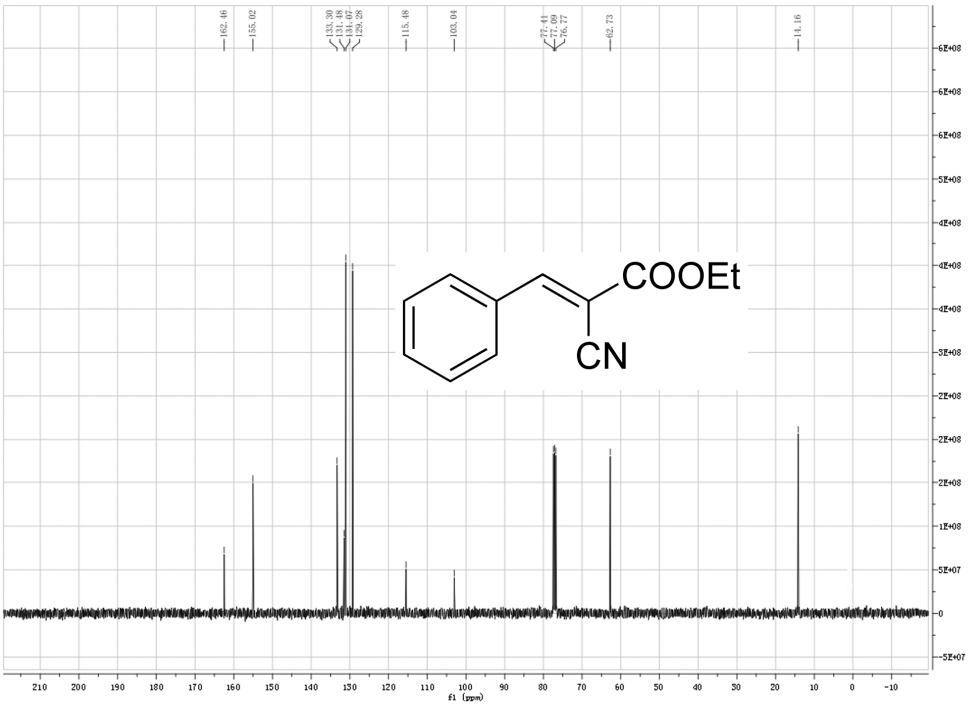


(*Z*)-3-(3-Hydroxyphenyl)-2-(4-nitrophenyl)acrylonitrile. Light yellow solid; melting point 233-235 °C; ^{1}H NMR (400 MHz, DMSO-d_6): δ = 9.90 (s, 1H), 8.34 (d, J = 8.8 Hz, 2H), 8.19 (s, 1H), 8.03 (d, J = 8.8 Hz, 2H), 7.49-7.33 (m, 3H), 6.97 (d, J = 7.8 Hz, 1H); ^{13}C NMR (101 MHz, DMSO-d_6): δ = 158.15, 147.75, 147.10, 140.62, 134.83, 130.55, 127.42, 124.71, 121.41, 119.29, 117.74, 116.16, 108.48.

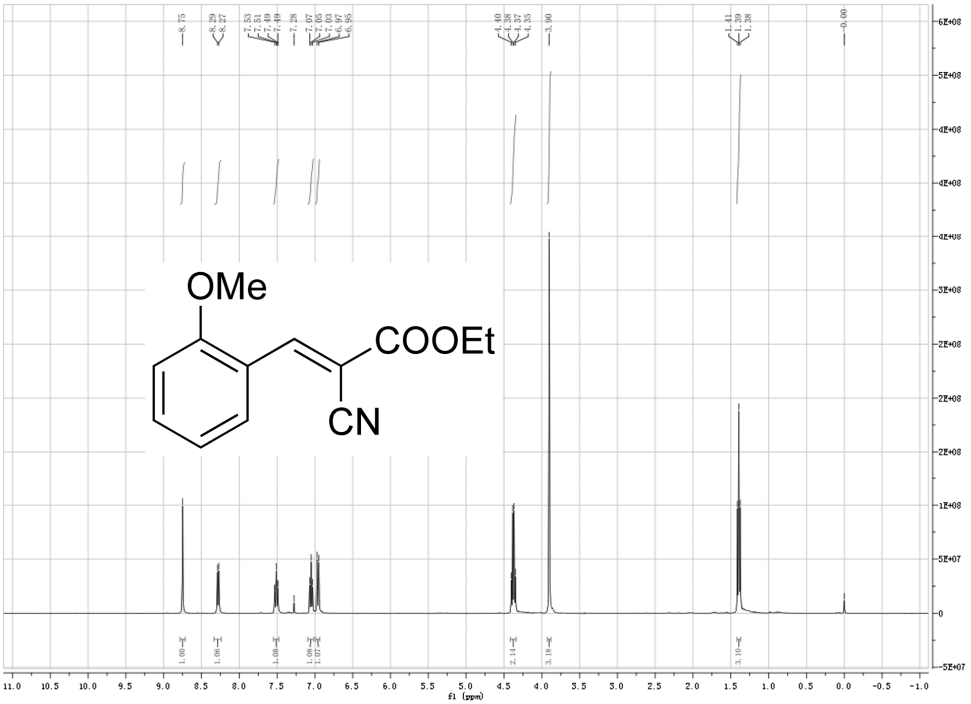
^{1}H and ^{13}C NMR spectra of all compounds



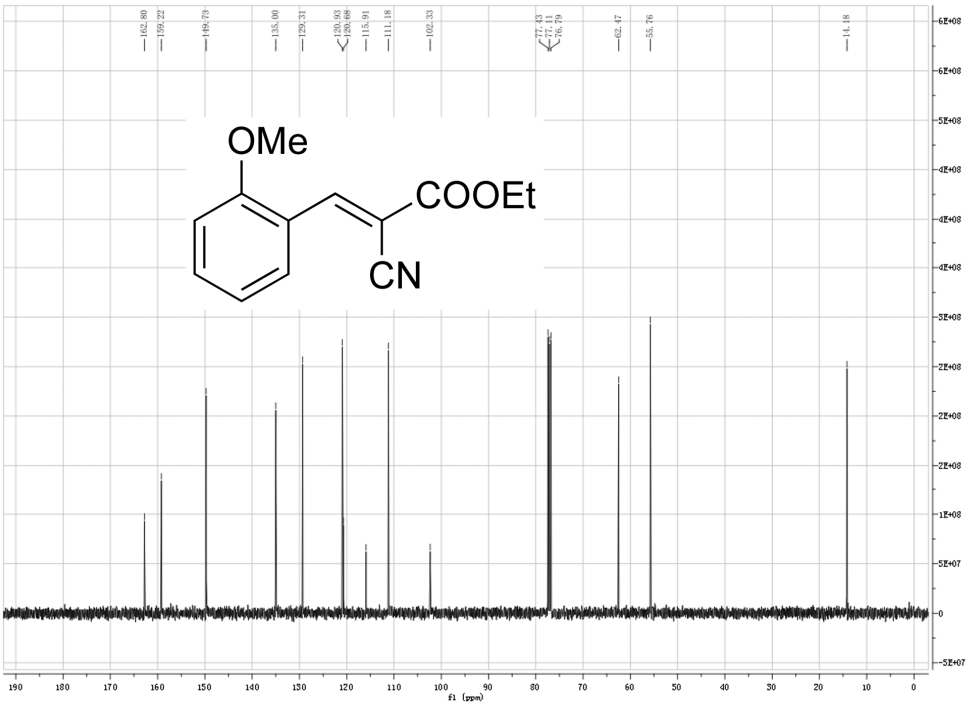
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-phenyl-2-propenoate (Table 7, entry 1).



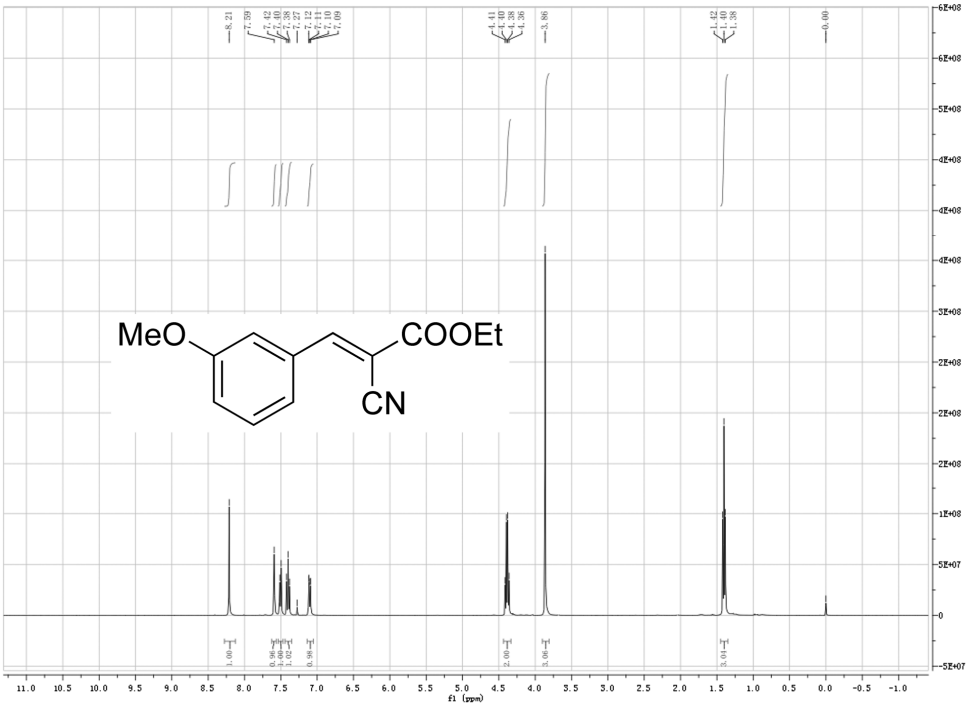
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-phenyl-2-propenoate (Table 5, entry 1).



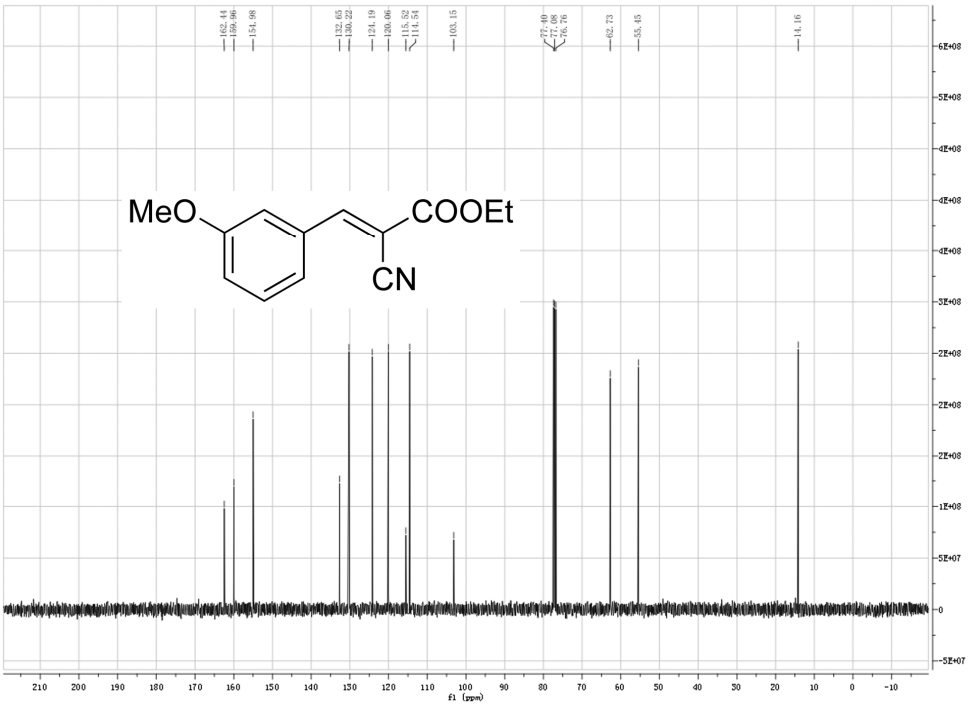
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(2-methoxyphenyl)-2-propenoate (Table 7, entry 2).



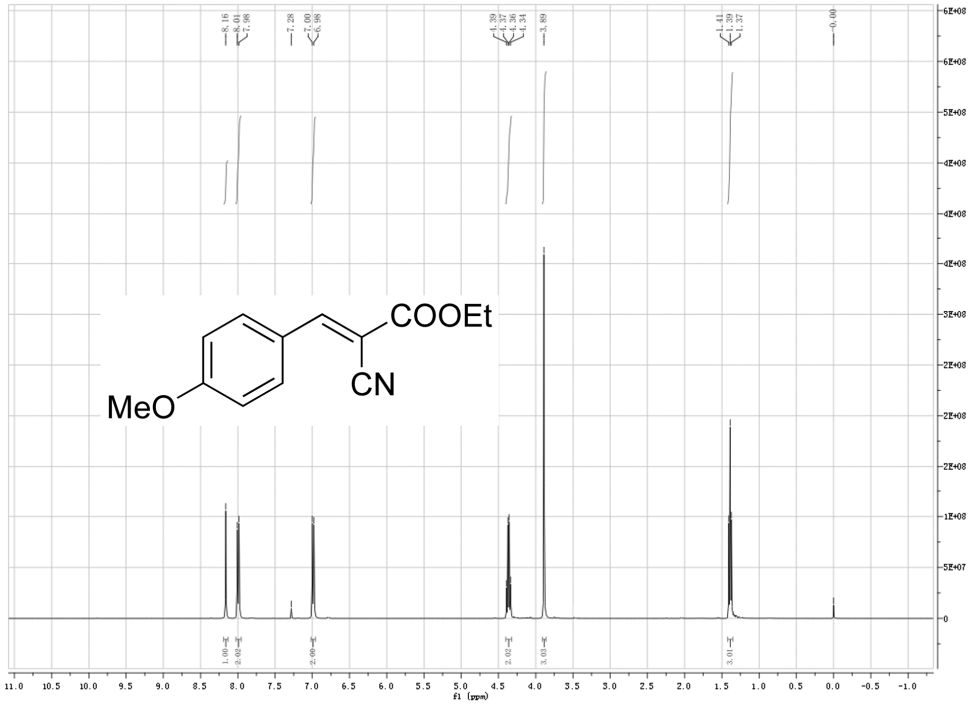
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(2-methoxyphenyl)-2-propenoate (Table 7, entry 2).



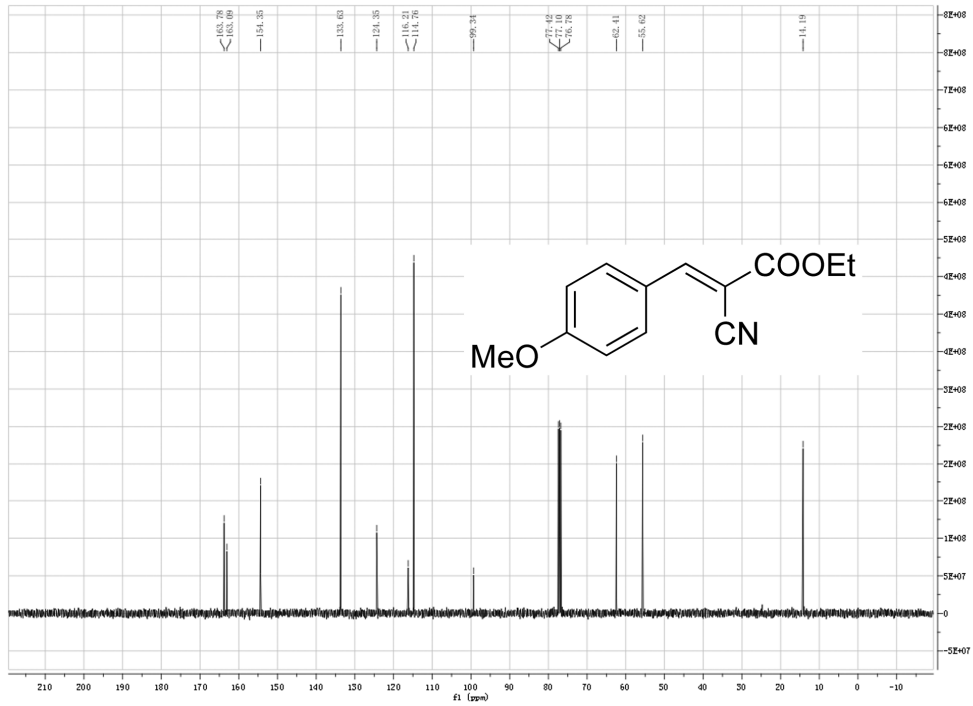
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(3-methoxyphenyl)-2-propenoate (Table 7, entry 3).



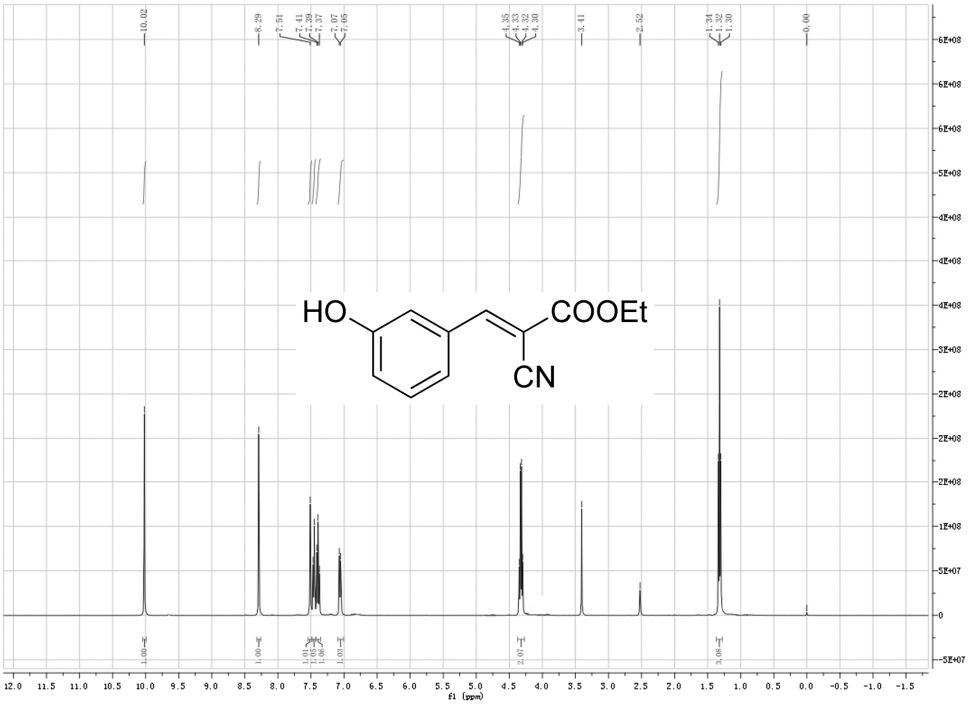
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(3-methoxyphenyl)-2-propenoate (Table 7, entry 3).



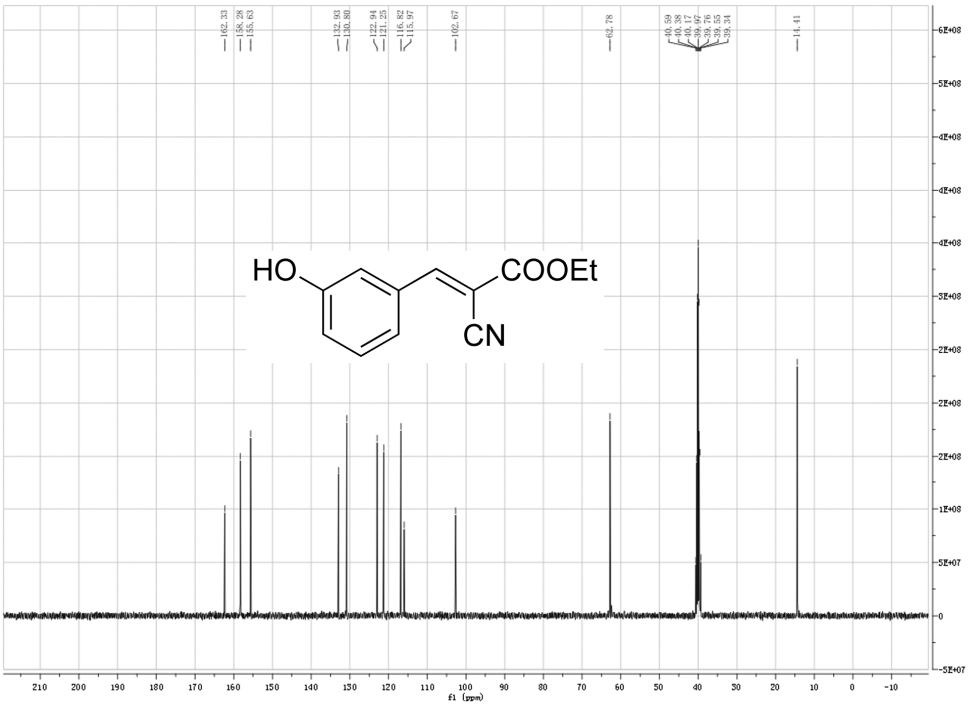
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(4-methoxyphenyl)-2-propenoate (Table 7, entry 4).



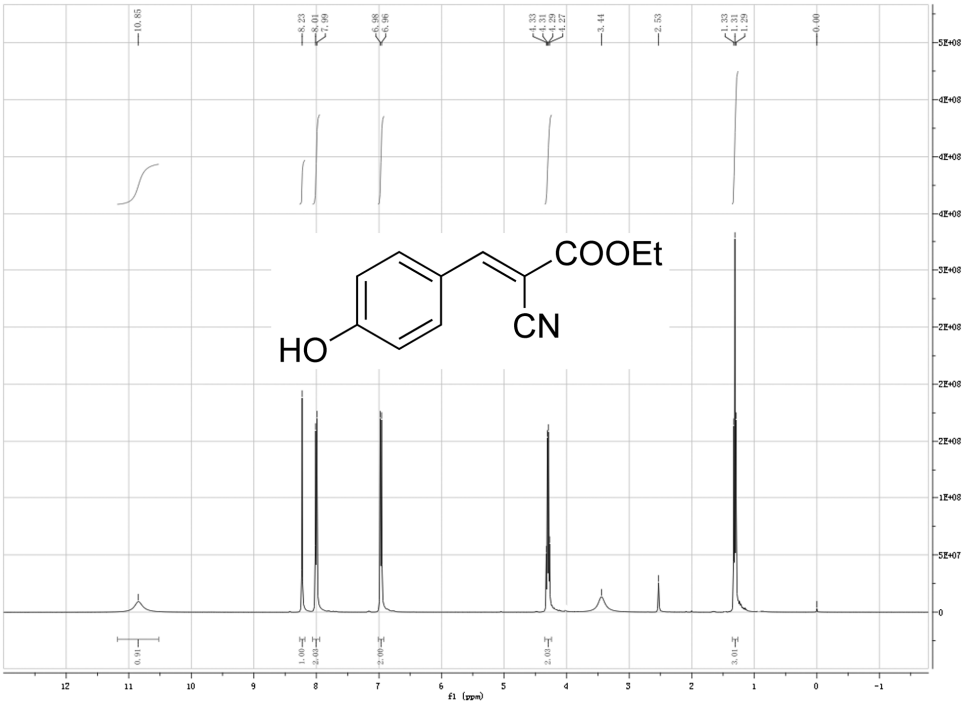
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(4-methoxyphenyl)-2-propenoate (Table 7, entry 4).



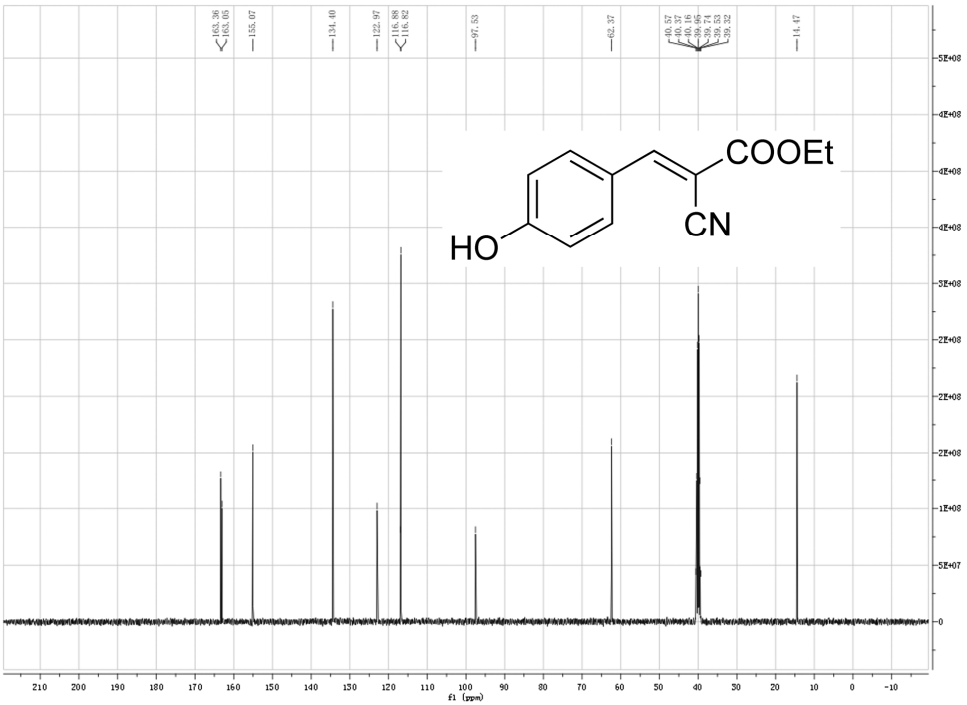
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(3-hydroxyphenyl)-2-propenoate (Table 7, entry 5).



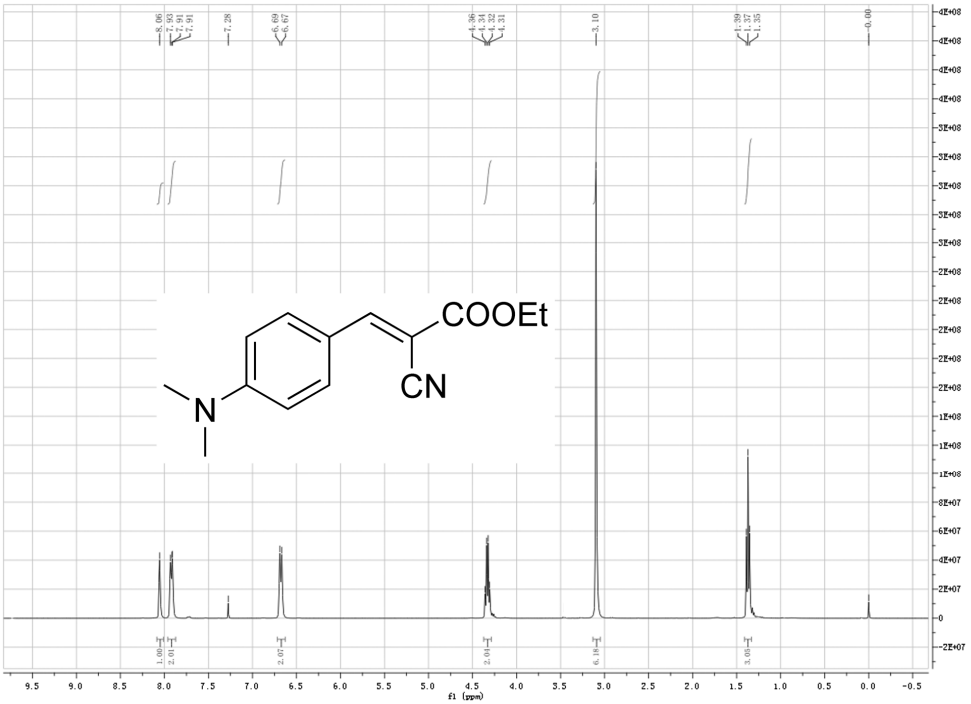
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(3-hydroxyphenyl)-2-propenoate (Table 7, entry 5).



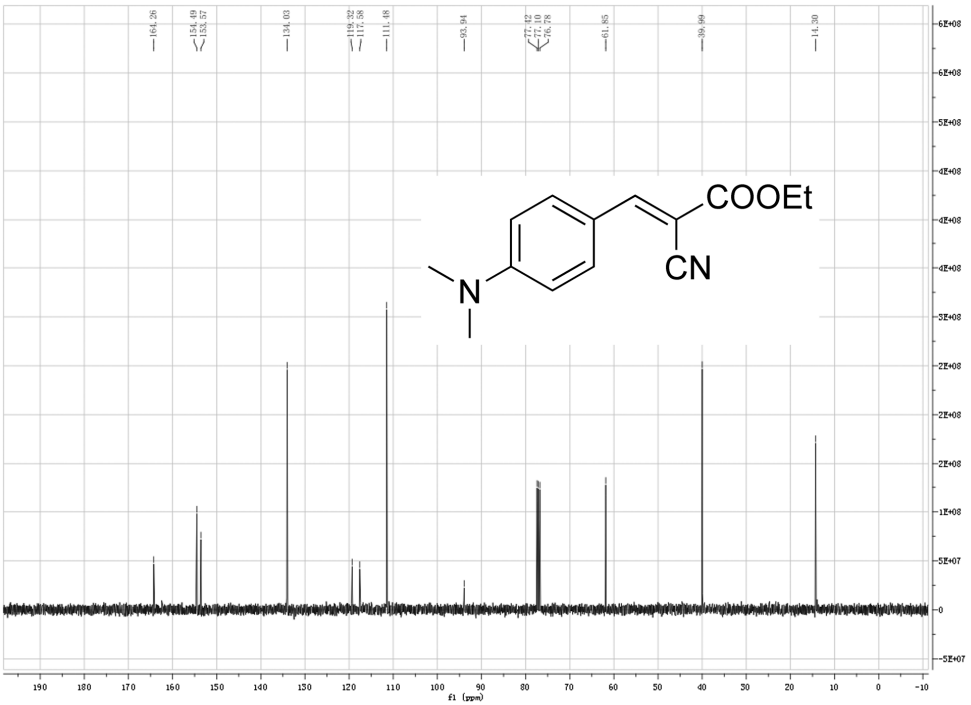
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(4-hydroxyphenyl)-2-propenoate (Table 7, entry 6).



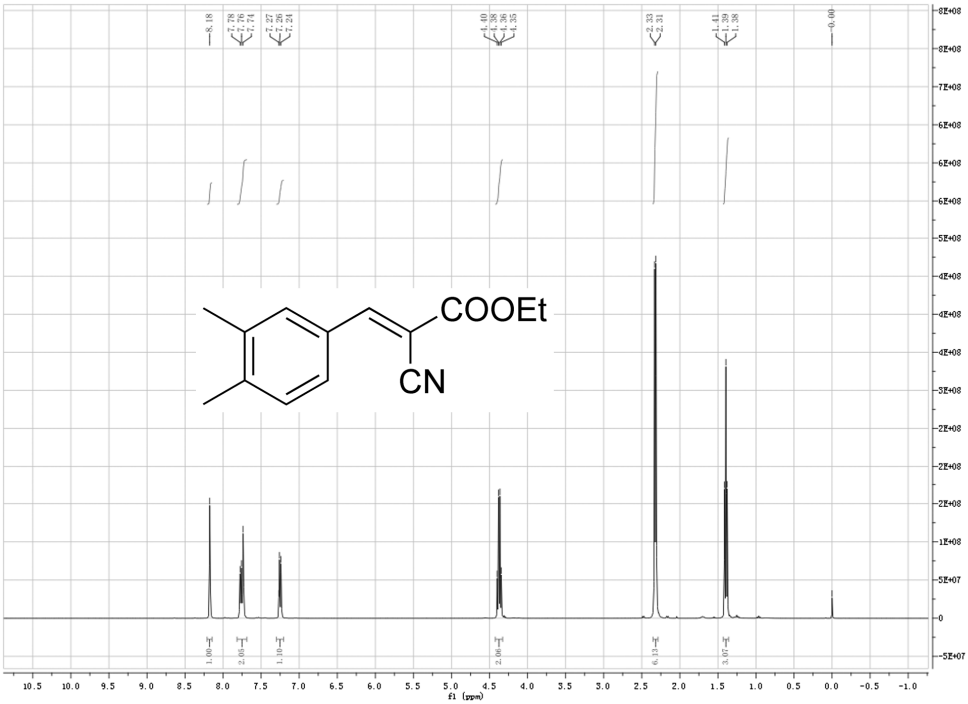
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(4-hydroxyphenyl)-2-propenoate (Table 7, entry 6).



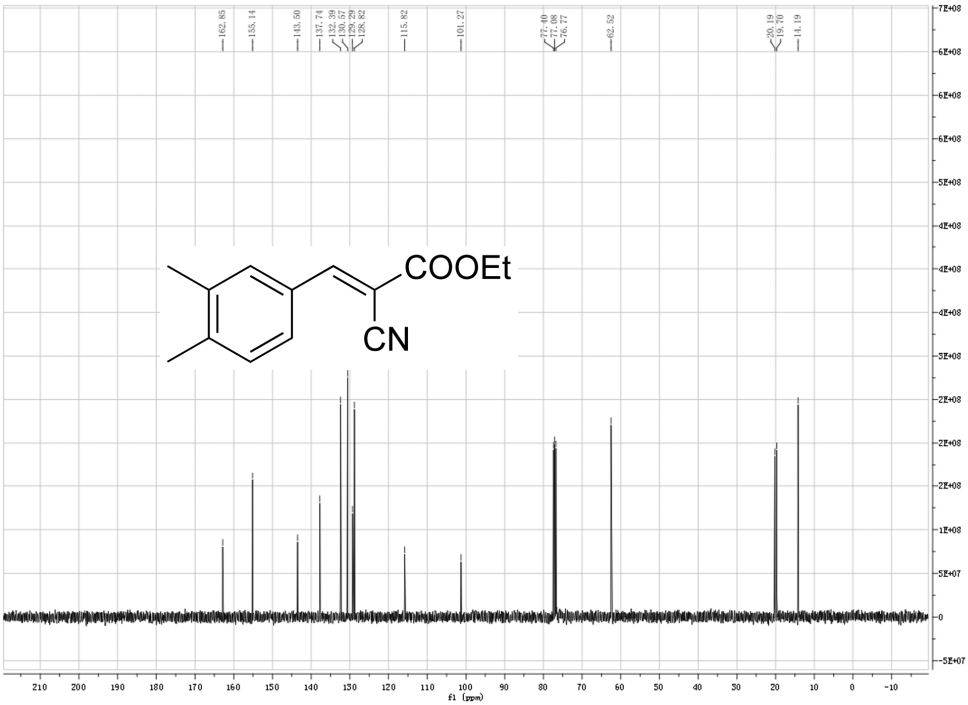
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(4-dimethylaminoyphenyl)-2-propenoate (Table 7, entry 7).



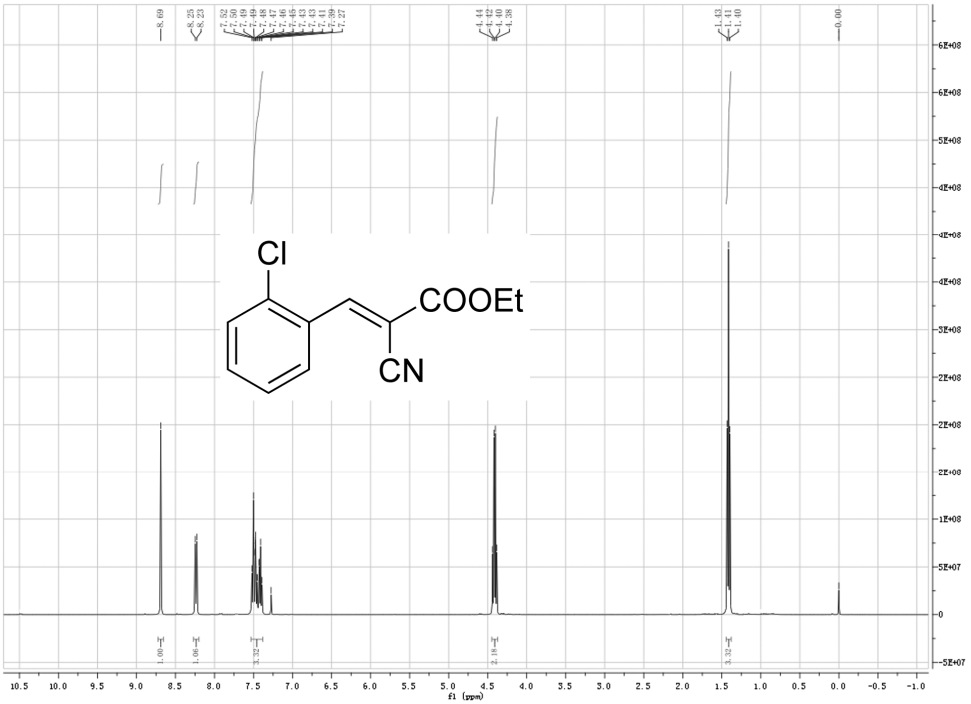
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(4-dimethylaminophenyl)-2-propenoate (Table 7, entry 7).



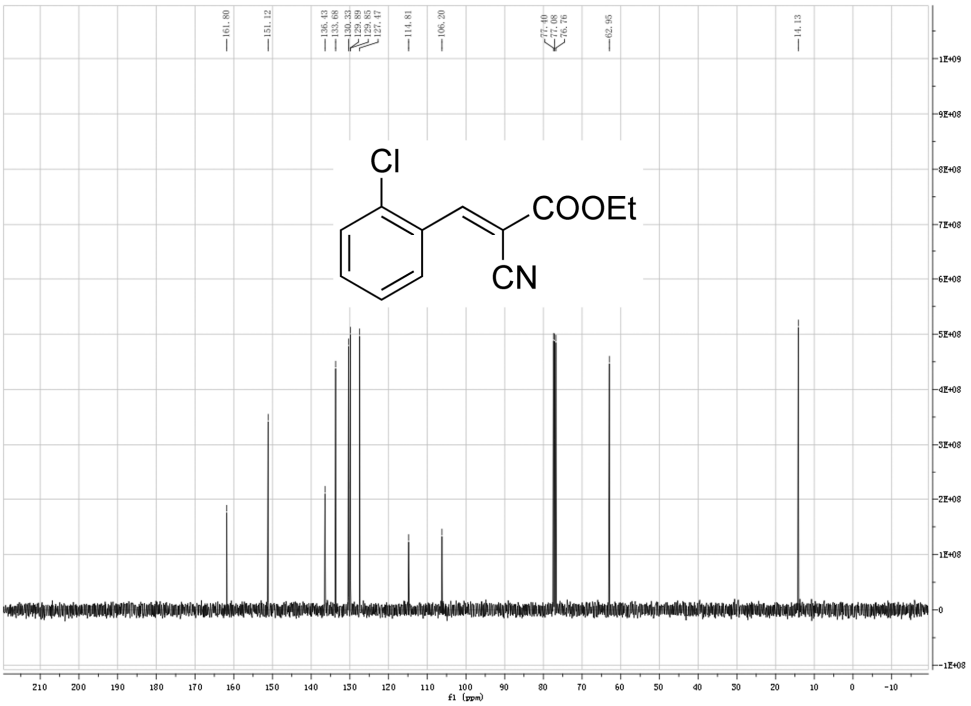
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(3,4-dimethylphenyl)-2-propenoate (Table 7, entries 8 and 9).



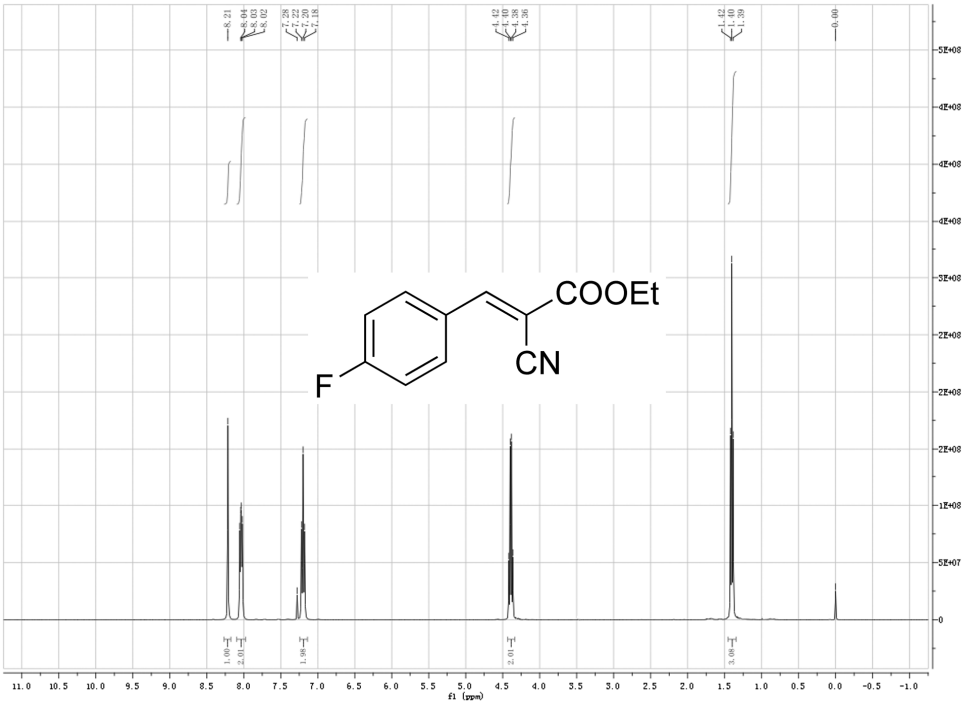
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(3,4-dimethylphenyl)-2-propenoate (Table 7, entries 8 and 9).



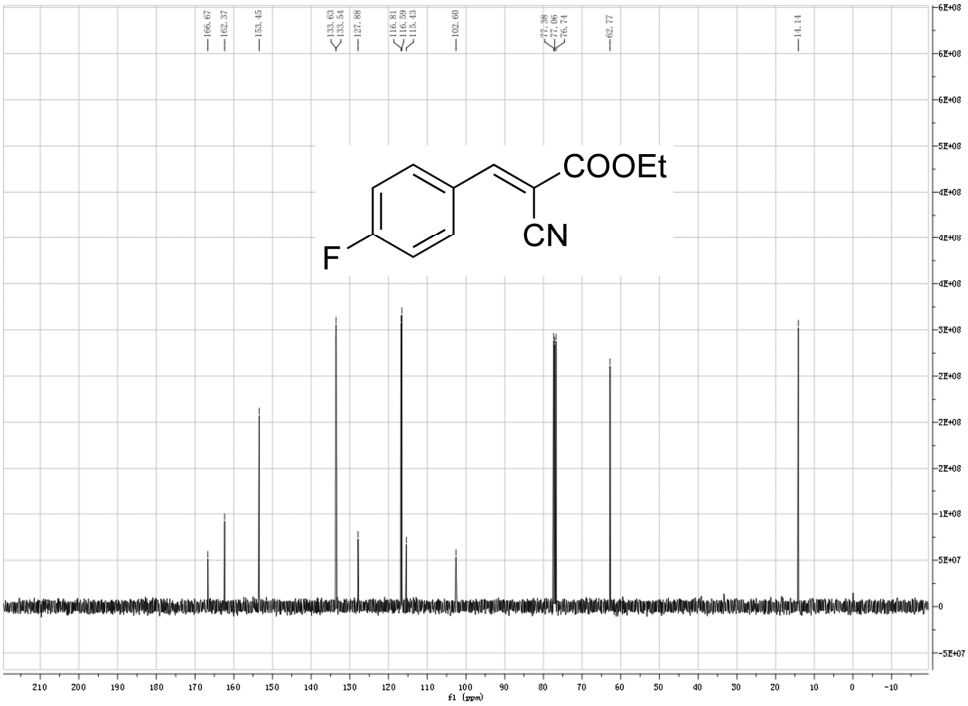
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(2-chlorophenyl)-2-propenoate (Table 7, entries 10 and 11).



The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(2-chlorophenyl)-2-propenoate (Table 7, entries 10 and 11).

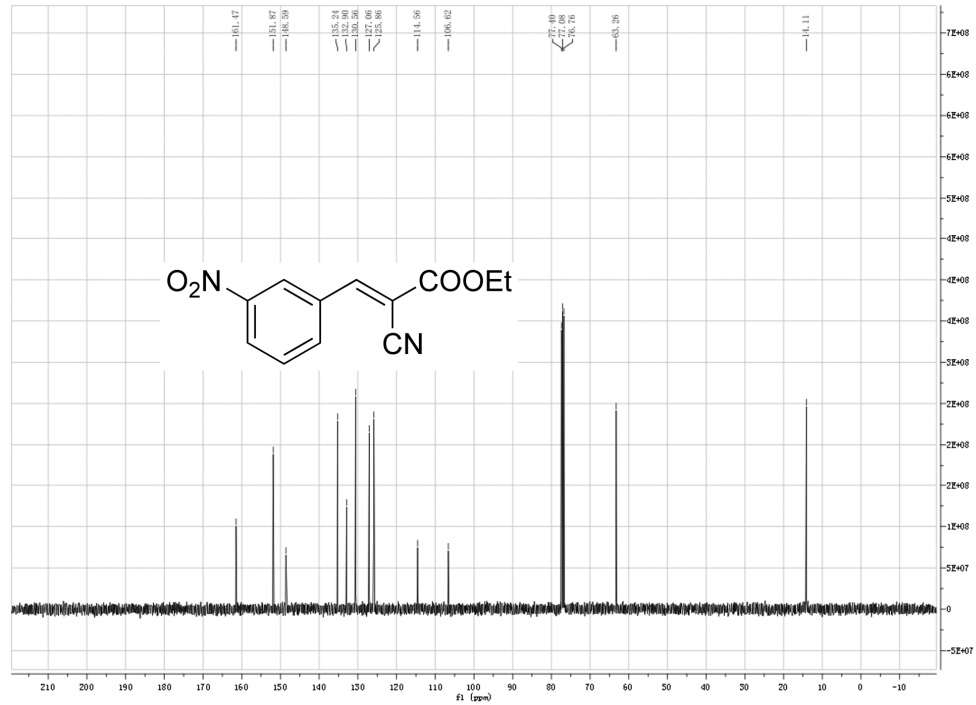


The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(4-fluorophenyl)-2-propenoate (Table 7, entry 12).

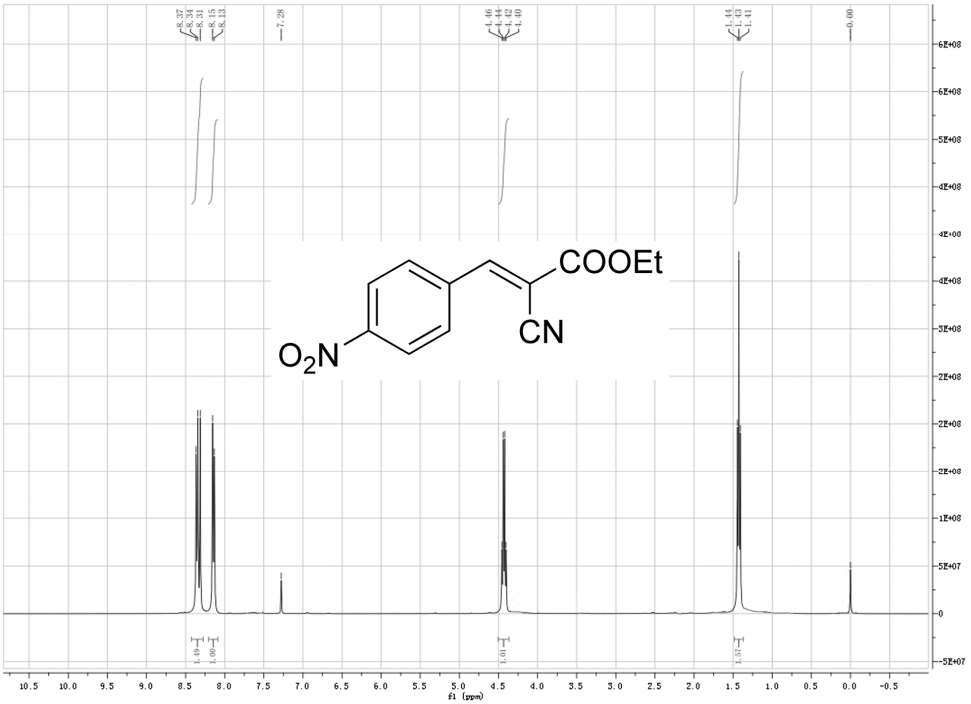


The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(4-fluorophenyl)-2-propenoate (Table 7, entry 12).

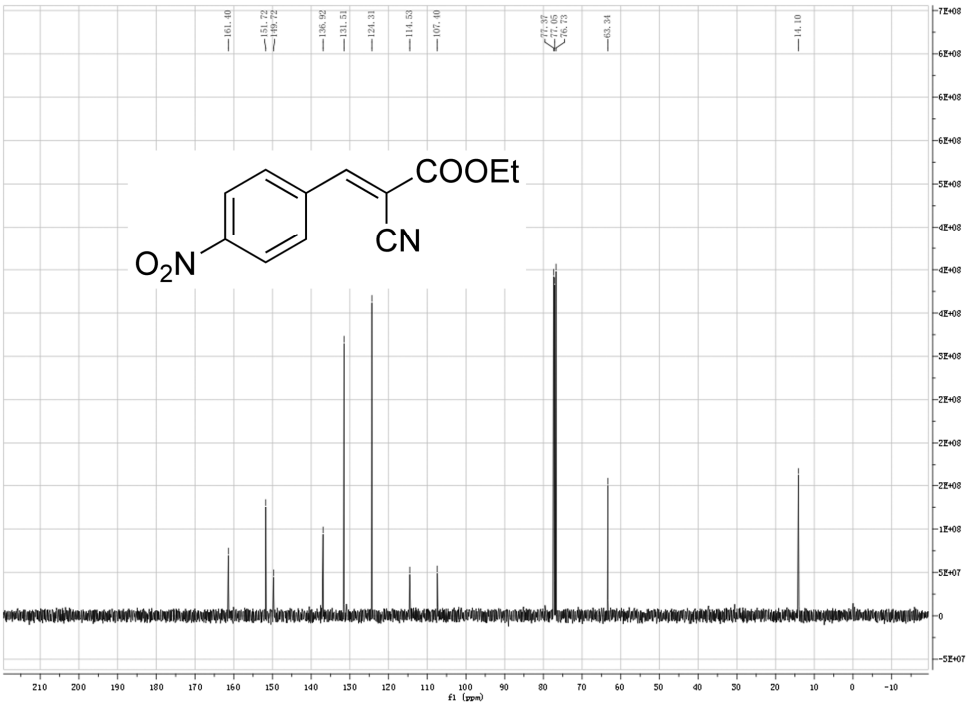
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(3-nitrophenyl)-2-propenoate (Table 7, entry 13).



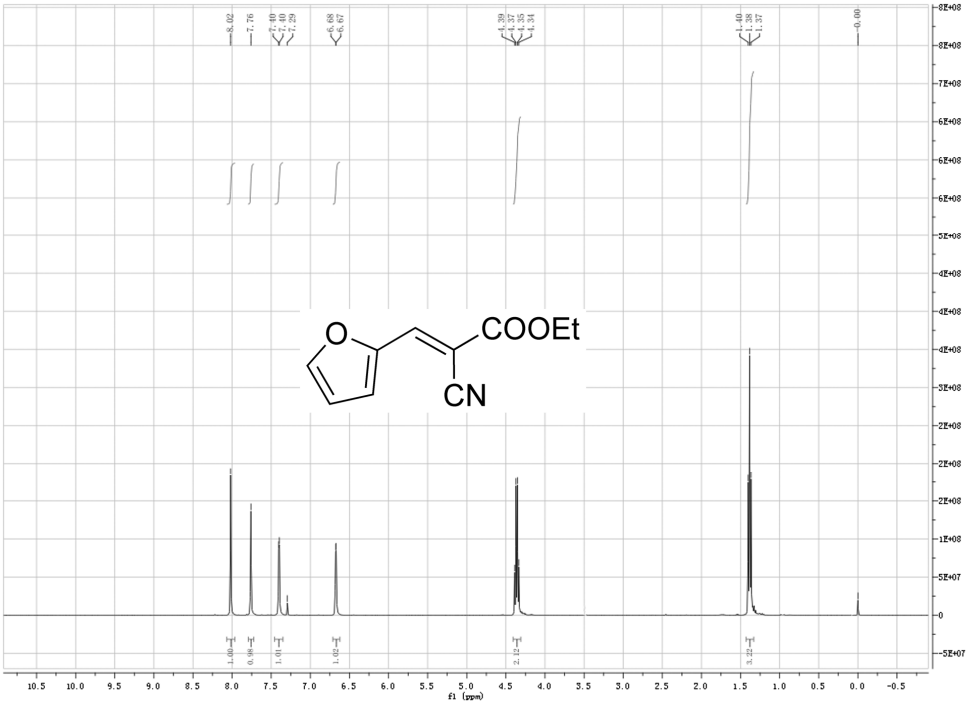
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(3-nitrophenyl)-2-propenoate (Table 7, entry 13).



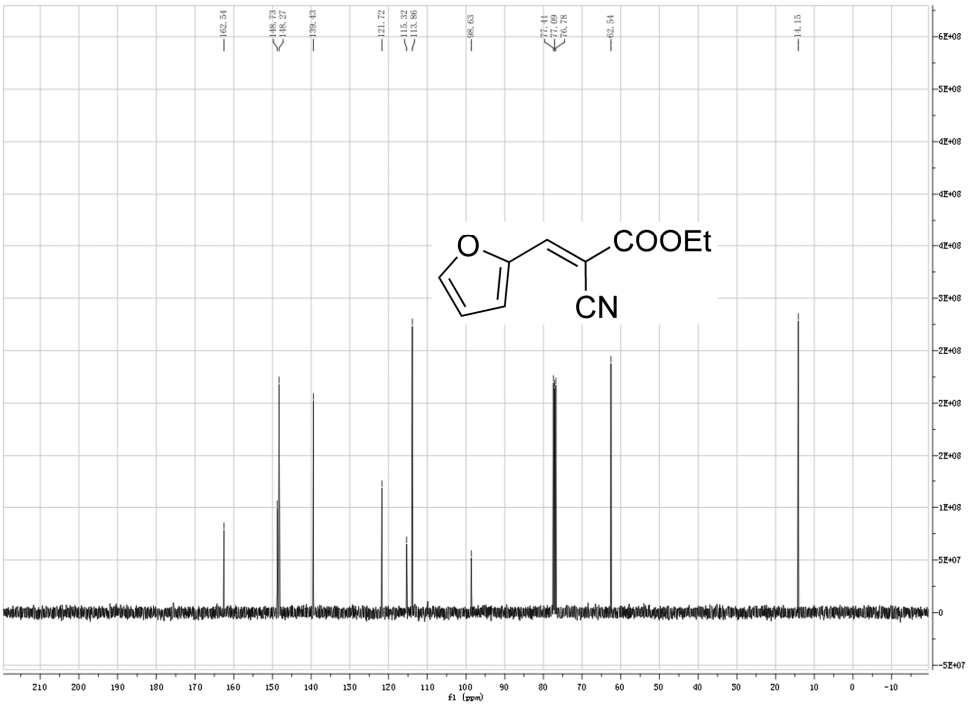
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(4-nitrophenyl)-2-propenoate (Table 7, entry 14).



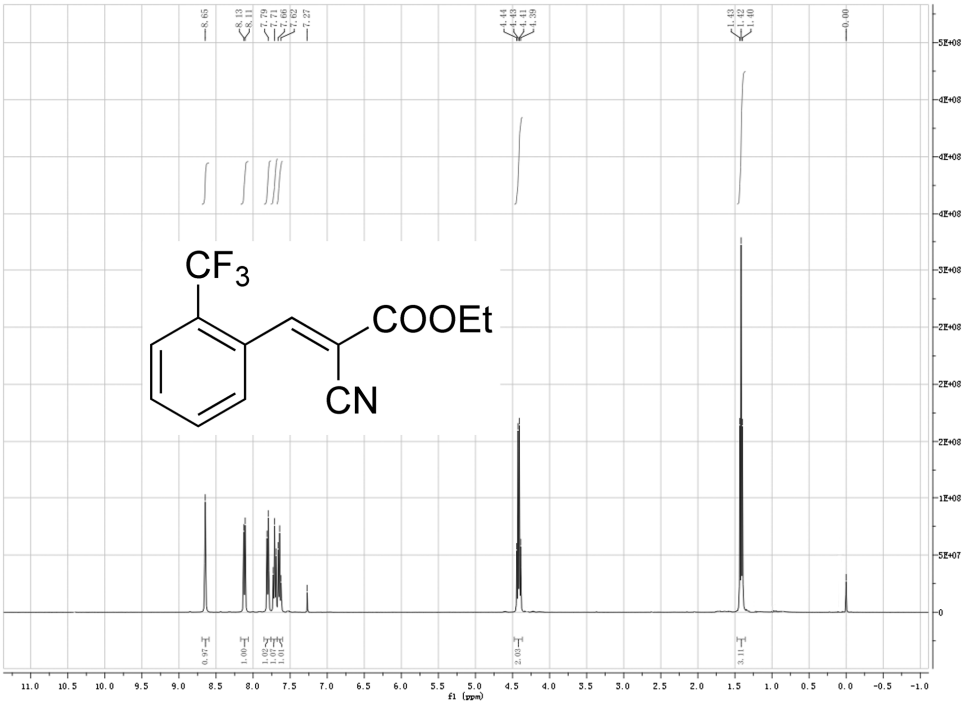
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(4-nitrophenyl)-2-propenoate (Table 7, entry 14).



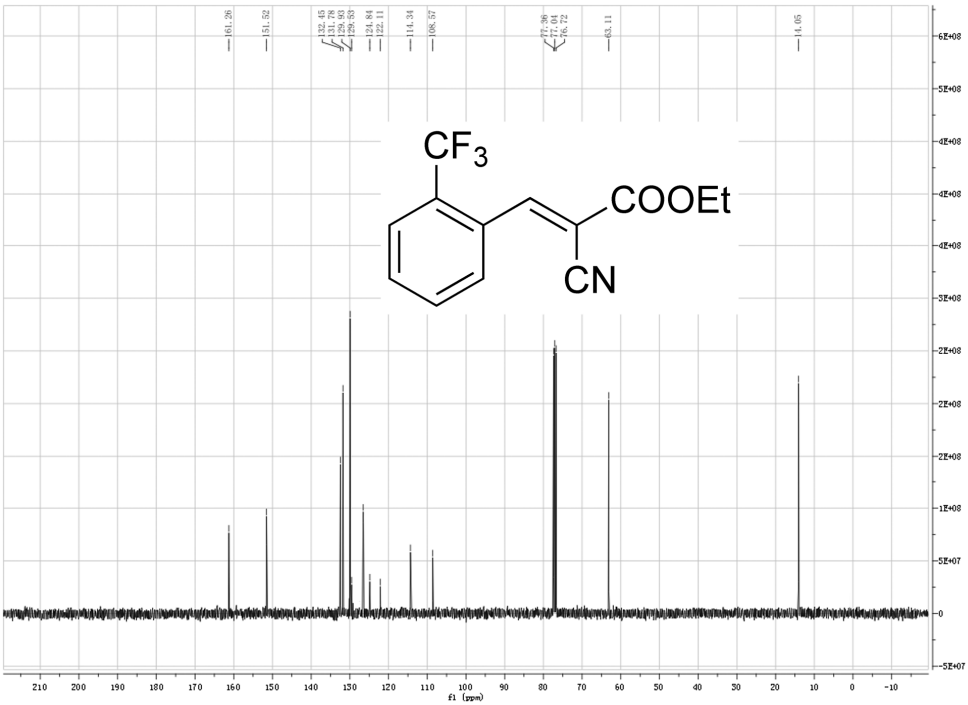
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(2-furyl)-2-propenoate (Table 7, entry 15).



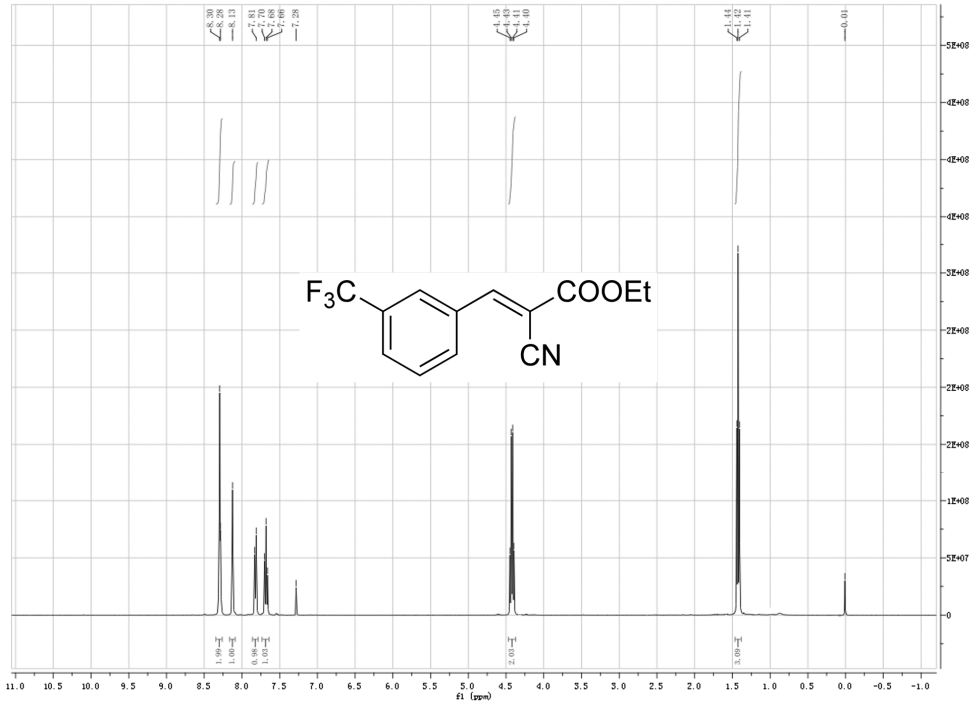
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(2-furyl)-2-propenoate (Table 7, entry 15).



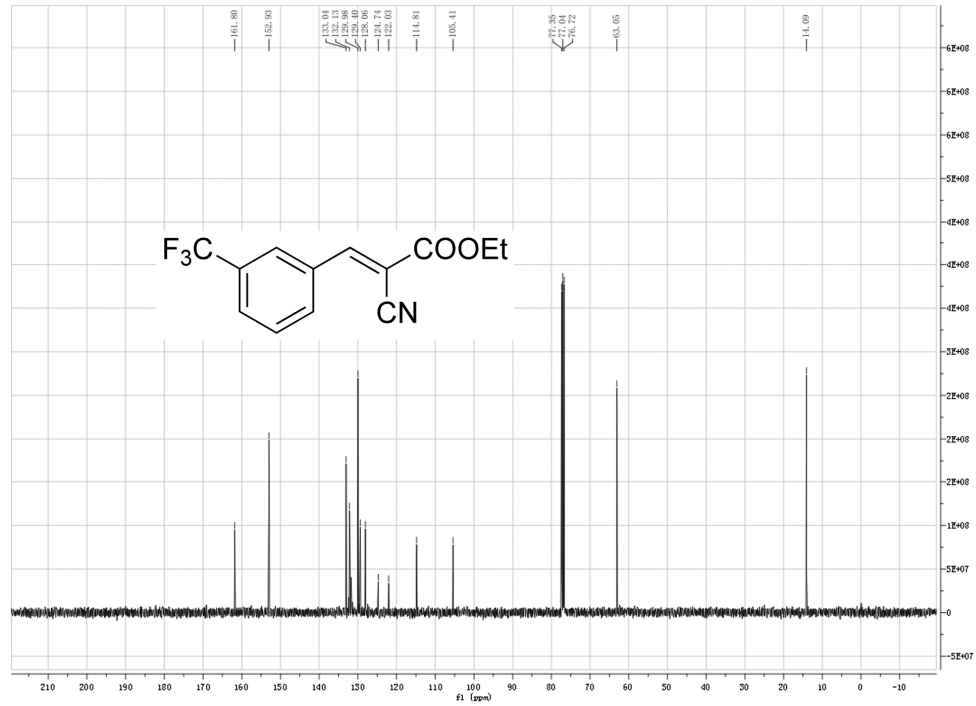
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(2-trifluoromethylphenyl)-2-propenoate (Table 7, entres 16 and 17).



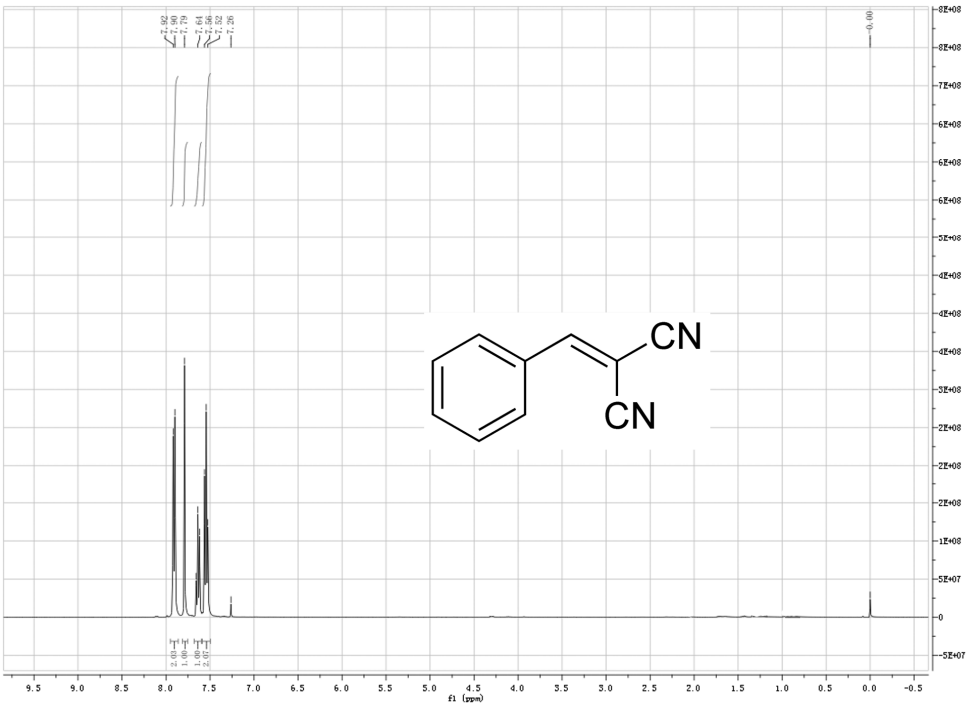
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(2-trifluoromethylphenyl)-2-propenoate (Table 7, entries 16 and 17).



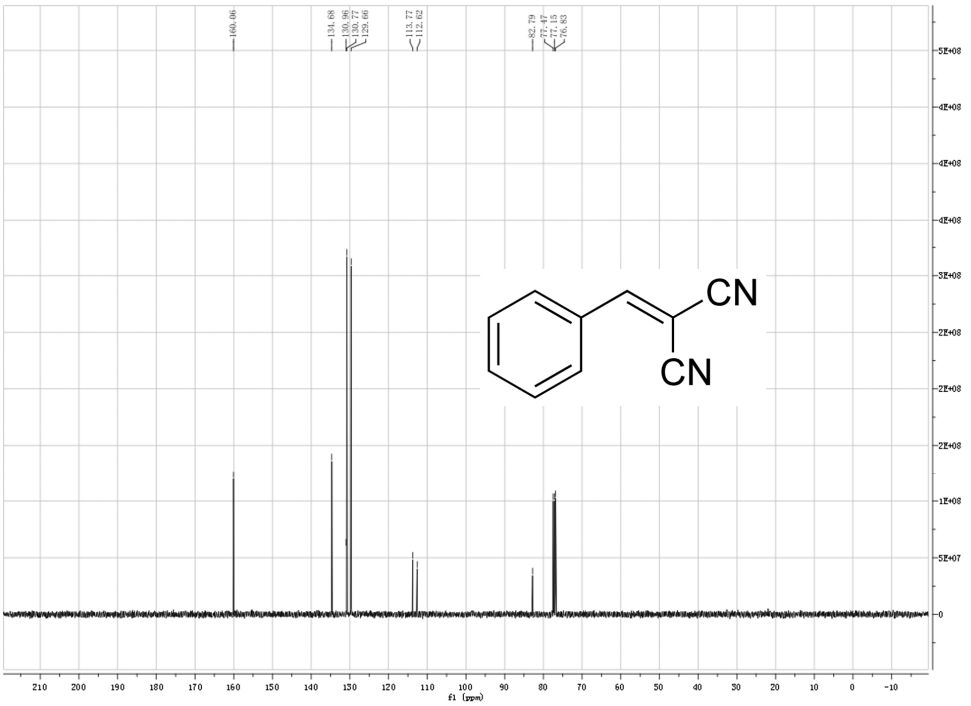
The ^{1}H NMR spectrum of ethyl (*E*)-2-cyano-3-(3-trifluoromethylphenyl)-2-propenoate (Table 7, entries 18 and 19).



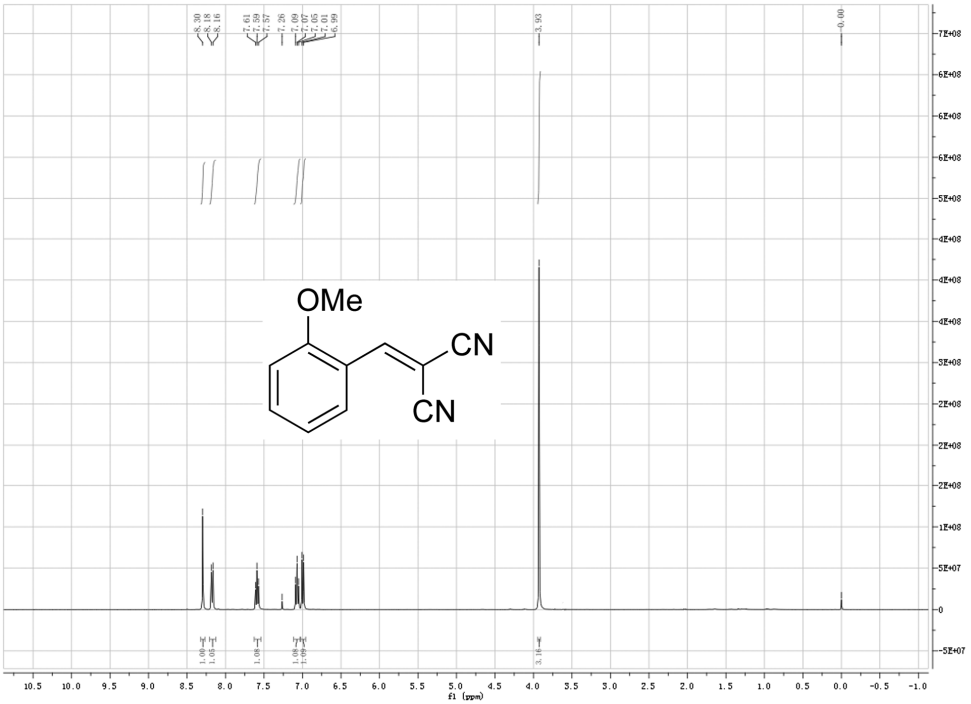
The ^{13}C NMR spectrum of ethyl (*E*)-2-cyano-3-(3-trifluoromethylphenyl)-2-propenoate (Table 7, entries 18 and 19).



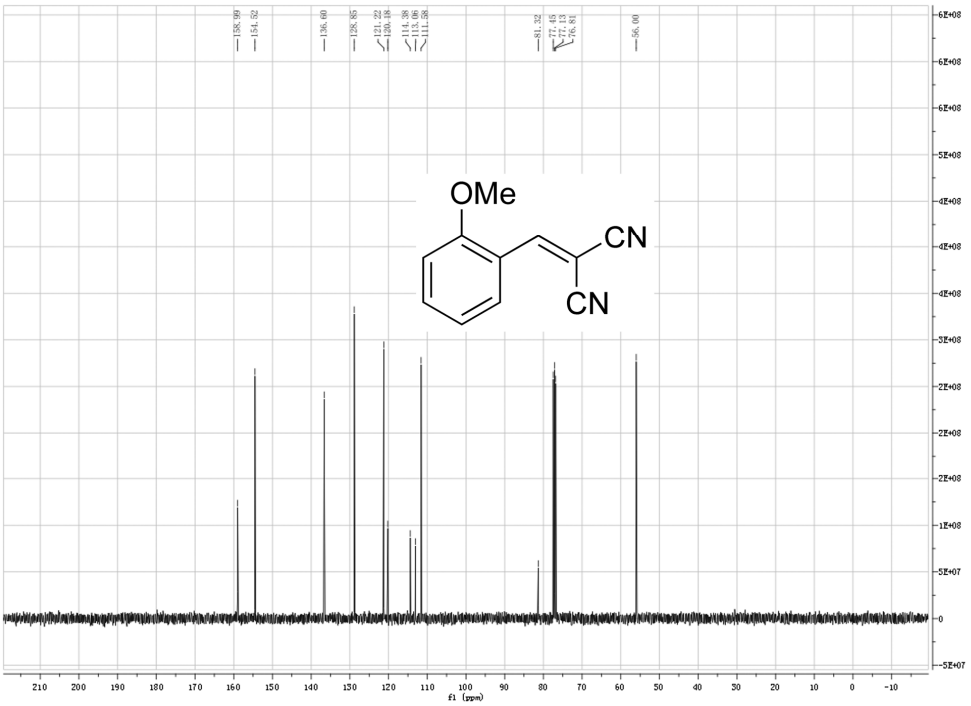
The ^{1}H NMR spectrum of 2-(phenylmethylene)malononitrile (Table 7, entry 20).



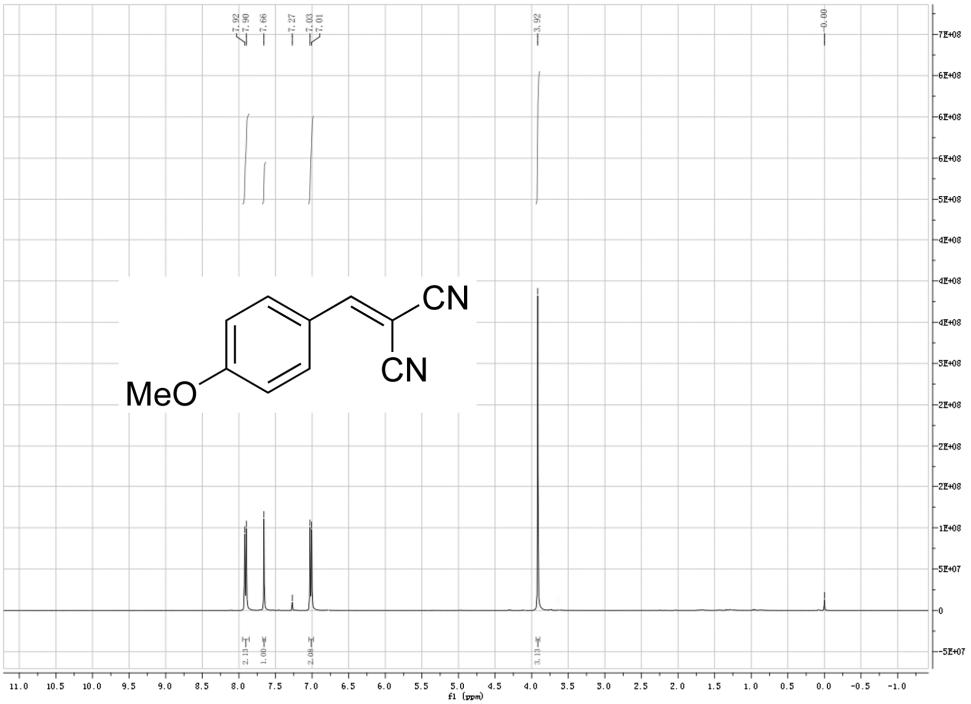
The ^{13}C NMR spectrum of 2-(phenylmethylene)malononitrile (Table 7, entry 20).



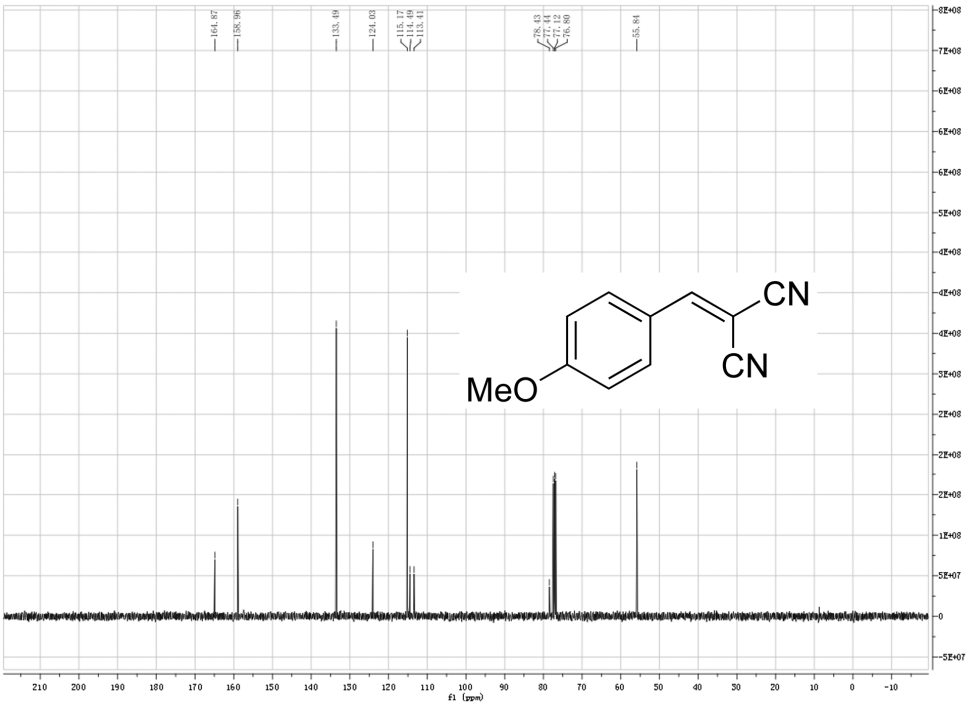
The ^{1}H NMR spectrum of 2-(2-methoxyphenylmethylene)malononitrile (Table 7, entry 21).



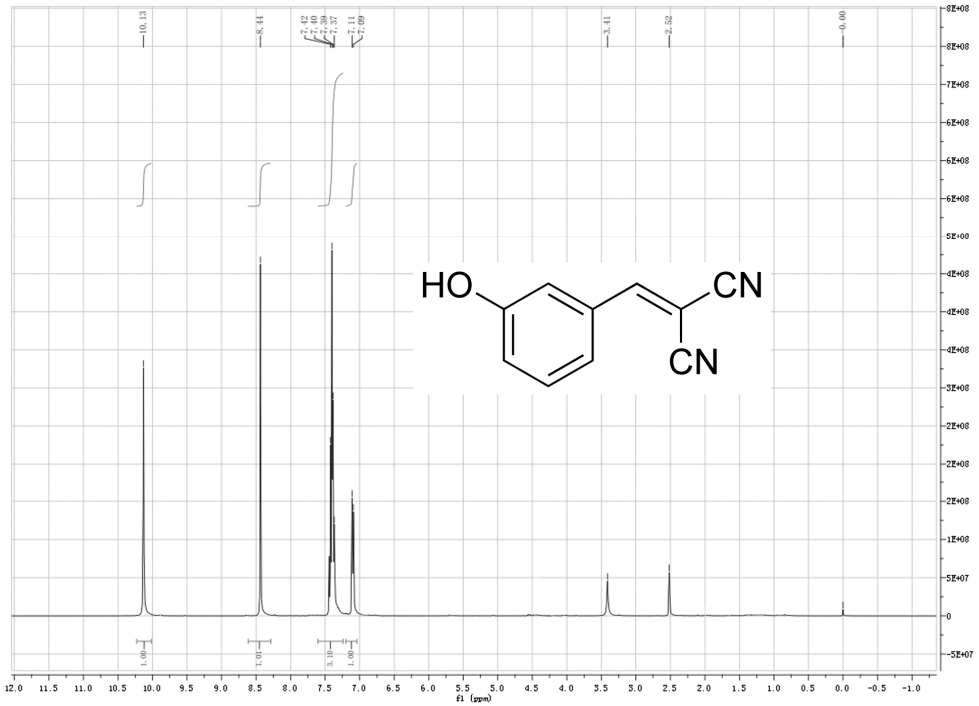
The ^{13}C NMR spectrum of 2-(2-methoxyphenylmethylene)malononitrile (Table 7, entry 21).



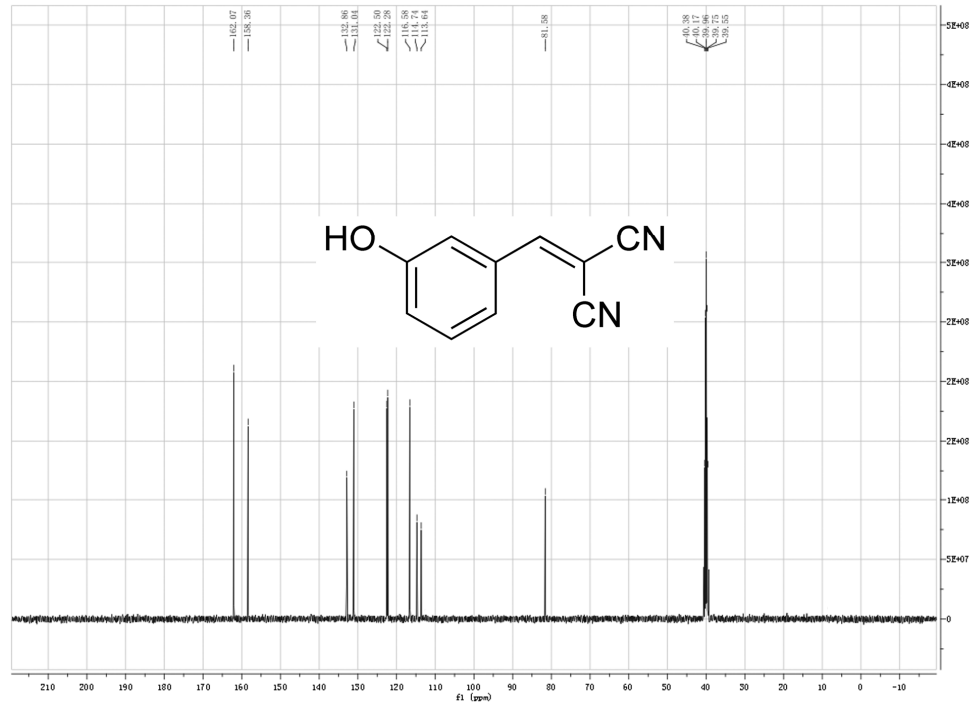
The ^{1}H NMR spectrum of 2-(4-methoxyphenylmethylene)malononitrile (Table 7, entry 22).



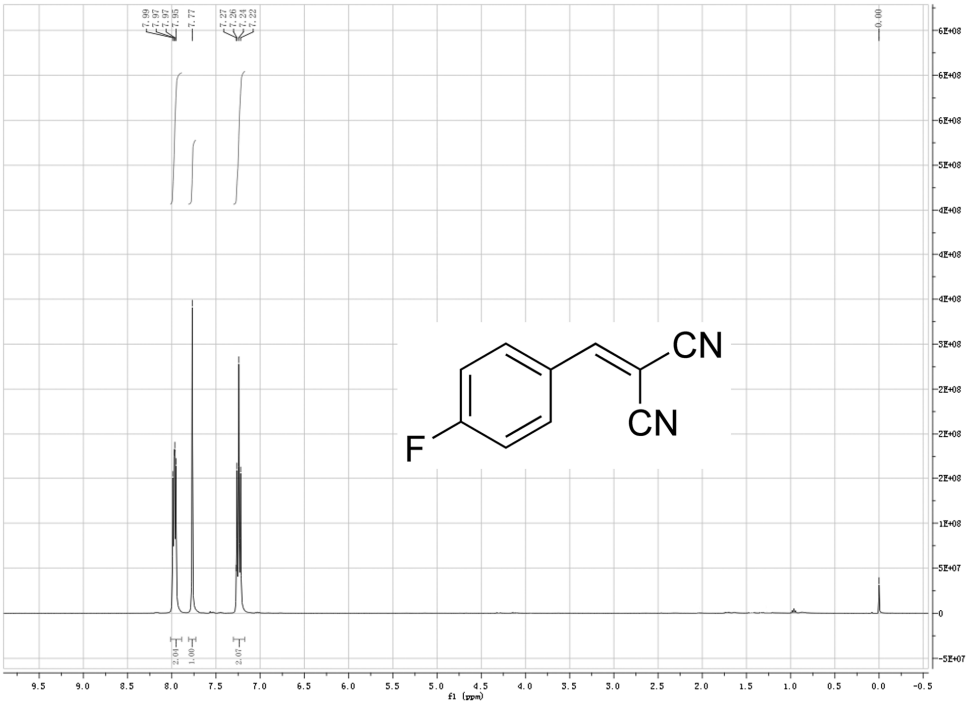
The ^{13}C NMR spectrum of 2-(4-methoxyphenylmethylene)malononitrile (Table 7, entry 22).



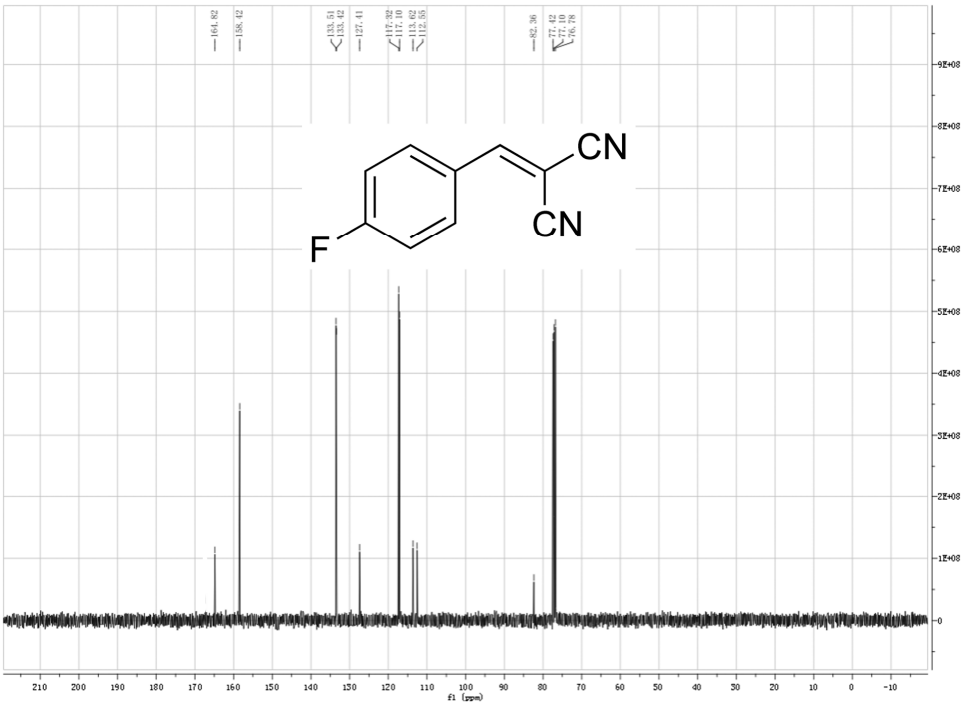
The ^{1}H NMR spectrum of 2-(3-hydroxyphenylmethylene)malononitrile (Table 7, entry 23).



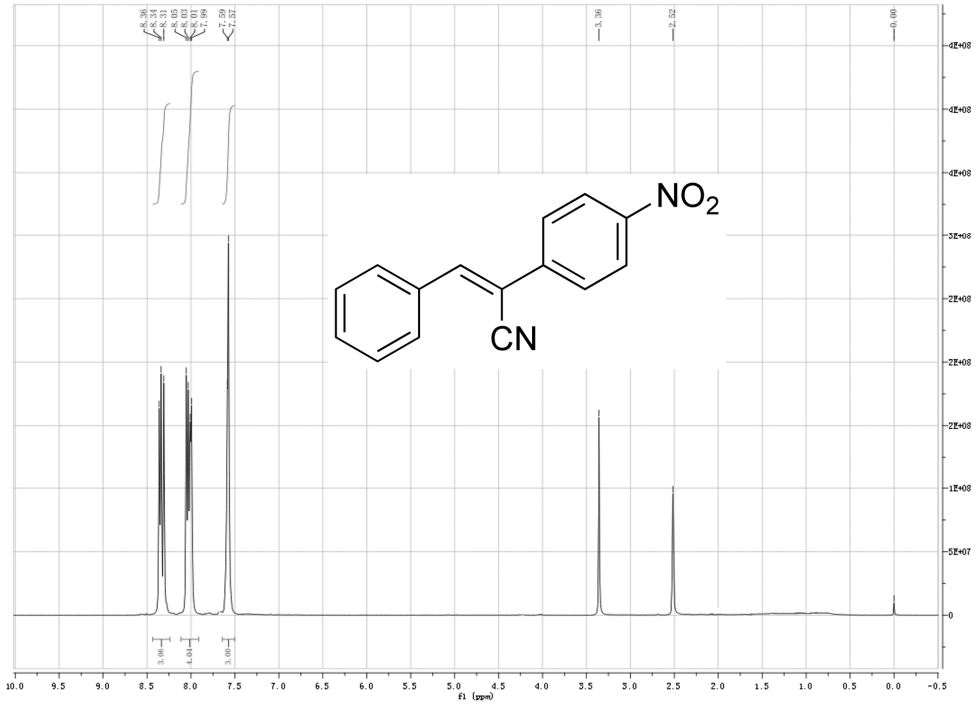
The ^{13}C NMR spectrum of 2-(3-hydroxyphenylmethylene)malononitrile (Table 7, entry 23).



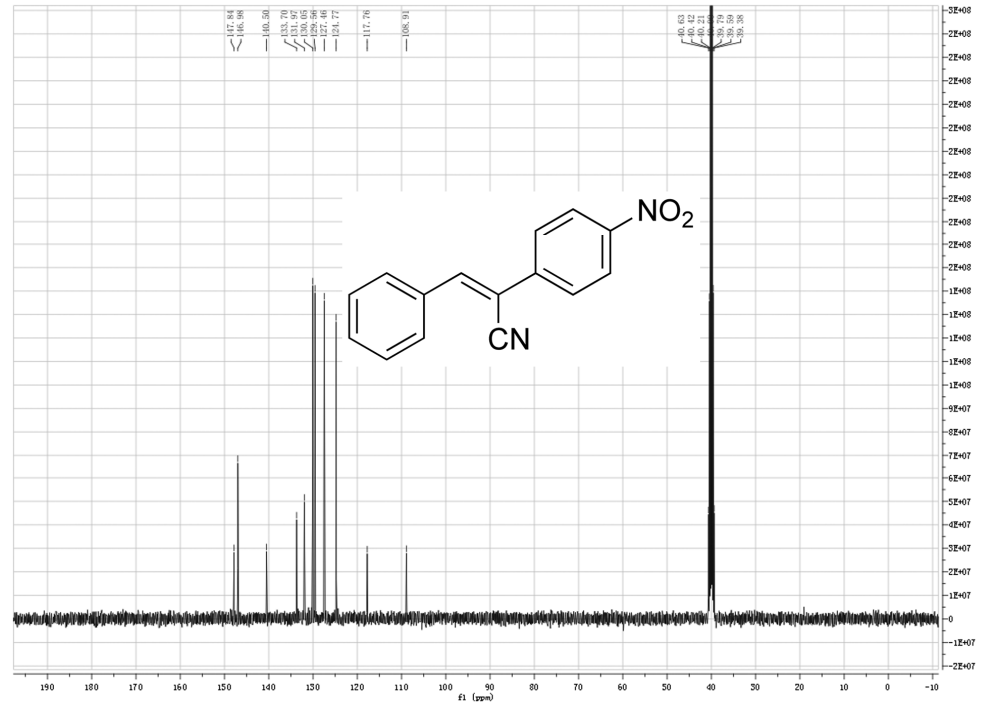
The ^{1}H NMR spectrum of 2-(4-fluorophenylmethylene)malononitrile (Table 7, entry 24).



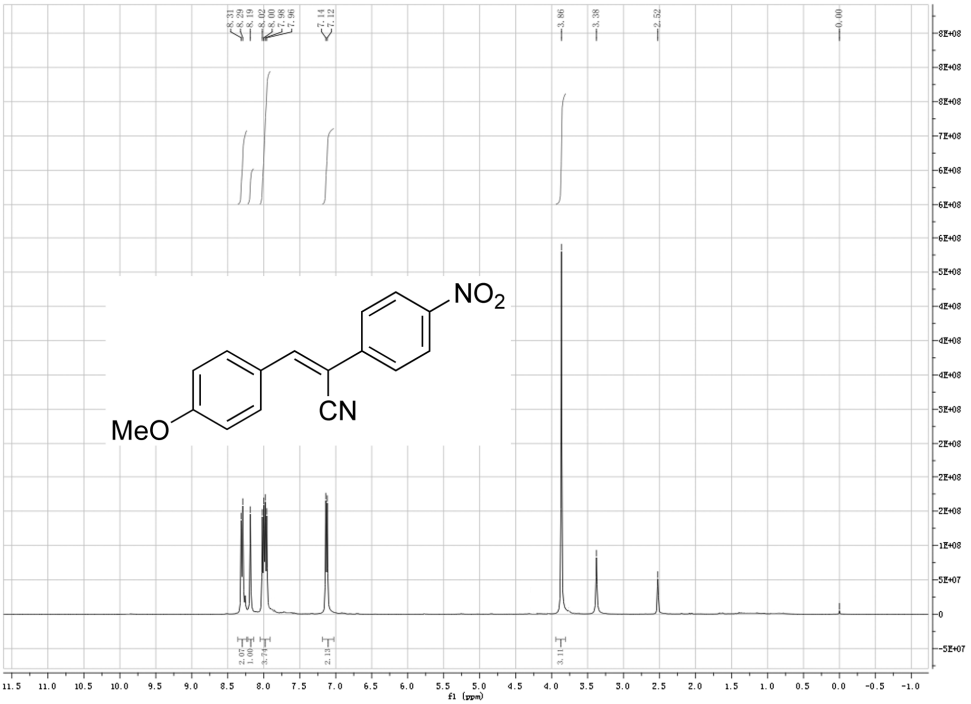
The ^{13}C NMR spectrum of 2-(4-fluorophenylmethylene)malononitrile (Table 7, entry 24).



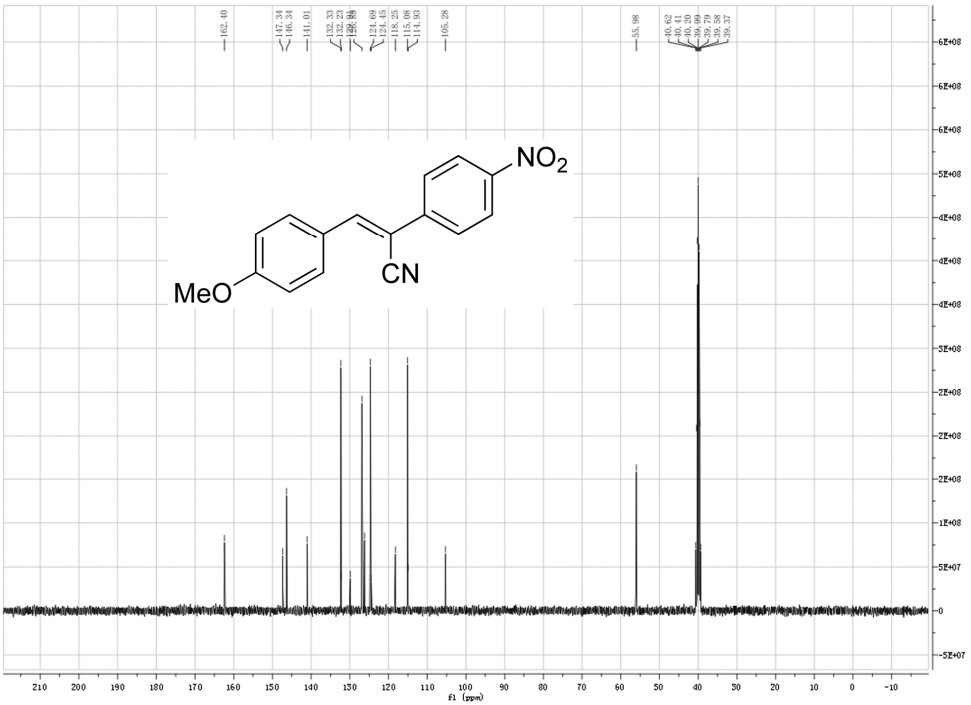
The ^{1}H NMR spectrum of (*Z*)-2-(4-nitrophenyl)-3-phenylacrylonitrile (Table 7, entry 25).



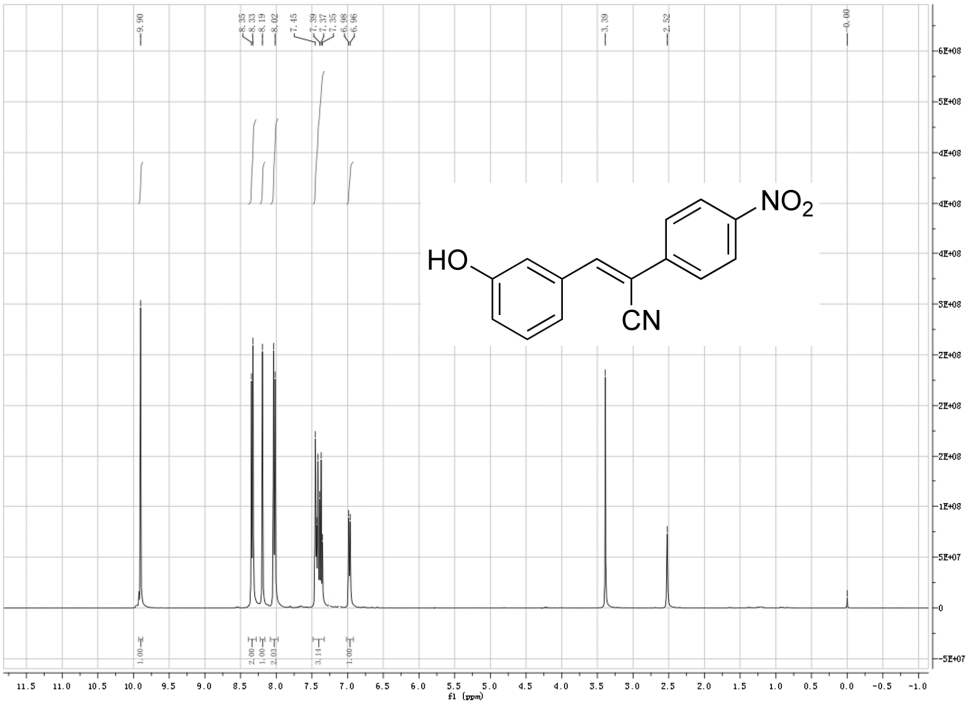
The ^{13}C NMR spectrum of (*Z*)-2-(4-nitrophenyl)-3-phenylacrylonitrile (Table 7, entry 25).



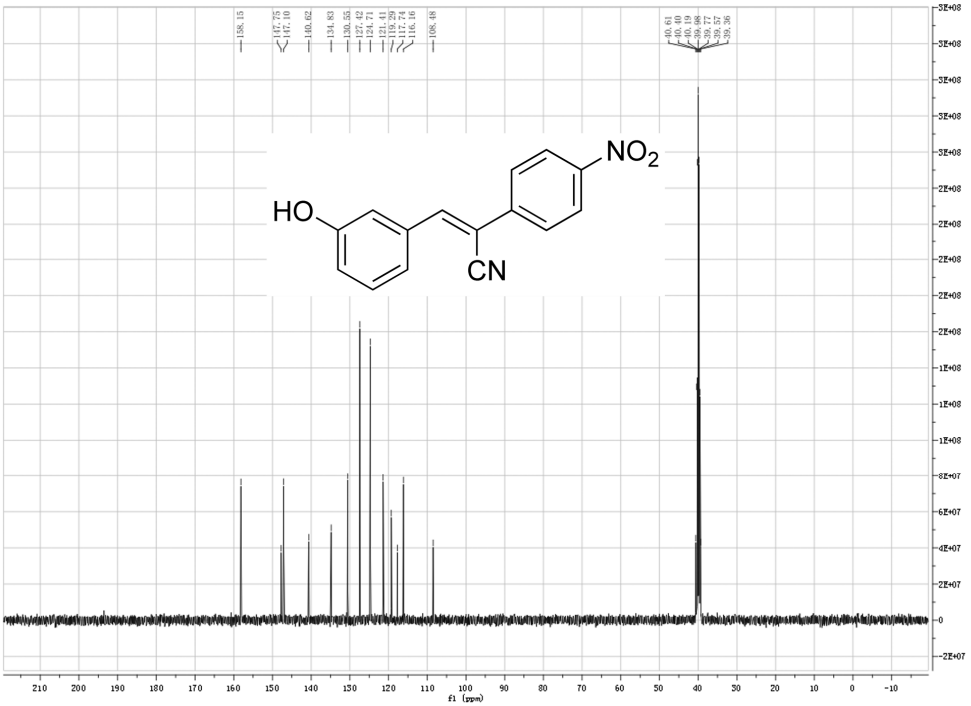
The ^{1}H NMR spectrum of (*Z*)-3-(4-Methoxyphenyl)-2-(4-nitrophenyl)acrylonitrile (Table 7, entry 26).



The ^{13}C NMR spectrum of (*Z*)-3-(4-Methoxyphenyl)-2-(4-nitrophenyl)acrylonitrile (Table 7, entry 26).



The ^{1}H NMR spectrum of (*Z*)-3-(3-hydroxyphenyl)-2-(4-nitrophenyl)acrylonitrile (Table 7, entry 27).



The ^{13}C NMR spectrum of (*Z*)-3-(3-hydroxyphenyl)-2-(4-nitrophenyl)acrylonitrile (Table 7, entry 27).