A New Synthetic Method for α -Alkoxycarbonyl Iminium Salt and Its Reaction with Nucleophiles

Makoto Shimizu,* Hiroyuki Itou and Megumi Miura

Department of Chemistry for Materials, Mie University, Tsu, Mie 514-8507, Japan

General Aspects

Infrared spectra were determined on a JASCO IR-810 spectrometer. ^1H NMR and ^{13}C NMR spectra were recorded with a JEOL EX-270 or a JEOL -500 spectrometer using tetramethylsilane as an internal standard. Mass spectra were recorded on a Mariner TK3500 spectrometer. Ether and THF were distilled from benzophenone ketyl immediately before use. CH_2Cl_2 was distilled from calcium hydride and stored over Molecular Sieves 4A. DME was distilled from calcium hydride and then copper(I) chloride and stored over sodium. Purification of products was performed by column chromatography on silica gel (Merck Silica Gel-60) and/or preparative TLC on silica gel (Merck Kiesel Gel PF254).

Ethyl 2-cyano-2-(dibenzylamino)acetate (4)

Typical procedure (Table 1, entry 9): Under an argon atmosphere, 1-ethoxy-2-dibenzylamino-1-trimethylsiloxyethylene (0.30 ml, 0.15 mmol, 0.5 M in CH_2Cl_2) and diethyl aluminium cyanide (0.30 mmol, 0.30 ml, 1.0 M in toluene) were added to a solution of 2,3-dichloro-5,6-dicyano-1,4-benzoquinone (DDQ) (35.1 mg, 0.15 mmol) in DME (0.5 ml) at -50°C . The reaction mixture was allowed to warm to ambient temperature with stirring for 11.5 h. The reaction was quenched with 10% aq Na_2SO_3 , and the whole mixture was extracted with ethyl acetate (10 ml x 3). The combined extracts were washed with brine, dried over anhydrous Na_2SO_4 , and concentrated in vacuo. The crude product was purified by preparative TLC on silica gel (developed once with EtOAc/*n*-hexane = 1/7 and then with EtOAc/toluene = 1/50) to give ethyl 2-cyano-2-(dibenzylamino)acetate (71%, 32.7 mg).

- **Ethyl 2-cyano-2-(dibenzylamino)acetate (4):** colorless oil; ^1H NMR (CDCl_3) 1.31 (t, $J=7.3$ Hz, 3H), 3.57 (d, $J=13.5$ Hz, 2H), 3.89 (d, $J=13.5$ Hz, 2H), 4.22 (q, $J=7.3$ Hz, 2H), 4.39 (s, 1H), 7.26-7.45 (m, 10H); ^{13}C NMR (CDCl_3) 14.0, 55.9, 56.6, 63.0, 113.0, 127.9, 128.6, 128.9, 136.9, 164.6; IR (neat) 3020, 2845, 1760, 1453, 1215, 1019, 755, 670 cm^{-1} ; HRMS (ESI): Calculated for $\text{C}_{19}\text{H}_{20}\text{N}_2\text{O}_2$ ($\text{M}+\text{H}$) $^+$. 309.15, found 309.04.

Ethyl 2-(dibenzylamino)butanoate (5b)

Typical procedure (Table 2, entry 2): Under an argon atmosphere, a solution of 1-ethoxy-2-dibenzylamino-1-trimethylsiloxyethylene (0.30 ml, 0.15 mmol, 0.5 M in CH₂Cl₂) and ethylmagnesium bromide (0.31 ml, 0.30 mmol, 0.98 M in THF) were added to a solution of DDQ (35.1 mg, 0.15 mmol) in DME (0.5 ml) at –55 °C. The reaction mixture was allowed to warm to ambient temperature with stirring for 15 h. The reaction was quenched with sat aqNaHCO₃, and the whole mixture was extracted with ethyl acetate (10 ml x 3). The combined extracts were washed with brine, dried over anhydrous Na₂SO₄, and concentrated in vacuo. The crude product was purified by preparative TLC on silica gel (EtOAc/toluene = 1/50) to give ethyl 2-(dibenzylamino)butanoate (66%, 30.8 mg).

Ethyl 2-(dibenzylamino)propanoate (5a)

colorless oil; ¹HNMR (CDCl₃) 1.33 (t, *J*=13.4 Hz, 6H), 3.49 (q, *J*=7.3 Hz, 1H), 3.66 (d, *J*=14.0 Hz, 2H), 3.81 (d, *J*=14.0 Hz, 2H), 4.14-4.27 (m, 2H), 7.21-7.39 (m, 10H); ¹³CNMR (CDCl₃) 14.5, 15.0, 54.4, 56.1, 60.1, 126.9, 128.2, 128.6, 140.0, 173.7; IR (neat) 3062, 3028, 2981, 2936, 2842, 2803, 1950, 1874, 1729, 1602, 1493, 1452, 1373, 1328, 1244, 1196, 1146, 1061, 1026, 745, 699 cm⁻¹; HRMS (ESI): Calculated for C₂₀H₂₅NO₂ (M+H)⁺ 298.17, found 298.14.

Ethyl 2-(dibenzylamino)butanoate (5b)

colorless oil; ¹HNMR (CDCl₃) 0.91 (t, *J*=7.3 Hz, 3H), 1.34 (t, *J*=7.3 Hz, 3H), 1.67-1.81 (m, 2H), 3.21 (t, *J*=7.6 Hz, 1H), 3.56 (d, *J*=13.9 Hz, 2H), 3.91 (d, *J*=14.2 Hz, 2H), 4.15-4.29 (m, 2H), 7.19-7.38 (m, 10H); ¹³CNMR (CDCl₃) 11.0, 14.6, 22.7, 54.5, 59.9, 62.5, 126.9, 128.2, 128.8, 139.8, 173.0; IR (neat) 3023, 2976, 2844, 1721, 1493, 1454, 1373, 1301, 1191, 1146, 1075, 1024, 732, 700, 669 cm⁻¹; HRMS (ESI): Calculated for C₂₀H₂₅NO₂ (M+H)⁺ 312.19, found 312.35.

Ethyl 2-(dibenzylamino)pentanoate (5c)

colorless oil; ¹HNMR (CDCl₃) 0.79 (t, *J*=14.7 Hz, 3H), 1.22-1.31 (m, 3H), 1.34 (t, *J*=15.7 Hz, 3H), 1.43-1.51 (m, 1H), 1.63-1.76 (m, 2H), 3.30 (dd, *J*=8.9 Hz, *J*=6.1 Hz, 1H), 3.55 (d, *J*=14.0 Hz, 2H), 3.92 (d, *J*=14.0 Hz, 2H), 4.15-4.29 (m, 2H), 7.21-7.37 (m, 10H); ¹³CNMR (CDCl₃) 13.8, 14.5, 19.4, 31.8, 54.5, 60.0, 60.5, 126.9, 128.2, 128.8, 139.8, 173.1; IR (neat) 3032, 2961, 2871, 1719, 1453, 1372, 1186, 1145, 1095, 1027, 751, 750, 699, 674, 465, 417 cm⁻¹; HRMS (ESI): Calculated for C₂₁H₂₇NO₂ (M+H)⁺ 326.20, found 326.43.

Ethyl 2-(dibenzylamino)-3-phenylpropanoate (5d)

colorless oil; ^1H NMR (CDCl_3) 1.29 (t, $J=7.4$ Hz, 3H), 2.96-3.14 (m, 2H), 3.58 (d, $J=14.0$ Hz, 2H), 3.65 (t, $J=15.3$ Hz, 1H), 3.94 (d, $J=14.0$ Hz, 2H), 4.14-4.26 (m, 2H), 7.00-7.26 (m, 15H); ^{13}C NMR (CDCl_3) 14.5, 35.7, 54.4, 60.2, 62.2, 126.2, 126.9, 128.1, 128.2, 128.7, 129.4, 138.2, 139.3, 172.3; IR (neat) 3687, 3025, 1722, 1602, 1494, 1453, 1373, 1248, 1172, 789, 773, 768, 760, 723, 700, 678, 669, 474, 450 cm^{-1} ; HRMS (ESI): Calculated for $\text{C}_{25}\text{H}_{27}\text{NO}_2$ ($\text{M}+\text{H}$) $^+$ 374.20, found 374.54.

Ethyl 2-(dibenzylamino)-4-phenylbutanoate (5e)

colorless oil; ^1H NMR (CDCl_3) 1.34 (t, $J=7.3$ Hz, 3H), 2.04 (dd, $J=15.5$ Hz, $J=7.6$ Hz, 2H), 2.41-2.53 (m, 1H), 2.74-2.85 (m, 1H), 3.37 (t, $J=7.3$ Hz, 1H), 3.60 (d, $J=13.9$ Hz, 2H), 3.93 (d, $J=13.9$ Hz, 2H), 4.22 (q, $J=7.3$ Hz, 2H), 7.01-7.39 (m, 15H); ^{13}C NMR (CDCl_3) 14.8, 31.8, 32.8, 54.9, 60.3, 60.7, 126.0, 127.2, 128.5, 128.6, 129.1, 139.9, 143.1, 173.0; IR (neat) 3064, 3009, 2936, 2853, 1720, 1602, 1494, 1454, 1371, 1252, 1216, 1162, 1074, 1026, 970, 910, 773, 731, 701, 484, 458, 444, 424, 416 cm^{-1} ; HRMS (ESI): Calculated for $\text{C}_{26}\text{H}_{29}\text{NO}_2$ ($\text{M}+\text{H}$) $^+$ 388.22, found 388.39.

Ethyl 2-(dibenzylamino)-3-methylbutanoate (5f)

colorless oil; ^1H NMR (CDCl_3) 0.78 (d, $J=6.3$ Hz, 3H), 1.01 (d, $J=6.6$ Hz, 3H), 1.36 (t, $J=14.2$ Hz, 3H), 2.10-2.21 (m, 1H), 2.83 (d, $J=13.9$ Hz, 1H), 3.29 (d, $J=10.9$ Hz, 2H), 3.97 (d, $J=13.9$ Hz, 2H), 4.15-4.34 (m, 2H), 7.20-7.40 (m, 10H); ^{13}C NMR (CDCl_3) 14.7, 19.5, 19.9, 27.2, 54.6, 59.7, 68.1, 126.9, 128.2, 128.8, 139.6, 171.9; IR (neat) 2964, 1720, 1451, 1371, 1145, 1026, 699, 451 cm^{-1} ; HRMS (ESI): Calculated for $\text{C}_{21}\text{H}_{27}\text{NO}_2$ ($\text{M}+\text{H}$) $^+$ 326.20, found 326.26.

Ethyl 2-cyclohexyl-2-(dibenzylamino)acetate (5g)

colorless oil; ^1H NMR (CDCl_3) 0.78-0.82 (m, 2H), 1.07-1.25 (m, 4H), 1.35 (t, $J=14.2$ Hz, 3H), 1.46-1.68 (m, 3H), 1.87-1.89 (m, 1H), 2.26 (d, $J=13.8$ Hz, 1H), 2.99 (dd, $J=17.1$ Hz, $J=6.1$ Hz, 1H), 3.34 (d, $J=14.0$ Hz, 2H), 3.97 (d, $J=14.0$ Hz, 2H), 4.14-4.32 (m, 2H), 7.17-7.39 (m, 10H); ^{13}C NMR (CDCl_3) 14.8, 25.8, 25.9, 26.5, 29.7, 30.4, 36.4, 54.6, 59.6, 66.9, 126.9, 128.2, 128.8, 139.7, 171.9; IR (neat) 2930, 2853, 1718, 1264, 1143, 909, 775, 436 cm^{-1} ; HRMS (ESI): Calculated for $\text{C}_{24}\text{H}_{31}\text{NO}_2$ ($\text{M}+\text{H}$) $^+$ 366.24, found 366.35.

Ethyl 2-(dibenzylamino)-2-phenylacetate (5i)

colorless oil; ^1H NMR (CDCl_3) 1.30 (t, $J=14.2$ Hz, 3H), , 3.73 (d, $J=14.2$ Hz, 2H), 3.75 (d, $J=14.4$ Hz, 2H), 4.20-4.34 (m, 2H), 4.60 (s, 1H), 7.19-7.35 (m, 15H); ^{13}C NMR (CDCl_3) 14.4, 54.2, 60.4, 65.8, 127.0, 127.7, 128.2, 128.3, 128.8, 136.8, 139.6, 172.1; IR (neat) 3030, 1728, 1451, 1214, 1133, 1026, 761, 669, 480 cm^{-1} ; HRMS (ESI): Calculated for $\text{C}_{24}\text{H}_{25}\text{NO}_2$

(M+H)⁺ 360.19, found 360.54.

Ethyl 2-(dibenzylamino)-2-*p*-tolylacetate (5j)

colorless oil; ¹HNMR (CDCl₃) 1.29 (t, *J*=14.2 Hz, 3H), 2.32 (s, 3H), 3.74 (d, *J*=14.4 Hz, 2H), 3.76 (d, *J*=14.5 Hz, 2H), 4.18-4.32 (m, 2H), 4.56 (s, 1H), 7.12-7.36 (m, 15H); ¹³CNMR (CDCl₃) 14.7, 21.4, 54.4, 60.0, 65.8, 127.2, 128.5, 129.0, 129.1, 129.4, 133.6, 137.7, 140.0, 172.6; IR (neat) 3030, 1727, 1452, 1214, 1132, 762, 449 cm⁻¹; HRMS (ESI): Calculated for C₂₅H₂₇NO₂ (M+H)⁺ 374.20, found 374.34.

Ethyl 2-(4-chlorophenyl)-2-(dibenzylamino)acetate (5k)

colorless oil; ¹HNMR (CDCl₃) 1.31 (t, *J*=13.9 Hz, 3H), 3.74 (d, *J*=14.0 Hz, 2H), 3.75 (d, *J*=14.0 Hz, 2H), 4.20-4.32 (m, 2H), 4.54 (s, 1H), 7.23-7.33 (m, 14H); ¹³CNMR (CDCl₃) 14.4, 54.2, 60.6, 65.2, 127.1, 128.3, 128.5, 128.8, 130.1, 133.6, 135.4, 139.3, 171.6; IR (neat) 3032, 2985, 2847, 1727, 1599, 1491, 1451, 1371, 1264, 1176, 1132, 1094, 1021, 909, 701, 673, 666, 460, 426, 409 cm⁻¹; HRMS (ESI): Calculated for C₂₄H₂₄ClNO₂ (M+H)⁺ 394.15, found 395.16.

Ethyl 2-(dibenzylamino)-2-(4-methoxyphenyl)acetate (5l)

colorless oil; ¹HNMR (CDCl₃) 1.29 (t, *J*=14.7 Hz, 3H), 3.74 (d, *J*=14.0 Hz, 2H), 3.75 (d, *J*=14.0 Hz, 2H), 3.79 (s, 3H), 4.20-4.32 (m, 2H), 4.54 (s, 1H), 6.86 (dd, *J*=9.2 Hz, *J*=2.4 Hz, 2H), 7.20-7.46 (m, 12H); ¹³CNMR (CDCl₃) 14.4, 54.1, 55.2, 60.3, 65.2, 113.7, 126.9, 128.2, 128.8, 130.0, 139.7, 159.1, 172.3; IR (neat) 3032, 2984, 2848, 1724, 1599, 1491, 1451, 1371, 1267, 1165, 1132, 1094, 1021, 909, 701, 673, 666, 460, 426, 409 cm⁻¹; HRMS (ESI): Calculated for C₂₅H₂₇NO₃ (M+H)⁺ 390.20, found 390.37.

Ethyl 2-cyclopropyl-2-(dibenzylamino)acetate (5m)

colorless oil; ¹HNMR (CDCl₃) 0.17-0.26 (m, 2H), 0.52-0.61 (m, 2H), 1.23-1.28 (m, 1H), 1.33 (t, *J*=14.0 Hz, 3H), 2.48 (d, *J*=9.8 Hz, 1H), 3.62 (d, *J*=14.0 Hz, 2H), 4.04 (d, *J*=14.0 Hz, 2H), 4.16-4.29 (m, 2H), 7.20-7.39 (m, 10H); ¹³CNMR (CDCl₃) 4.0, 4.2, 11.3, 14.6, 54.8, 60.0, 66.3, 126.9, 128.1, 128.7, 140.0, 172.7; IR (neat) 3019, 2933, 2843, 1721, 1493, 1370, 1216, 1154, 1101, 1073, 1026, 971, 909, 731, 700, 669, 469, 441 cm⁻¹; HRMS (ESI): Calculated for C₂₁H₂₅NO₂ (M+H)⁺ 324.19, found 324.28.

Ethyl 2-(dibenzylamino)-3-(trimethylsilyl)propanoate (5n)

colorless oil; ¹HNMR (CDCl₃) 0.00 (s, 9H), 0.97 (dd, *J*=14.7 Hz, *J*=3.7 Hz, 1H), 1.42 (dd, *J*=14.0 Hz, *J*=11.0 Hz, 1H), 1.47 (t, *J*=14.7 Hz, 3H), 3.56 (dd, *J*=11.0 Hz, *J*=3.7 Hz, 1H), 3.61 (d, *J*=13.0 Hz, 2H), 4.04 (d, *J*=13.4 Hz, 2H), 4.25-4.42 (m, 2H), 7.32-7.51 (m, 10H); ¹³CNMR (CDCl₃) 0.00, 16.0, 19.0, 55.6, 59.0, 61.5, 128.1, 128.3, 129.2, 129.6, 130.2, 141.9, 174.5;

IR (neat) 3019, 1722, 1493, 1452, 1370, 1249, 1215, 1149, 1103, 1062, 854, 756, 670, 507 cm^{-1} ; HRMS (ESI): Calculated for $\text{C}_{22}\text{H}_{31}\text{NO}_2\text{Si}$ ($\text{M}+\text{H}$)⁺ 370.21, found 370.15.

Ethyl 2-(dibenzylamino)hex-5-enoate (5o)

colorless oil; ^1H NMR (CDCl_3) 1.34 (t, $J=7.26$ Hz, 3H), 1.55-1.85 (m, 2H), 1.90-2.04 (m, 1H), 2.14-2.24 (m, 1H), 3.32 (t, $J=7.26$ Hz, 1H), 3.57 (d, $J=13.86$ Hz, 2H), 3.90 (d, $J=13.86$ Hz, 2H), 4.84-4.92 (m, 2H), 5.59-5.74 (m, 1H), 7.20-7.38 (m, 10H); ^{13}C NMR (CDCl_3) 14.6, 28.9, 30.3, 54.6, 60.0, 60.3, 114.9, 126.9, 128.2, 128.9, 137.9, 139.7, 172.1; IR (neat) 3019, 1721, 1494, 1453, 1373, 1219, 1181, 1145, 1027, 917, 783, 769, 752, 736, 728, 699, 671, 449, 424 cm^{-1} ; HRMS (ESI): Calculated for $\text{C}_{22}\text{H}_{27}\text{NO}_2$ ($\text{M}+\text{H}$)⁺ 338.20, found 338.21.

Ethyl 8-(4-methoxyphenoxy)-2-(dibenzylamino)octanoate (5p)

colorless oil; ^1H NMR (CDCl_3) 1.18-1.45 (m, 9H), 1.65-1.75 (m, 4H), 3.29 (t, $J=14.7$ Hz, 1H), 3.54 (d, $J=14.0$ Hz, 2H), 3.81 (s, 3H), 3.86 (t, $J=13.4$ Hz, 2H), 3.91 (d, $J=14.0$ Hz, 2H), 4.12-4.29 (m, 2H), 6.82 (s, 4H), 7.21-7.37 (m, 10H); ^{13}C NMR (CDCl_3) 14.6, 25.9, 26.0, 29.0, 29.3, 29.4, 54.5, 55.7, 60.0, 60.5, 68.5, 114.6, 115.4, 126.9, 128.2, 128.8, 139.8, 153.2, 173.1; IR (neat) 3033, 2935, 1720, 1507, 1218, 782, 763, 734, 676, 669, 662, 494, 465, 451 cm^{-1} ; HRMS (ESI): Calculated for $\text{C}_{31}\text{H}_{39}\text{NO}_3$ ($\text{M}+\text{H}$)⁺ 490.29, found 490.42.

Ethyl 2-(dibenzylamino)-4-methylpent-4-enoate (6a)

Typical procedure (Table 3, entry 2): Under an argon atmosphere, a mixture of 1-ethoxy-2-dibenzylamino-1-*tert*-butyldimethylsiloxyethylene (59.6 mg, 0.15 mmol) and tetramethyltin (25.4 mg, 0.075 mmol) in DME (2.0 ml) and diethylaluminium chloride (0.31 ml, 0.30 mmol, 0.98 M in hexane) were added to a solution of DDQ (35.1 mg, 0.15 mmol) in DME (2.0 ml) at -50°C . The reaction mixture was allowed to warm to ambient temperature with stirring for 18 h. The reaction was quenched with 10% aq Na_2SO_3 , and the whole mixture was extracted with ethyl acetate (10 ml x 3). The combined extracts were washed with brine, dried over anhydrous Na_2SO_4 , and concentrated in vacuo. The crude product was purified by preparative TLC on silica gel (EtOAc/*n*-hexane = 1/7) to give ethyl 2-(dibenzylamino)-4-methylpent-4-enoate (72%, 36.3 mg).

• **Ethyl 2-(dibenzylamino)-4-methylpent-4-enoate (6a):** colorless oil; ^1H NMR (CDCl_3) 1.34 (t, $J=14.0$ Hz, 3H), 1.49 (s, 3H), 2.49 (d, $J=7.3$ Hz, 2H), 3.50 (d, $J=14.0$ Hz, 2H), 3.52 (t, $J=15.3$ Hz, 1H), 3.90 (d, $J=14.0$ Hz, 2H), 4.17-4.28 (m, 2H), 4.75 (d, $J=35.1$ Hz, 2H), 7.21-7.37 (m, 10H); ^{13}C NMR (CDCl_3) 14.6, 21.7, 38.1, 54.4, 58.9, 60.1, 113.0, 126.9, 128.1, 129.0, 139.6, 141.9, 172.5; IR (neat) 3066, 3031, 3009, 2983, 2844, 2360, 1722, 1493, 1452, 1373, 1233, 1175, 1137, 1026, 895, 473 cm^{-1} ; HRMS (ESI): Calculated for $\text{C}_{22}\text{H}_{27}\text{NO}_2$

(M+H)⁺ 338.20, found 338.20.

Ethyl 2-(dibenzylamino)pent-4-enoate (6b)

Typical procedure (Table 3, entry 5): Under an argon atmosphere, a mixture of 1-ethoxy-2-dibenzylamino-1-*tert*-butyldimethylsiloxyethylene (59.6 mg, 0.15 mmol) and allyltributyltin (49.7 mg, 0.15 mmol) in DME (2.0 ml), and diethylaluminiumchloride (0.31 ml, 0.30 mol, 0.98 M in hexane) were added to a solution of DDQ (35.1 mg, 0.15 mmol) in DME (0.5 ml) at –50 °C. The reaction mixture was allowed to warm to ambient temperature with stirring for 18 h. The reaction was quenched with 10% aqNa₂SO₃, and the whole mixture was extracted with ethyl acetate (10 ml x 3). The combined extracts were washed with brine, dried over anhydrous Na₂SO₄, and concentrated in vacuo. The crude product was purified by preparative TLC on silica gel (EtOAc/*n*-hexane = 1/7) to give ethyl 2-(dibenzylamino)pent-4-enoate (64%, 31.1 mg).

• **Ethyl 2-(dibenzylamino)pent-4-enoate (6b):** colorless oil; ¹HNMR (CDCl₃) 1.33 (t, *J*=7.3 Hz, 3H), 2.52 (t, *J*=6.9 Hz, 2H), 3.41 (t, *J*=7.9 Hz, 1H), 3.57 (d, *J*=14.0 Hz, 2H), 3.90 (d, *J*=13.9 Hz, 2H), 4.15-4.29 (m, 2H), 5.01 (s, 1H), 5.07 (d, *J*=6.6 Hz, 1H), 5.65-5.80 (m, 1H), 7.19-7.39 (m, 10H); ¹³CNMR (CDCl₃) 14.6, 34.1, 54.5, 60.1, 60.7, 116.8, 127.0, 128.2, 128.8, 135.1, 139.6, 172.3; IR (neat) 3064, 3029, 2980, 2936, 2843, 1728, 1452, 1183, 1141, 1026, 914, 747, 699 cm⁻¹; HRMS (ESI): Calculated for C₂₁H₂₅NO₂ (M+H)⁺ 324.19, found 324.43 (M+H)⁺.

¹H and ¹³C spectra

23-DEC-03 22:03:36
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 OBSET 135.00 kHz
 OBFIN 5200.0 Hz
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 ACQTH 0.819 sec
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 IRRAC 1H
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 RGAIN 27
 OPERATOR :

50

08040000
 セロフィリング
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 サンプル名
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分析
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2 cm-1
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4	1611.62	47.7455	7	1321.96	36.9175	8	1254.47	12.6598
11	1161.418	8.94815	12	735.228	47.0716	14	513.936	76.4188
16	428.12	126.346				15	463.796	110.785
								50.0027

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