

Supporting Information for
Highly Efficient Synthesis of Flavonol 5-*O*-glycosides with Glycosyl
ortho-Akynylbenzoates as Donors

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3,7,3',4'-Tetra-*O*-*tert*-butyldimethylsilyl-quercetin (3)

To a suspension of quercetin (1 g, 3.3 mmol) in dry CH₂Cl₂ (10 mL) was added TBSCl (2.80g, 19 mmol) and DBU (3 mL, 20 mmol) at room temperature. Then the reaction mixture was stirred for another 5 h, at which time TLC showed that all starting material was consumed. Ethyl acetate (100 mL) was added to dilute the reaction mixture, and the mixture was washed successively with water, saturated NaCl solution and dried over Na₂SO₄. Filtration and concentration under reduced pressure to afford the crude product, which was further purified by silica gel chromatography (eluent system: PE : EA = 15 : 1) to afford the fully TBS protected quercetin.

The above obtained intermediate was dissolved in CH₂Cl₂/H₂O (v/v = 10 : 1, 10 mL), to which catalytic amount I₂ was added. Then the reaction mixture was heated to reflux for 3 hours, at which time TLC showed that all starting material was consumed.

General procedure was adopted to get **3** (1.8 g, 70 %) as light-yellow solid: ¹H NMR (400 MHz, CDCl₃) δ 12.68 (s, 1 H), 7.46 (m, 1 H), 7.35 (m, 1 H), 6.91 (d, *J* = 8.4 Hz, 1 H), 1.01 (s, 9 H), 1.00 (s, 9 H), 0.99 (s, 9 H), 0.84 (s, 9 H), 0.26 (s, 6 H), 0.23 (s, 6 H), 0.21 (s, 6 H), 0.12 (s, 6 H); ¹³C NMR (100 MHz, CDCl₃) δ 178.2, 161.8 (2 C), 156.4, 153.2, 149.2, 146.8, 135.6, 124.4, 123.2, 121.8, 120.8, 106.1, 102.9, 98.2, 25.9 (2 C), 25.7, 25.6, 18.6, 18.4, 18.3, -4.0, -4.1, -4.2, -4.4; HRMS (ESI) calcd for C₃₉H₆₇O₇Si₄ [M+H]⁺ 759.3958, found 759.3959.

3,7,4'-Tri-*O*-hexanoyl-kaempferol (5)

To a suspension of kaempferol (2.3 g, 8 mmol) and Et₃N (3.7 mL) in dry acetone (100 mL) was added hexanoyl chloride (3.66 mL, 26.4 mmol) dropwise at 0 °C. After hexanoyl chloride addition completed, the temperature was raised to rt, and the stirring was continued for another 3 h. Ice water (10 mL) was added to quench the reaction and the acetone was removed under reduced pressure, the resultant reaction mixture was diluted with ethyl acetate and washed with 1 N HCl, saturated Na₂CO₃ and NaCl successively, then dried over Na₂SO₄. Filtration and concentration under reduced pressure afforded the crude product which was further purified by silica gel chromatography (eluent system: PE : EA = 13 : 1) to give **5** (3.1 g, 68%) as light-yellow solid: ¹H NMR (400 MHz, CDCl₃) δ 12.17 (s, 1 H), 7.88 (dd, *J* = 2.0, 6.8

Hz, 2 H), 7.26 (dd, $J = 2.0, 6.8$ Hz, 2 H), 6.84 (d, $J = 2.0$ Hz, 1 H), 6.58 (d, $J = 2.0$ Hz, 1 H), 2.63-2.56 (m, 6 H), 1.80-1.74 (m, 6 H), 1.41-1.33 (m, 12 H), 0.96-0.88 (m, 9 H); ^{13}C NMR (100 MHz, CDCl_3) δ 176.3, 171.7, 171.1, 170.6, 161.7, 156.5, 156.4, 156.0, 153.2, 132.0, 129.7, 126.7, 122.0, 108.7, 105.4, 101.0, 34.3, 33.7, 31.2, 31.1, 31.0, 24.5, 24.4 (2 C), 22.3, 22.2 (2 C), 13.9, 13.8; HRMS (ESI) calcd for $\text{C}_{33}\text{H}_{40}\text{O}_9\text{Na}$ $[\text{M}+\text{Na}]^+$ 603.2565, found 603.2562.

3,7,4'-Tri-*O*-*tert*-butyldimethylsilyl-5-*O*-(2'',3'',4'')-tetra-*O*-benzoyl- β -D-glucopyranosyl)-kaempferol (10)

To a suspension of acceptor **2** (63 mg, 0.1 mmol), donor **6** (115 mg, 0.15 mmol), and activated powdered 4Å MS in dry CH_2Cl_2 (3 mL) was added $\text{PPh}_3\text{AuNTf}_2$ (22 mg, 0.03 mmol) under the protection of N_2 . The reaction mixture was then stirred at 30 °C overnight. Filtration and concentration under reduced pressure gave the crude product which was further purified by silica gel chromatography (eluent system: PE : EA = 15 : 1) to furnish **10** (103 mg, 90%), as a white solid: $[\alpha]_{\text{D}}^{28}$ 6.0 (c 1.0, CHCl_3); ^1H NMR (400 MHz, CDCl_3) δ 8.07 (d, $J = 7.2$ Hz, 2 H), 7.93-7.87 (m, 6 H), 7.82 (d, $J = 8.8$ Hz, 2 H), 7.52-7.28 (m, 12 H), 6.91 (d, $J = 8.8$ Hz, 2 H), 6.62 (d, $J = 2.4$ Hz, 1 H), 6.61 (d, $J = 2.4$ Hz, 1 H), 6.04-5.95 (m, 2 H), 5.86 (t, $J = 9.2$ Hz, 1 H), 5.71 (d, $J = 6.8$ Hz, 1 H), 4.61 (dd, $J = 3.1, 12.4$ Hz, 1 H), 4.50 (dd, $J = 4.7, 12.0$ Hz, 1 H), 4.23 (m, 1 H), 1.00 (s, 9 H), 0.95 (s, 9 H), 0.75 (s, 9 H), 0.23 (s, 6 H), 0.22 (s, 3 H), 0.21 (s, 3 H), 0.01 (d, $J = 4.0$ Hz, 3 H); ^{13}C NMR (100 MHz, CDCl_3) δ 172.5, 166.0, 165.8, 165.2, 165.1, 159.3, 157.6, 157.1, 155.9, 149.5, 137.7, 133.4, 133.1, 133.0, 132.8, 130.1, 129.8 (2 C), 129.7, 129.6, 129.5, 128.9, 128.8, 128.4, 128.3, 128.1, 124.6, 119.8, 110.8, 109.6, 103.9, 99.9, 73.1, 72.4, 72.0, 69.6, 65.5, 63.0, 25.8, 25.6, 25.5, 18.7, 18.3, 18.2, 1.0, -3.9, -4.0, -4.4; HRMS (ESI) calcd for $\text{C}_{67}\text{H}_{78}\text{O}_{15}\text{Si}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 1229.4541, found 1229.4542.

3,7,4'-Tri-*O*-*tert*-butyldimethylsilyl-5-*O*-(2'',3'',4'')-tri-*O*-benzoyl-6-*O*-*tert*-butyldiphenylsilyl- β -D-glucopyranosyl)-kaempferol (11)

Similar procedure as that used for the synthesis of **10** was adopted to give **11** (121 mg, 90%) as a white solid: $[\alpha]_{\text{D}}^{28}$ -0.1 (c 2.7, CHCl_3); ^1H NMR (400 MHz, CDCl_3) δ 8.08 (d, $J = 8.0$ Hz, 2 H), 7.91-7.88 (m, 4 H), 7.84 (d, $J = 8.8$ Hz, 2 H), 7.62 (d, $J =$

8.0 Hz, 2 H), 7.56-7.19 (m, 15 H), 7.14 (t, $J = 7.6$ Hz, 2 H), 6.92 (d, $J = 8.8$ Hz, 2 H), 6.67 (d, $J = 2.4$ Hz, 1 H), 6.64 (d, $J = 2.4$ Hz, 1 H), 6.01-5.86 (m, 3 H), 5.69 (d, $J = 7.2$ Hz, 1 H), 3.93-3.89 (m, 1 H), 3.83 (d, $J = 2.8$ Hz, 2 H), 1.01 (s, 9 H), 0.98 (s, 9 H), 0.94 (s, 9 H), 0.75 (s, 9 H), 0.23 (s, 6 H), 0.19 (s, 3 H), 0.18 (s, 3 H), 0.07 (s, 3 H), -0.04 (s, 3 H); ^{13}C NMR (100 MHz, CDCl_3) δ 172.6, 166.0, 165.2, 164.9, 159.4, 157.6, 157.0, 156.4, 149.4, 137.7, 135.6, 135.4, 133.1, 133.0, 132.9, 132.7, 132.6, 130.2, 129.8 (2 C), 129.5, 129.4, 129.3, 129.1, 128.3, 128.2, 128.1, 127.6, 127.5, 124.6, 119.8, 110.8, 109.3, 103.5, 100.1, 75.2, 73.6, 72.0, 68.9, 62.2, 26.5, 25.8, 25.7, 25.5, 19.0, 18.7, 18.3, 18.2, -4.0 (2 C), -4.4 (3 C); HRMS (ESI) calcd for $\text{C}_{76}\text{H}_{92}\text{O}_{14}\text{Si}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 1363.5456, found 1363.5458.

3,7,4'-Tri-*O*-*tert*-butyldimethylsilyl-5-*O*-(2'',3'',4'',6'')-tetra-*O*-benzoyl- β -D-galactopyranosyl)-kaempferol (12)

Similar procedure as that used for the synthesis of **10** was adopted to give **12** (120 mg, 99%) as a white solid: $[\alpha]_{\text{D}}^{28}$ 47.6 (c 1.6, CHCl_3); ^1H NMR (400 MHz, CDCl_3) δ 8.14 (d, $J = 7.2$ Hz, 2 H), 8.06 (d, $J = 7.2$ Hz, 2 H), 7.94 (d, $J = 7.6$ Hz, 2 H), 7.84 (d, $J = 7.2$ Hz, 2 H), 7.82 (d, $J = 8.8$ Hz, 2 H), 7.65 (t, $J = 7.2$ Hz, 1 H), 7.54-7.24 (m, 11 H), 6.91 (d, $J = 8.8$ Hz, 2 H), 6.70 (d, $J = 2.2$ Hz, 1 H), 6.63 (d, $J = 2.2$ Hz, 1 H), 6.27 (dd, $J = 8.0, 10.4$ Hz, 1 H), 6.08 (d, $J = 3.2$ Hz, 1 H), 5.70 (dd, $J = 3.8, 10.4$ Hz, 1 H), 5.65 (d, $J = 8.0$ Hz, 1 H), 4.68-4.62 (m, 1 H), 4.44-4.38 (m, 2 H), 1.00 (s, 9 H), 0.98 (s, 9 H), 0.74 (s, 9 H), 0.26 (s, 6 H), 0.22 (s, 6 H), 0.07 (s, 3 H), -0.10 (s, 3 H); ^{13}C NMR (100 MHz, CDCl_3) δ 172.5, 165.9, 165.6, 165.3, 159.4, 157.6, 157.1, 156.4, 149.4, 137.7, 133.5, 133.2 (2 C), 132.8, 130.2, 130.1, 129.8, 129.7, 129.3, 129.1, 128.8, 128.6, 128.4 (2 C), 128.2, 128.1, 124.6, 119.8, 110.7, 109.6, 103.8, 100.6, 71.9, 71.6, 69.4, 68.0, 61.7, 25.8, 25.7, 25.6, 18.7, 18.3, 18.2, -3.9, -4.1, -4.3 (2 C), -4.4; HRMS (ESI) calcd for $\text{C}_{67}\text{H}_{78}\text{O}_{15}\text{Si}_3\text{Na}$ $[\text{M}+\text{H}]^+$ 1207.4721, found 1207.4726.

3,7,4'-Tri-*O*-*tert*-butyldimethylsilyl-5-*O*-(2'',3'',4'')-tri-*O*-benzoyl- α -L-rhamnopyranosyl)-kaempferol (13)

Similar procedure as that used for the synthesis of **10** was adopted to give **13** (73 mg, 72%) as a white solid: $[\alpha]_{\text{D}}^{28}$ 17.9 (c 1.5, CHCl_3); ^1H NMR (400 MHz, CDCl_3) δ 8.17 (d, $J = 7.2$ Hz, 2 H), 8.05 (d, $J = 7.2$ Hz, 2 H), 7.93 (d, $J = 8.8$ Hz, 2 H), 7.89 (d,

$J = 7.2$ Hz, 2 H), 7.63 (t, $J = 7.2$ Hz, 1 H), 7.54-7.50 (m, 3 H), 7.44-7.36 (m, 3 H), 7.29-7.25 (m, 2 H), 6.95 (d, $J = 8.8$ Hz, 2 H), 6.62 (d, $J = 2.0$ Hz, 1 H), 6.54 (d, $J = 2.0$ Hz, 1 H), 6.53 (dd, $J = 3.4, 10.0$ Hz, 1 H), 6.13-6.12 (m, 1 H), 5.89 (s, 1 H), 5.81 (t, $J = 10.0$ Hz, 1 H), 4.55-4.51 (m, 1 H), 1.33 (d, $J = 6.4$ Hz, 3 H), 1.01 (s, 9 H), 1.007 (s, 9 H), 0.36 (s, 3 H), 0.31 (s, 3 H), 0.294 (s, 3 H), 0.291 (s, 3 H), 0.24 (s, 6 H); ^{13}C NMR (100 MHz, CDCl_3) δ 172.7, 166.0, 165.5, 164.9, 159.7, 157.9, 157.1, 155.5, 149.1, 138.0, 133.4, 133.2, 132.8, 130.1, 130.0, 129.9, 129.7, 129.6, 129.5, 129.4, 128.6, 128.3, 128.2, 124.6, 119.8, 110.2, 105.3, 102.6, 96.1, 72.0, 70.7, 69.7, 68.2, 26.0, 25.7 (2 C), 25.6, 19.0, 18.3, 18.2, 17.6, -3.4 (2 C), -4.3, -4.4 (2 C). HRMS (MALDI) calcd for $\text{C}_{60}\text{H}_{75}\text{O}_{13}\text{Si}_3$ $[\text{M}+\text{H}]^+$ 1087.4783, found 1087.4510.

3,7,3',4'-Tetra-*O*-*tert*-butyldimethylsilyl-5-*O*-(2'',3'',4'',6'')-tetra-*O*-benzoyl- β -D-glucopyranosyl)-quercetin (14)

Similar procedure as that used for the synthesis of **10** was adopted to give **14** (125 mg, 93%) as a white solide: $[\alpha]_{\text{D}}^{28}$ 7.3 (c 1.7, CHCl_3); ^1H NMR (400 MHz, CDCl_3) δ 8.08 (d, $J = 7.2$ Hz, 2 H), 7.92 (d, $J = 6.5$ Hz, 2 H), 7.88 (d, $J = 7.2$ Hz, 2 H), 7.52-7.41 (m, 5 H), 7.37-7.26 (m, 9 H), 6.88 (d, $J = 8.4$ Hz, 2 H), 6.62 (d, $J = 2.2$ Hz, 1 H), 6.56 (d, $J = 2.2$ Hz, 1 H), 6.04-5.93 (m, 2 H), 5.85 (t, $J = 9.6$ Hz, 1 H), 5.71 (d, $J = 7.2$ Hz, 1 H), 4.96 (dd, $J = 3.2, 12.0$ Hz, 1 H), 4.49 (dd, $J = 4.8, 12.0$ Hz, 1 H), 4.22-4.17 (m, 1 H), 1.00 (s, 9 H), 0.99 (s, 9 H), 0.94 (s, 9 H), 0.73 (s, 9 H), 0.223 (s, 3 H), 0.218 (s, 3 H), 0.21 (s, 3 H), 0.20 (s, 6 H), 0.198 (s, 3 H), -0.01 (s, 3 H), -0.02 (s, 3 H); ^{13}C NMR (100 MHz, CDCl_3) δ 172.6, 166.0, 165.8, 165.2, 165.1, 159.3, 157.5, 155.9, 159.6, 148.6, 146.6, 137.6, 133.3, 133.1, 133.0, 132.8, 130.1, 129.8 (2 C), 129.7, 129.6, 129.5, 128.9, 128.8, 128.3, 128.2, 128.1, 124.7, 123.0, 121.4, 120.7, 110.9, 109.9, 103.8, 100.0, 73.1, 72.4, 72.0, 69.6, 62.9, 25.9, 25.7, 25.5, 15.6, 18.5, 18.4, 18.2, -4.0, -4.1 (2 C), -4.2 (3 C), -4.4 (2 C); HRMS (ESI) calcd for $\text{C}_{73}\text{H}_{92}\text{O}_{16}\text{Si}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 1359.5355, found 1359.5361.

3,7,3',4'-Tetra-*O*-*tert*-butyldimethylsilyl-5-*O*-(2'',3'',4'')-tri-*O*-benzoyl-6-*O*-*tert*-butyldiphenylsilyl- β -D-glucopyranosyl)-quercetin (15)

Similar procedure as that used for the synthesis of **10** was adopted to give **15** (121 mg, 90%) as a white solide: $[\alpha]_{\text{D}}^{28}$ -0.1 (c 2.7, CHCl_3); ^1H NMR (400 MHz, CDCl_3) δ

8.08 (d, $J = 7.6$ Hz, 2 H), 7.90 (d, $J = 8.0$ Hz, 4 H), 7.61 (d, $J = 6.8$ Hz, 2 H), 7.55-7.24 (m, 15 H), 7.20 (t, $J = 7.2$ Hz, 2 H), 7.15 (t, $J = 7.6$ Hz, 2 H), 6.89 (d, $J = 8.4$ Hz, 1 H), 6.67 (d, $J = 2.1$ Hz, 1 H), 6.60 (d, $J = 2.1$ Hz, 1 H), 5.99-5.92 (m, 2 H), 5.88 (t, $J = 9.2$ Hz, 1 H), 5.69 (d, $J = 7.2$ Hz, 1 H), 3.91 (m, 1 H), 3.82 (d, $J = 2.5$ Hz, 1 H), 1.00 (s, 9 H), 0.99 (s, 9 H), 0.97 (s, 9 H), 0.94 (s, 9 H), 0.74 (s, 9 H), 0.22 (s, 6 H), 0.20 (s, 6 H), 0.19 (s, 3 H), 0.188 (s, 3 H), 0.04 (s, 3 H), -0.05 (s, 3 H); ^{13}C NMR (100 MHz, CDCl_3) δ 172.6, 166.0, 165.2, 164.9, 159.4, 157.6, 156.4, 149.5, 148.6, 146.6, 137.7, 135.6, 135.4, 133.1, 133.0 (2 C), 132.7, 132.6, 130.2, 129.8 (3 C), 129.5, 129.4 (2 C), 129.1, 128.3, 128.2, 128.0, 127.6, 127.5, 124.8, 123.0, 121.4, 120.7, 110.9, 109.5, 103.5, 100.2, 75.2, 73.6, 72.1, 69.0, 62.2, 26.5, 25.9, 25.8, 25.5, 19.0, 18.7, 18.6, 18.4, 18.2, -4.1 (3 C), -4.2, -4.3, -4.4; HRMS (ESI) calcd for $\text{C}_{76}\text{H}_{92}\text{O}_{14}\text{Si}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 1363.5456, found 1363.5458.

3,7,3',4'-Tetra-*O*-*tert*-butyldimethylsilyl-5-*O*-(2'',3'',4'',6'')-tetra-*O*-benzoyl- β -D-galactopyranosyl)-quercetin (16)

Similar procedure as that used for the synthesis of **10** was adopted to give **16** (87 mg, 70%) as a white solid: $[\alpha]_{\text{D}}^{28}$ 41.7 (c 1.5, CHCl_3); ^1H NMR (400 MHz, CDCl_3) δ 8.13 (d, $J = 7.2$ Hz, 2 H), 8.06 (d, $J = 7.2$ Hz, 2 H), 7.94 (d, $J = 7.2$ Hz, 2 H), 7.84 (d, $J = 7.2$ Hz, 2 H), 7.64 (t, $J = 7.2$ Hz, 1 H), 7.54-7.24 (m, 13 H), 6.88 (d, $J = 8.4$ Hz, 1 H), 6.70 (d, $J = 2.2$ Hz, 1 H), 6.58 (d, $J = 2.2$ Hz, 1 H), 6.25 (dd, $J = 8.0, 10.4$ Hz, 1 H), 6.07 (d, $J = 3.3$ Hz, 1 H), 5.70 (dd, $J = 3.4, 10.4$ Hz, 1 H), 5.65 (d, $J = 8.0$ Hz, 1 H), 4.66-4.61 (m, 1 H), 4.44-4.37 (m, 1 H), 1.00 (s, 9 H), 0.998 (s, 9 H), 0.990 (s, 9 H), 0.98 (s, 9 H), 0.72 (s, 9 H), 0.26 (d, $J = 1.8$ Hz, 6 H), 0.22 (s, 6 H), 0.20 (s, 6 H), 0.03 (s, 3 H), -0.12 (s, 3 H); ^{13}C NMR (100 MHz, CDCl_3) δ 172.6, 165.9, 165.6, 165.3, 159.4, 157.6, 156.3, 149.6, 148.6, 146.6, 137.7, 133.5, 133.2 (2 C), 132.8, 130.1, 130.0, 129.8 (2 C), 129.7, 129.3, 129.2, 129.1, 128.8, 128.6, 128.5, 128.4 (2 C), 128.3 (2 C), 128.1, 126.3, 124.7, 123.0, 121.4, 120.7, 110.8, 109.3, 103.7, 100.6, 71.9, 71.6, 69.5, 68.0, 61.7, 25.9, 25.7, 25.6, 18.7, 18.6, 18.4, 18.3, -4.1, -4.2 (2 C), -4.3 (2 C); HRMS (ESI) calcd for $\text{C}_{73}\text{H}_{93}\text{O}_{16}\text{Si}_4$ $[\text{M}+\text{H}]^+$ 1338.5560, found 1338.5561.

3,7,3',4'-Tetra-*O*-*tert*-butyldimethylsilyl-5-*O*-(2'',3'',4'')-tri-*O*-benzoyl- α -L-rhamnopyranosyl)-quercetin (17)

Similar procedure as that used for the synthesis of **10** was adopted to give **17** (120 mg, 99%) as a white solide: $[\alpha]_D^{28}$ 7.7 (*c* 1.9, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 8.17 (d, *J* = 7.2 Hz, 2 H), 8.04 (d, *J* = 7.2 Hz, 2 H), 7.88 (d, *J* = 7.2 Hz, 2 H), 7.64 (t, *J* = 7.2 Hz, 1 H), 7.56-7.49 (m, 4 H), 7.43-7.36 (m, 4 H), 7.28 (t, *J* = 8.0 Hz, 2 H), 6.92 (d, *J* = 8.4 Hz, 1 H), 6.58 (d, *J* = 2.0 Hz, 1 H), 6.54 (d, *J* = 2.0 Hz, 1 H), 6.52 (dd, *J* = 3.4, 10.0 Hz, 1 H), 6.12 (m, 1 H), 5.88 (bs, 1 H), 5.80 (t, *J* = 6.0 Hz, 1 H), 4.56-4.52 (m, 1 H), 1.02 (s, 9 H), 1.01 (s, 18 H), 0.83 (s, 9 H), 0.33 (s, 3 H), 0.29 (s, 6 H), 0.28 (s, 3 H), 0.24 (s, 6 H), 0.23 (s, 6 H); ¹³C NMR (100 MHz, CDCl₃) δ 172.8, 166.0, 165.5, 164.9, 159.7, 157.9, 155.6, 149.2, 148.6, 146.6, 138.0, 133.4, 133.2, 132.8, 130.0 (2 C), 129.7, 129.6 (2 C), 129.4, 128.6, 128.3, 128.1, 124.8, 123.0, 121.3, 120.7, 110.2, 105.2, 96.1, 72.0, 70.7, 69.7, 68.2, 26.0, 25.9, 25.6, 19.0, 18.6, 18.5, 18.3, 17.6, -3.5, -3.6, -4.0 (2 C), -4.1, -4.2, -4.3, -4.4; HRMS (ESI) calcd for C₆₆H₈₉O₁₄Si₄Na [M+Na]⁺ 1217.5324, found 1217.5314.

3,7,4'-Tri-*O*-benzyl-5-*O*-(2'',3'',4'',6'')-tetra-*O*-benzoyl-β-D-glucopyranosyl)-kaempferol (18)

Similar procedure as that used for the synthesis of **10** was adopted to give **18** (108 mg, 87%) as a white solide: $[\alpha]_D^{28}$ 9.0 (*c* 1.0, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 8.08 (d, *J* = 7.2 Hz, 2 H), 7.98-7.89 (m, 6 H), 7.53-7.20 (m, 29 H), 6.99 (d, *J* = 12.8 Hz, 2 H), 6.84 (d, *J* = 2.3 Hz, 1 H), 6.64 (d, *J* = 2.3 Hz, 1 H), 6.07 (t, *J* = 9.2 Hz, 1 H), 6.00 (dd, *J* = 7.2, 9.2 Hz, 1 H), 5.86 (t, *J* = 9.6 Hz, 1 H), 5.70 (d, *J* = 7.2 Hz, 1 H), 5.12 (s, 2 H), 5.06 (s, 2 H), 4.77 (d, *J* = 10.8 Hz, 1 H), 4.72 (dd, *J* = 2.9, 12.0 Hz, 1 H), 4.70 (d, *J* = 10.8 Hz, 1 H), 4.52 (dd, *J* = 5.6, 12.0 Hz, 1 H), 4.31-4.26 (m, 1 H); ¹³C NMR (100 MHz, CDCl₃) δ 172.6, 166.0, 165.8, 165.3, 165.2, 162.0, 160.2, 157.8, 156.6, 153.3, 139.2, 137.0, 136.4, 135.6, 133.4, 133.1, 132.9, 132.7, 130.1, 130.0, 129.8 (2 C), 129.6, 129.4, 128.9, 128.8, 128.7, 128.6, 128.4, 128.3, 128.2 (2 C), 128.1, 128.0 (2 C), 127.8, 127.4 (2 C), 123.4, 114.5, 111.0, 104.7, 100.2, 97.6, 73.3, 72.8, 72.6, 71.8, 70.4, 70.0, 69.5, 62.8. HRMS (MALDI) calcd for C₇₀H₅₅O₁₅ [M+H]⁺ 1135.1688, found 1135.3535.

3,7,4'-Tri-*O*-benzyl-5-*O*-(2'',3'',4'')-tri-*O*-benzoyl-6-*O*-*tert*-butyldiphenylsilyl-β-D-glucopyranosyl)-kaempferol (19)

Similar procedure as that used for the synthesis of **10** was adopted to give **19** (87 mg, 69%) as a white solide: $[\alpha]_D^{28}$ 6.1 (*c* 1.4, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 8.09 (d, *J* = 7.6 Hz, 2 H), 7.93 (dd, *J* = 8.0, 8.4 Hz, 6 H), 7.65 (d, *J* = 7.2 Hz, 2 H), 7.56 (d, *J* = 7.2 Hz, 3 H), 7.46-7.13 (m, 29 H), 6.99 (d, *J* = 8.9 Hz, 2 H), 6.92 (d, *J* = 1.8 Hz, 1 H), 6.71 (d, *J* = 1.8 Hz, 1 H), 6.02-5.95 (m, 2 H), 5.81 (t, *J* = 9.6 Hz, 1 H), 5.65 (d, *J* = 6.8 Hz, 1 H), 5.12 (s, 2 H), 5.02 (s, 2 H), 4.74 (AB, 2 H), 3.98 (m, 1 H), 3.89-3.82 (m, 2 H), 0.97 (s, 9 H); ¹³C NMR (100 MHz, CDCl₃) δ 172.6, 165.9, 165.4, 164.9, 162.2, 160.2, 158.0, 157.1, 153.2, 139.3, 137.1, 136.5, 135.6, 135.5, 135.4, 133.2, 133.0, 132.9, 132.8, 132.6, 130.1, 130.0, 129.9, 129.8, 129.5, 129.2, 129.1, 128.8, 128.6, 128.3, 128.2, 128.1, 128.0 (2 C), 127.8, 127.6 (2 C), 127.4, 123.5, 114.5, 111.2, 105.3, 100.7, 97.2, 75.5, 73.3, 71.9, 70.4, 70.0, 69.1, 62.5, 26.5, 19.0; HRMS (ESI) calcd for C₇₉H₆₈O₁₄SiNa [M+Na]⁺ 1291.4271, found 1291.4280.

3,7,4'-Tri-*O*-benzyl-5-*O*-(2'',3'',4'',6''-tetra-*O*-benzoyl-β-*D*-galactopyranosyl)-kaempferol (20)

Similar procedure as that used for the synthesis of **10** was adopted to give **20** (123 mg, 99%) as a white solide: $[\alpha]_D^{28}$ 70.8 (*c* 1.8, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 8.15 (d, *J* = 7.2 Hz, 2 H), 8.05 (d, *J* = 7.2 Hz, 2 H), 8.00 (d, *J* = 7.2 Hz, 2 H), 7.91 (d, *J* = 8.8 Hz, 2 H), 7.86 (d, *J* = 7.2 Hz, 2 H), 7.64 (t, *J* = 7.4 Hz, 1 H), 7.51-7.14 (m, 22 H), 6.98 (d, *J* = 9.0 Hz, 2 H), 6.95 (d, *J* = 2.3 Hz, 1 H), 6.68 (d, *J* = 2.3 Hz, 1 H), 6.34 (dd, *J* = 8.0, 10.4 Hz, 1 H), 6.09 (d, *J* = 2.9 Hz, 1 H), 5.74 (dd, *J* = 3.4, 10.4 Hz, 1 H), 5.60 (d, *J* = 8.0 Hz, 1 H), 5.11 (s, 2 H), 5.09 (s, 2 H), 4.71 (dd, *J* = 4.2, 11.2 Hz, 1 H), 4.62 (AB, 2 H), 4.52-4.45 (m, 2 H); ¹³C NMR (100 MHz, CDCl₃) δ 172.6, 166.0, 165.6, 165.4, 162.1, 160.1, 157.9, 157.3, 153.2, 139.3, 137.0, 136.4, 135.6, 133.6, 133.2, 133.1, 132.6, 130.0 (2 C), 129.9, 129.8, 129.7, 129.3, 128.9, 128.7 (2 C), 128.6, 128.3, 128.2, 128.1, 128.0, 127.8, 127.4, 123.4, 114.5, 111.0, 104.6, 101.3, 97.3, 73.2, 71.9, 70.4, 70.0, 69.2, 68.1, 62.4; HRMS (ESI) calcd for C₇₀H₅₄O₁₅ [M+H]⁺ 1135.3535, found 1135.3527.

3,7,4'-Tri-*O*-benzyl-2'',3'',4''-tri-*O*-benzoyl-α-*L*-rhamnopyranosyl)-kaempferol (21)

Similar procedure as that used for the synthesis of **10** was adopted to give **21** (100 mg,

99%) as a white solide: $[\alpha]_D^{28}$ 22.3 (*c* 0.6, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 8.17 (d, *J* = 7.6 Hz, 2 H), 8.05 (d, *J* = 7.6 Hz, 2 H), 8.00 (d, *J* = 8.4 Hz, 2 H), 7.89 (d, *J* = 7.6 Hz, 2 H), 7.64 (t, *J* = 7.2 Hz, 1 H), 7.53-7.26 (m, 23 H), 7.03 (d, *J* = 8.4 Hz, 2 H), 6.80 (s, 1 H), 6.72 (s, 1 H), 6.43 (dd, *J* = 3.4, 10.4 Hz, 1 H), 6.14 (s, 1 H), 5.92 (s, 1 H), 5.84 (t, *J* = 10.0 Hz, 1 H), 5.22-5.10 (m, 6 H), 4.61-4.58 (m, 1 H); ¹³C NMR (100 MHz, CDCl₃) δ 173.2, 166.0, 165.4, 165.2, 162.4, 160.2, 158.4, 156.2, 153.7, 139.6, 137.0, 136.5, 135.7, 133.4, 133.2, 132.9, 130.2, 030.0, 129.9, 129.7, 129.5, 129.4, 129.3, 129.1, 128.7, 128.6 (2 C), 128.4, 128.2, 128.1, 127.9, 127.5 (2 C), 123.5, 114.6, 110.7, 101.4, 96.6, 96.5, 74.0, 71.9, 70.7, 70.5, 70.0, 69.9, 68.4; HRMS (ESI) calcd for C₆₃H₅₀O₁₃Na [M+Na]⁺ 1037.3144, found 1037.3140.

3,7,4'-Tri-*O*-hexanoyl-5-*O*-(2'',3'',4'',6'')-tetra-*O*-benzoyl-β-D-glucopyranosyl)-kaempferol (22)

Similar procedure as that used for the synthesis of **10** was adopted to give **22** (115 mg, 99%) as a white solide: $[\alpha]_D^{28}$ 11 (*c* 1.3, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 8.01-7.90 (m, 8 H), 7.80 (d, *J* = 8.8 Hz, 2 H), 7.54-7.43 (m, 4 H), 7.40-7.30 (m, 8 H), 7.21 (d, *J* = 8.8 Hz, 2 H), 7.08 (d, *J* = 2.1 Hz, 1 H), 6.96 (d, *J* = 2.1 Hz, 1 H); 6.03 (t, *J* = 9.2 Hz, 1 H), 5.94 (dd, *J* = 7.2, 8.8 Hz, 1 H), 5.82 (t, *J* = 9.2 Hz, 1 H), 5.64 (d, *J* = 7.2 Hz, 1 H), 4.73 (dd, *J* = 3.2, 12.0 Hz, 1 H), 4.50 (dd, *J* = 5.6, 12.4 Hz, 1 H), 4.33 (m, 1 H), 2.60 (t, *J* = 7.6 Hz, 2 H), 2.46-2.41 (m, 4 H), 1.79-1.60 (m, 6 H), 1.43-1.28 (m, 12 H), 0.95-0.88 (m, 9 H); ¹³C NMR (100 MHz, CDCl₃) δ 171.7, 170.9, 170.4, 169.4, 166.0, 165.8, 165.3, 165.1, 157.1, 156.5, 154.2, 153.3, 152.7, 134.1, 133.4, 133.2, 133.0, 132.7, 130.0, 129.9, 129.8, 129.7, 129.5, 129.4, 128.9, 128.8, 128.4, 128.3 (2 C), 128.0, 127.1, 121.8, 113.8, 109.5, 106.5, 100.0, 72.7, 71.7, 69.4, 62.9, 34.3, 34.2, 33.7, 31.2, 31.1, 24.5, 24.3, 24.2, 22.3, 13.9; HRMS (ESI) calcd for C₆₇H₆₆O₁₈Na [M+Na]⁺ 1181.4141, found 1181.4148.

3,7,4'-Tri-*O*-hexanoyl-5-*O*-(2'',3'',4'')-tri-*O*-benzoyl-6-*O*-*tert*-butyldiphenylsilyl-β-D-glucopyranosyl)-kaempferol (23)

Similar procedure as that used for the synthesis of **10** was adopted to give **23** (127 mg, 98%) as a white solide: $[\alpha]_D^{28}$ 14.7 (*c* 1.36, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 8.00 (d, *J* = 7.2 Hz, 2 H), 7.90-7.86 (m, 4 H), 7.81 (d, *J* = 8.8 Hz, 2 H), 7.57-7.27 (m,

14 H), 7.25-7.18 (m, 5 H), 7.16 (d, $J = 2.2$ Hz, 1 H), 7.03 (d, $J = 2.2$ Hz, 1 H), 5.95-5.93 (m, 2 H), 5.78-5.73 (m, 1 H), 5.61 (d, $J = 7.2$ Hz, 1 H), 4.05-4.01 (m, 1 H), 6.90-3.82 (m, 2 H), 2.60 (t, $J = 3.4$ Hz, 2 H), 2.46-2.40 (m, 4 H), 1.81-1.74 (m, 2 H), 1.70-1.60 (m, 4 H), 1.42-1.26 (m, 12 H), 0.96-0.86 (m, 9 H); ^{13}C NMR (100 MHz, CDCl_3) δ 171.7, 170.9, 170.4, 169.4, 165.9, 165.4, 164.9, 157.2, 157.1, 154.2, 153.2, 152.7, 135.5, 135.4, 134.1, 133.2, 133.0, 132.8, 132.5, 130.0, 129.9 (2 C), 129.8, 129.6, 129.4, 129.2, 129.0, 128.3, 128.2, 128.0, 127.6, 127.1, 121.8, 113.8, 109.3, 106.4, 100.5, 73.1, 71.7, 68.9, 62.5, 34.3 (2 C), 33.7, 31.2 (2 C), 31.1, 26.6, 24.5, 24.2, 22.2 (2 C), 19.1, 13.9, 13.8 (2 C); HRMS (MALDI) calcd for $\text{C}_{76}\text{H}_{80}\text{O}_{17}\text{Si}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 1315.5062, found 1315.5057.

3,7,4'-Tri-*O*-hexanoyl-5-*O*-(2'',3'',4'',6''-tetra-*O*-benzoyl- β -D-galactopyranosyl)-kaempferol (24)

Similar procedure as that used for the synthesis of **10** was adopted to give **24** (115 mg, 99%) as a white solid: $[\alpha]_{\text{D}}^{28}$ 66.3 (c 2.4, CHCl_3); ^1H NMR (400 MHz, CDCl_3) δ 8.13 (d, $J = 7.2$ Hz, 2 H), 8.01 (dd, $J = 7.2, 8.8$ Hz, 4 H), 7.85 (d, $J = 7.2$ Hz, 2 H), 7.79 (d, $J = 8.8$ Hz, 2 H), 7.64 (t, $J = 7.6$ Hz, 1 H), 7.58-7.25 (m, 11 H), 7.20 (d, $J = 8.8$ Hz, 2 H), 7.12 (d, $J = 2.1$ Hz, 1 H), 7.03 (d, $J = 2.0$ Hz, 1 H), 6.27 (dd, $J = 8.0, 10.3$ Hz, 1 H), 6.07 (d, $J = 3.2$ Hz, 1 H), 4.68 (dd, $J = 6.8, 11.1$ Hz, 1 H), 4.55-4.47 (m, 2 H), 2.59 (t, $J = 7.6$ Hz, 2 H), 2.44-2.37 (m, 4 H), 1.78-1.57 (m, 6 H), 1.40-1.28 (m, 12 H), 0.95-0.88 (m, 9 H); ^{13}C NMR (100 MHz, CDCl_3) δ 171.7, 171.0, 170.4, 169.3, 166.0, 165.6, 165.5, 157.1 (2 C), 154.2, 153.3, 152.7, 134.1, 133.6, 133.2 (2 C), 132.6, 130.1, 130.0, 129.8 (2 C), 129.4, 128.9, 128.7, 128.6, 128.4, 128.3, 128.0, 127.0, 121.8, 113.7, 109.1, 106.6, 101.0, 71.9, 71.6, 69.1, 68.0, 62.2, 34.3, 34.2, 33.6, 31.2 (2 C), 31.1, 24.5, 24.2 (2 C), 22.2, 13.4; HRMS (ESI) calcd for $\text{C}_{67}\text{H}_{66}\text{O}_{18}\text{Na}$ $[\text{M}+\text{Na}]^+$ 1181.4146, found 1181.4140.

3,7,4'-Tri-*O*-hexanoyl-2'',3'',4''-tri-*O*-benzoyl- α -L-rhamnopyranosyl)-kaempferol (25)

Similar procedure as that used for the synthesis of **10** was adopted to give **25** (85 mg, 82%) as a white solid: $[\alpha]_{\text{D}}^{28}$ 15.9 (c 0.9, CHCl_3); ^1H NMR (400 MHz, CDCl_3) δ 8.15 (d, $J = 7.2$ Hz, 2 H), 8.04 (d, $J = 7.6$ Hz, 2 H), 7.90 (t, $J = 5.8, 8.4$ Hz, 4 H), 7.64

(t, $J = 7.4$ Hz, 1 H), 7.54-7.49 (m, 3 H), 7.44-7.37 (m, 3 H), 7.29-7.24 (m, 4 H), 7.10 (d, $J = 1.8$ Hz, 1 H), 6.94 (d, $J = 1.8$ Hz, 1 H), 6.36 (dd, $J = 3.3, 10.1$ Hz, 1 H), 6.05 (s, 1 H), 5.89 (s, 1 H), 5.81 (t, $J = 10.0$ Hz, 1 H), 4.44-4.38 (m, 1 H), 2.68 (t, $J = 7.2$ Hz, 2 H), 2.62 (td, $J = 3.3, 7.6$ Hz, 4 H), 1.80 (dd, $J = 7.2, 14.4$ Hz, 6 H), 1.41-1.39 (m, 12 H), 1.35 (d, $J = 6.2$ Hz, 3 H), 0.96 (dd, $J = 6.8, 13.0$ Hz, 6 H), 0.86 (t, $J = 6.8$ Hz, 3 H); ^{13}C NMR (100 MHz, CDCl_3) δ 171.7, 171.0 (2 C), 165.9, 165.4, 165.0, 157.6, 156.1, 154.6, 153.6, 152.8, 134.2, 133.5, 133.2, 132.8, 129.9, 129.7, 129.5, 129.4, 129.3 (2 C), 128.6, 128.3, 128.2, 127.1, 121.9, 113.1, 105.7, 105.4, 96.3, 71.6, 70.6, 69.7, 68.3, 34.3, 33.9, 31.2 (2 C), 31.1, 24.5, 24.4 (2 C), 22.3, 22.2, 17.6, 13.8 (3 C); HRMS (ESI) calcd for $\text{C}_{60}\text{H}_{62}\text{O}_{16}\text{Na}$ $[\text{M}+\text{Na}]^+$ 1061.3934, found 1061.3930.

3,7,4'-Tri-*O*-hexanoyl-5-*O*-(2'',3'',4''-tri-*O*-benzoyl- β -D-glucopyranosyl)-kaempferol (26)

To a solution of 23 (70 mg, 0.06 mmol) in THF (2 mL) was added HOAc (0.02 mL, 0.36 mmol) and TBAF (1 mmol/ml in THF, 0.18 mL, 0.18 mmol) at 0 °C. Then the reaction mixture was warmed to room temperature and stirred overnight. Ethyl acetate (20 mL) was added and the solution was washed with water, saturated NaHCO_3 and brine successively, and then dried over Na_2SO_4 . Filtration and concentration under reduced pressure to afford the crude product which was further purified by silica gel chromatography (eluent system: PE : EA = 4 : 1) to afford **26** (32 mg, 57%) as a white solid: $[\alpha]_D^{28}$ -9.6 (c 1.1, CHCl_3); ^1H NMR (400 MHz, CDCl_3) δ 8.01 (d, $J = 7.2$ Hz, 2 H), 7.99 (d, $J = 7.6$ Hz, 2 H), 7.90 (d, $J = 8.4$ Hz, 2 H), 7.81 (d, $J = 8.4$ Hz, 2 H), 7.55-7.28 (m, 9 H), 7.22 (d, $J = 8.4$ Hz, 2 H), 7.08 (d, $J = 2.1$ Hz, 1 H), 7.03 (d, $J = 2.1$ Hz, 1 H), 6.05 (t, $J = 9.2$ Hz, 1 H), 5.95 (dd, $J = 7.2, 9.6$ Hz, 1 H), 5.62 (d, $J = 7.6$ Hz, 1 H), 5.62 (dd, $J = 7.6, 9.6$ Hz, 1 H), 3.98-3.95 (m, 1 H), 3.88-3.80 (m, 2 H), 2.60 (t, $J = 7.6$ Hz, 4 H), 2.48 (t, $J = 7.6$ Hz, 2 H), 1.79-1.72 (m, 4 H), 1.69-1.62 (m, 2 H), 1.40-1.29 (m, 12 H), 0.95-0.89 (m, 9 H); ^{13}C NMR (100 MHz, CDCl_3) δ 171.7, 171.2, 170.5, 169.6, 165.8, 165.7, 165.2, 157.2, 156.3, 154.1, 153.4, 152.8, 134.1, 133.5, 133.2, 132.7, 129.9 (2 C), 129.8, 129.7, 129.4, 128.9, 128.7, 128.4, 128.2, 128.0, 127.0, 121.8, 76.0, 72.5, 71.7, 69.8, 61.7, 34.3 (2 C), 33.7, 31.2, 31.1, 24.4, 24.3, 24.2, 22.2, 13.9, 13.8. HRMS (MALDI) calcd for $\text{C}_{60}\text{H}_{63}\text{O}_{17}$ $[\text{M}+\text{H}]^+$ 1055.4040, found

1055.4060.

3,7,4'-Tri-*O*-hexanoyl-5-*O*-[2'',3'',4''-tri-*O*-benzoyl-6''-*O*-(2''',3''',4''')-tri-*O*-benzoyl- α -L-rhamnopyranonyl]- β -D-glucopyranosyl]-kaempferol (27)

Similar procedure as that used for the synthesis of **10** was adopted to give **27** (36 mg, 82%) as a white solide: $[\alpha]_D^{28}$ 33.0 (*c* 0.57, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 8.03 (dd, *J* = 7.2, 7.6 Hz, 6 H), 7.95 (t, *J* = 8.0 Hz, 4 H), 7.78 (d, *J* = 8.8 Hz, 4 H), 7.59 (t, *J* = 7.2 Hz, 1 H), 7.52-7.30 (m, 15 H), 7.23-7.17 (m, 4 H), 7.08 (d, *J* = 1.8 Hz, 1 H), 7.05 (s, 1 H), 6.05 (t, *J* = 9.2 Hz, 1 H), 5.94 (dd, *J* = 7.2, 9.2 Hz, 1 H), 5.72-5.54 (m, 5 H), 4.98 (s, 1 H), 4.30 (t, *J* = 6.8 Hz, 1 H), 4.10-3.90 (m, 3 H), 2.60 (t, *J* = 7.6 Hz, 2 H), 2.46-2.39 (m, 4 H), 1.81-1.73 (m, 2 H), 1.67-1.53 (m, 4 H), 1.43-1.18 (m, 15 H), 0.96-0.88 (m, 6 H), 0.82 (t, *J* = 7.2 Hz, 3 H); ¹³C NMR (100 MHz, CDCl₃) δ 171.8, 171.1, 170.4, 169.5, 165.7, 165.3, 165.1 (2 C), 157.2, 156.4, 154.3, 153.3, 152.7, 134.1, 133.5, 133.3, 133.2, 133.1, 132.9, 132.7, 130.0, 129.9, 129.8, 129.7, 129.6, 129.5, 129.3, 128.9, 128.8, 128.5 (2 C), 128.4, 128.3, 128.2, 128.0, 127.2, 121.8, 113.8, 109.8, 106.8, 100.2, 98.1, 74.4, 72.5, 71.7 (2 C), 70.4, 69.9, 69.7, 67.2, 66.9, 34.4, 34.1, 33.7, 31.2, 31.0, 29.7, 24.5, 24.2 (2 C), 22.3, 22.2, 17.5, 13.9 (2 C), 13.8. HRMS (MALDI) calcd for C₈₇H₈₅O₂₄ [M+H]⁺ 1513.5419, found 1513.5425.

3,7,4'-Tri-*O*-benzyl-5-*O*-(2'',3'',4''-tri-*O*-benzoyl- β -D-glucopyranosyl)-kaempferol (29)

Similar procedure as that used for the synthesis of **26** was adopted to give **29** (130 mg, 99%) as a white solide: $[\alpha]_D^{28}$ 4.7 (*c* 1.2, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 8.06 (t, *J* = 7.6 Hz, 4 H), 7.96 (dd, *J* = 6.4, 8.0 Hz, 4 H), 7.60 (t, *J* = 7.2 Hz, 1 H), 7.46-7.24 (m, 23 H), 7.01 (d, *J* = 8.4 Hz, 2 H), 6.87 (s, 1 H), 6.68 (d, *J* = 10.4 Hz, 1 H), 6.09-6.02 (m, 2 H), 5.76-5.69 (m, 2 H), 5.13 (s, 4 H), 4.74 (s, 2 H), 4.03 (s, 1 H), 3.94 (s, 2 H); ¹³C NMR (100 MHz, CDCl₃) δ 172.7, 165.9, 165.6, 165.0, 162.3, 160.0, 157.6, 157.4, 152.9, 139.2, 136.9, 136.4, 135.8, 133.3, 133.0, 132.6, 129.9, 129.8 (2 C), 129.0, 128.9, 128.8, 128.5, 128.3, 128.2, 128.1, 128.0, 127.9, 127.7, 127.6, 127.3, 123.2, 114.3, 110.3, 102.1, 100.5, 97.0, 76.7, 76.0, 73.3, 73.0, 71.6, 70.4, 69.8, 69.7, 61.5; HRMS (ESI) calcd for C₆₃H₅₀O₁₄Na [M+Na]⁺ 1053.3093, found 1053.3104.

3,7,4'-Tri-*O*-benzyl-5-*O*-[2'',3'',4''-tri-*O*-benzoyl-6''-*O*-(2''',3''',4''')-tri-*O*-benzoyl

- α -L-rhamnopyranonyl)- β -D-glucopyranosyl]-kaempferol (30)

Similar procedure as that used for the synthesis of **10** was adopted to give **27** (106 mg, 67%) as a white solid: $[\alpha]_D^{28}$ 21.5 (*c* 1.2, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 8.1 (d, *J* = 7.2 Hz, 2 H), 8.03 (dd, *J* = 7.6, 8.4 Hz, 4 H), 7.94 (d, *J* = 7.6 Hz, 4 H), 7.87 (d, *J* = 8.8 Hz, 2 H), 7.87 (d, *J* = 7.2 Hz, 2 H), 7.57-7.18 (m, 33 H), 6.97 (d, *J* = 8.8 Hz, 2 H), 6.91 (d, *J* = 2.0 Hz, 1 H), 6.49 (d, *J* = 2.0 Hz, 1 H), 6.09 (t, *J* = 9.2 Hz, 1 H), 6.00 (dd, *J* = 7.2, 9.2 Hz, 1 H), 5.75-5.54 (m, 5 H), 5.11 (s, 2 H), 5.10 (AB, 2 H), 4.99 (s, 1 H), 4.80 (AB, 2 H), 4.31-4.25 (m, 1 H), 4.11-4.02 (m, 1 H), 4.02-3.91 (m, 2 H); ¹³C NMR (100 MHz, CDCl₃) δ 172.7, 165.7, 165.3, 165.1, 162.1, 160.1, 157.8, 156.4, 153.3, 139.2, 137.0, 136.4, 135.8, 133.4, 133.2 (2 C), 133.1, 132.8, 132.7, 130.1, 130.0, 129.9 (2 C), 129.8, 129.7, 129.6, 129.4, 129.2, 128.9, 128.8, 128.7, 128.6 (2 C), 128.4, 128.3, 128.2, 128.1, 128.0, 127.8, 127.4, 127.3, 123.4, 114.4, 111.1, 105.2, 100.2, 98.0, 97.7, 74.4, 73.3, 72.6, 71.8, 71.7, 70.4, 69.9, 69.8 (2 C), 66.9 (2 C); HRMS (ESI) calcd for C₉₀H₇₃O₂₁ [M+H]⁺ 1489.4639, found 1489.4647.

3,7,4'-Tri-O-acetyl-5-O-[2'',3'',4''-tri-O-acetyl-6''-O-(2''',3''',4''')-tri-O-acetyl- α -L-rhamnopyranonyl)- β -D-glucopyranosyl]-kaempferol (28)

To a solution of **30** in MeOH (5 mL) and THF (5 mL) was added NaOMe (in MeOH solution). The reaction mixture was stirred at room temperature for 6 hours, then ⁺H resin was added to quench the reaction. Filtration and concentration to get the crude deacylated intermediate which was not purified for the next hydrogenolysis step.

The above obtained intermediate was dissolved in ethyl acetate (2 mL) and ethanol (2 mL), to which 10% Pd/C was added. The reaction flask was evacuated and then refilled with H₂. After repeating this process three times, the mixture was stirred at room temperature for another 24 hours. Filtration and concentration yield the crude **28a** which was put directly to next acetylation step.

To a solution of **28a** in dry pyridine (1 mL) was added Ac₂O (1 mL) dropwise at 0 °C. Then the addition was completed, the temperature was raised to room temperature. The stirring was continued for another 36 hours, at which time TLC showed that the starting material disappeared and one new compound was formed. Ethyl acetate (30 mL) was added to dilute the reaction mixture, the solution was washed with 1 N HCl,

saturated NaHCO₃, and brine successively and then dried over Na₂SO₄. Filtration and concentration under reduced pressure to give the crude product which was further purified by silica gel chromatography (eluent system: PE : EA = 2 : 1) to afford **30** (20 mg, 99%) as a white solide: $[\alpha]_D^{28}$ -129.0 (*c* 0.25, CHCl₃); ¹H NMR (400 MHz, CDCl₃) δ 7.86 (d, *J* = 8.8 Hz, 2 H), 7.25 (d, *J* = 8.8 Hz, 2 H), 7.15 (d, *J* = 2.0 Hz, 1 H), 6.92 (d, *J* = 2.0 Hz, 1 H), 5.43 (dd, *J* = 7.8, 9.4 Hz, 1 H), 5.32 (dd, *J* = 9.3, 11.0 Hz, 1 H), 5.24-5.21 (m, 2 H), 5.15 (d, *J* = 7.7 Hz, 1 H), 5.13 (t, *J* = 10.0 Hz, 1 H), 5.06 (t, *J* = 9.8 Hz, 1 H), 4.74 (s, 1 H), 3.93-3.89 (m, 1 H), 3.85 (dd, *J* = 5.6, 9.7 Hz, 1 H), 3.80 (d, *J* = 11.4 Hz, 1 H), 3.71 (dd, *J* = 6.0, 11.6 Hz, 1 H), 2.34 (s, 3 H), 2.33 (s, 3 H), 2.31 (s, 3 H), 2.10 (s, 3 H), 2.07 (s, 3 H), 2.06 (s, 3 H), 2.05 (s, 3 H), 2.04 (s, 3 H), 1.97 (s, 3 H); ¹³C NMR (100 MHz, CDCl₃) δ 170.3, 170.0, 169.8 (2 C), 169.5, 169.4, 168.9, 168.2, 167.9, 157.4, 157.2, 154.4, 153.3, 152.7, 134.3, 129.5, 127.1, 122.0, 113.3, 107.8, 106.2, 100.5, 98.0, 77.2, 73.5, 72.4, 70.8, 70.5, 69.3, 69.1, 69.0, 66.6, 21.1, 20.8, 20.7, 20.6 (2 C), 17.3; HRMS (ESI) calcd for C₄₅H₄₉O₂₄ [M+H]⁺ 973.2613, found 973.2626.

Key correlations in compound 28:

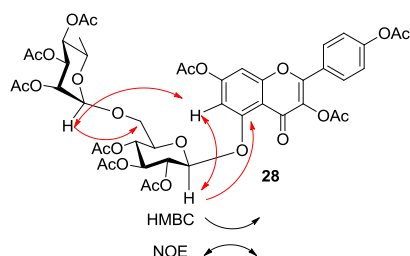


Figure 1. Key HMBC and NOE correlations in **28**

12.6701

7.8600
7.8555
7.8386
7.8338
7.2603
7.2600
6.9398
6.9218
6.3669
6.3619
6.2673

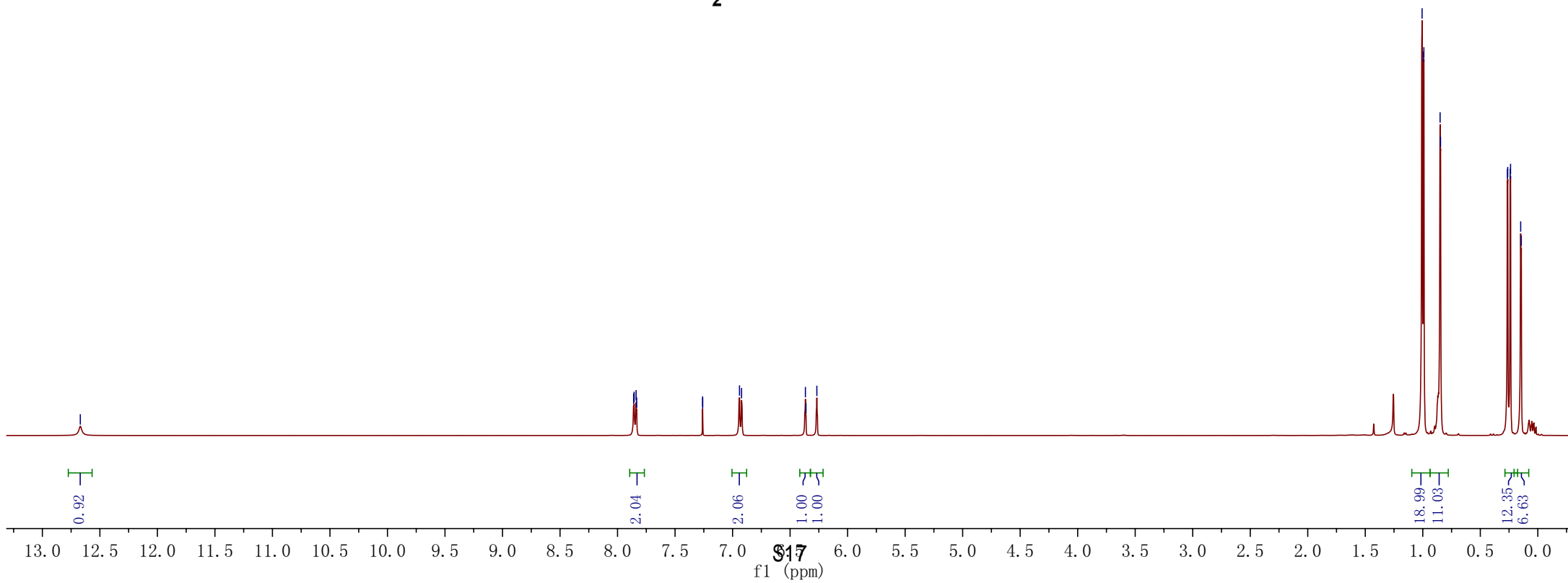
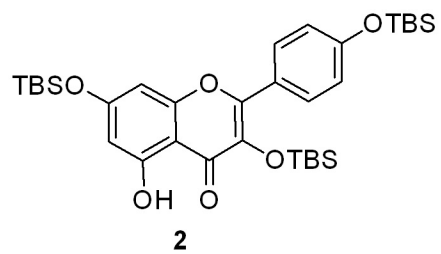
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0.9928
0.9906
0.8494
0.8457
0.2642
0.2615
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0.2370
0.1490
0.1436

Parameter Value
Solvent CDC13
Spectrometer Frequency 400.13
Nucleus 1H

0.92

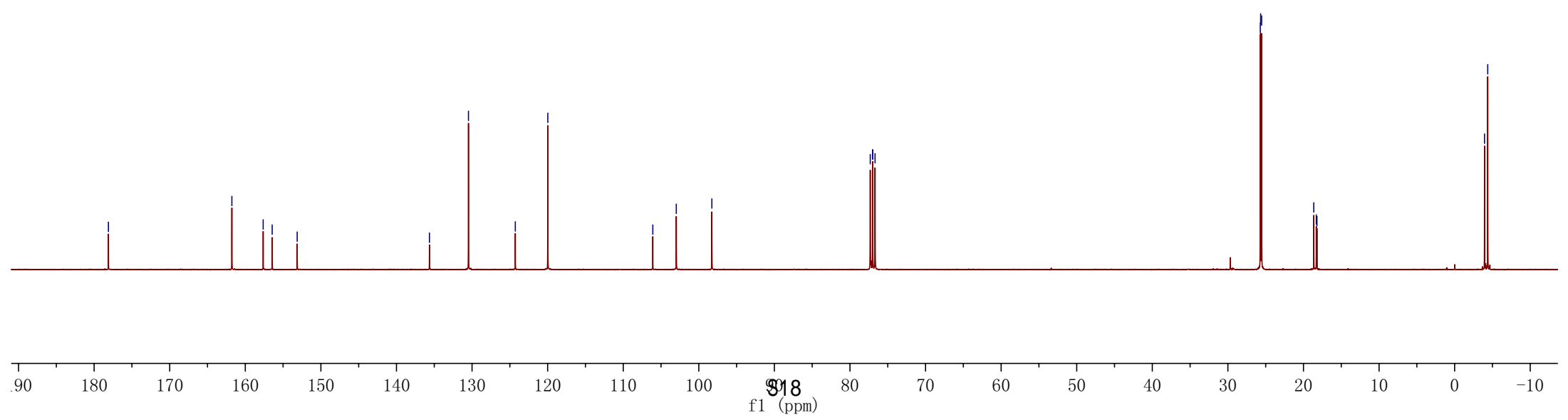
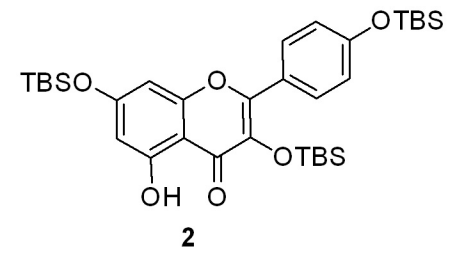
2.04 2.06 1.00 1.00

18.99 11.03 12.35 6.63

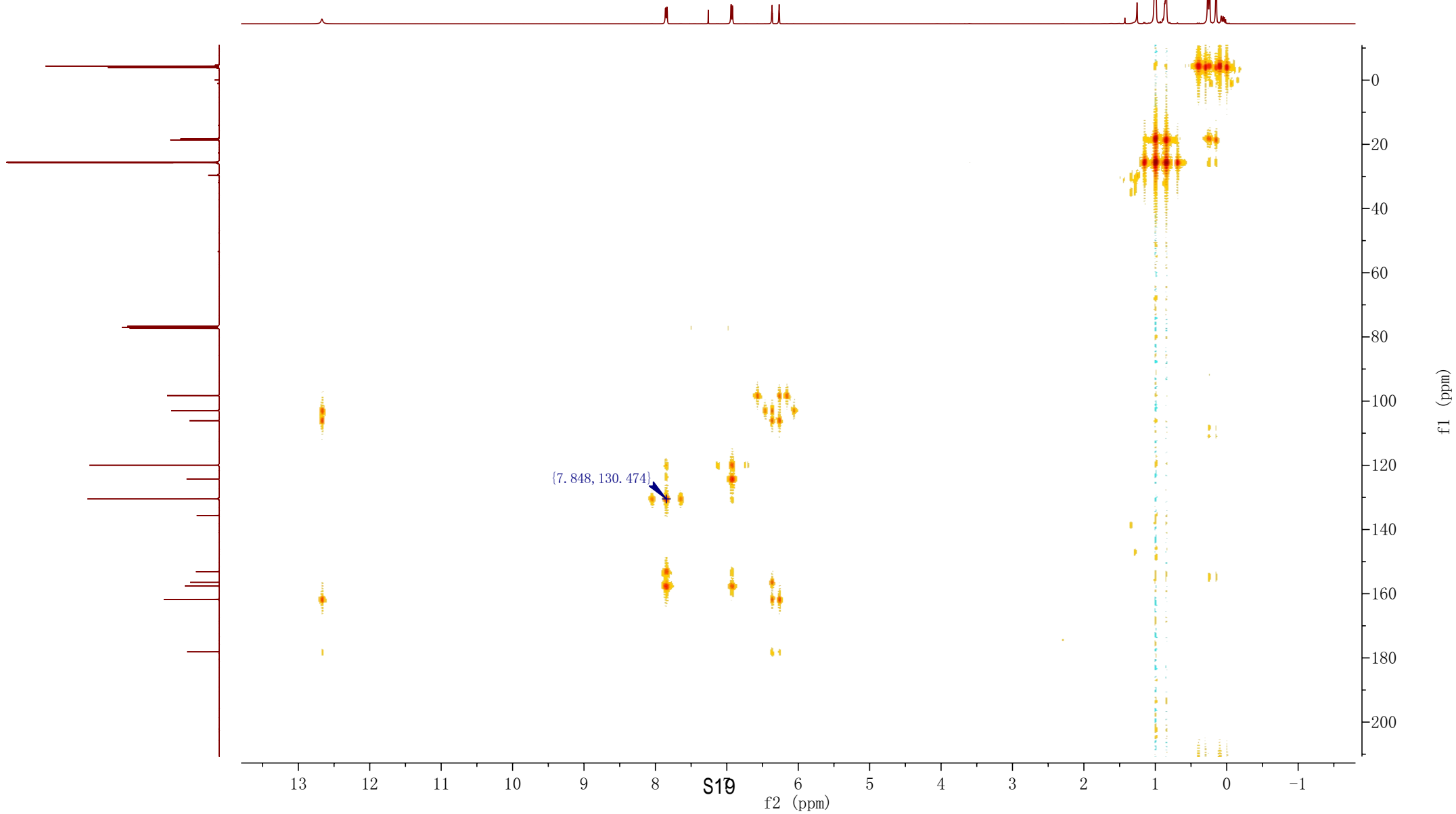
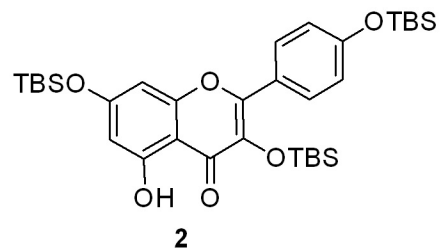


— 178.1089
 — 161.7759
 — 157.6340
 — 156.4440
 — 153.1346
 — 135.6366
 — 130.4737
 — 124.2763
 — 119.9756
 — 106.0847
 — 102.9773
 — 98.2708
 — 77.3174
 — 77.0000
 — 76.9998
 — 76.6820
 — 25.7130
 — 25.6673
 — 25.5328
 — 18.6393
 — 18.3048
 — 18.2167
 — 3.9543
 — 4.3787

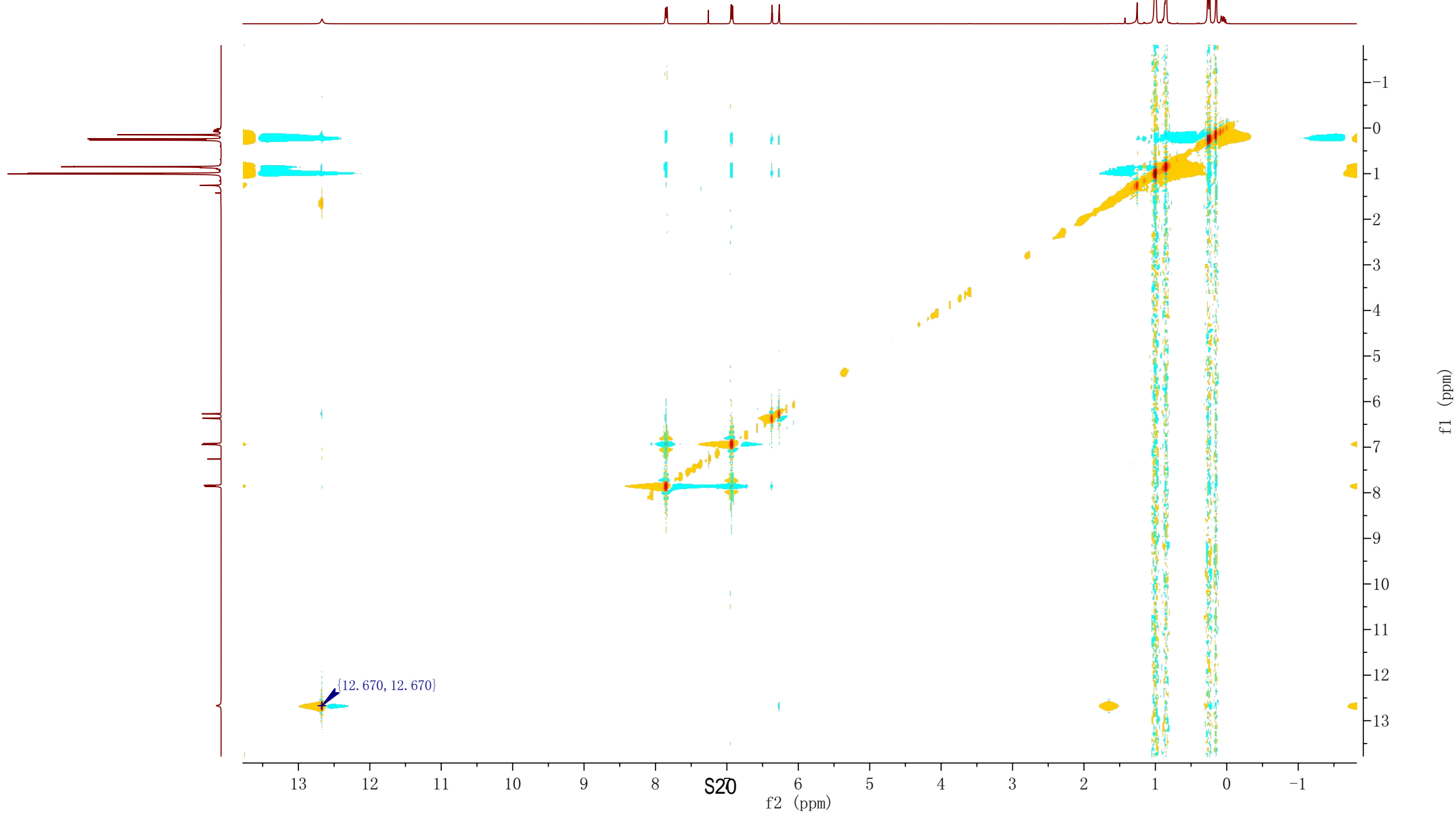
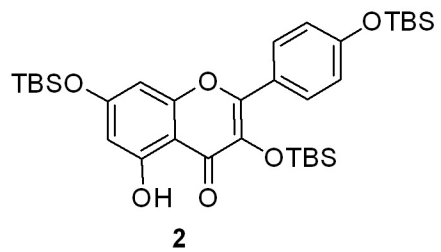
Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C



Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-HMBC
3 Spectrometer Frequency	(400.13, 100.61)
4 Nucleus	(1H, 13C)



Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-NOESY
3 Spectrometer Frequency	(400.13, 400.13)
4 Nucleus	(1H, 1H)

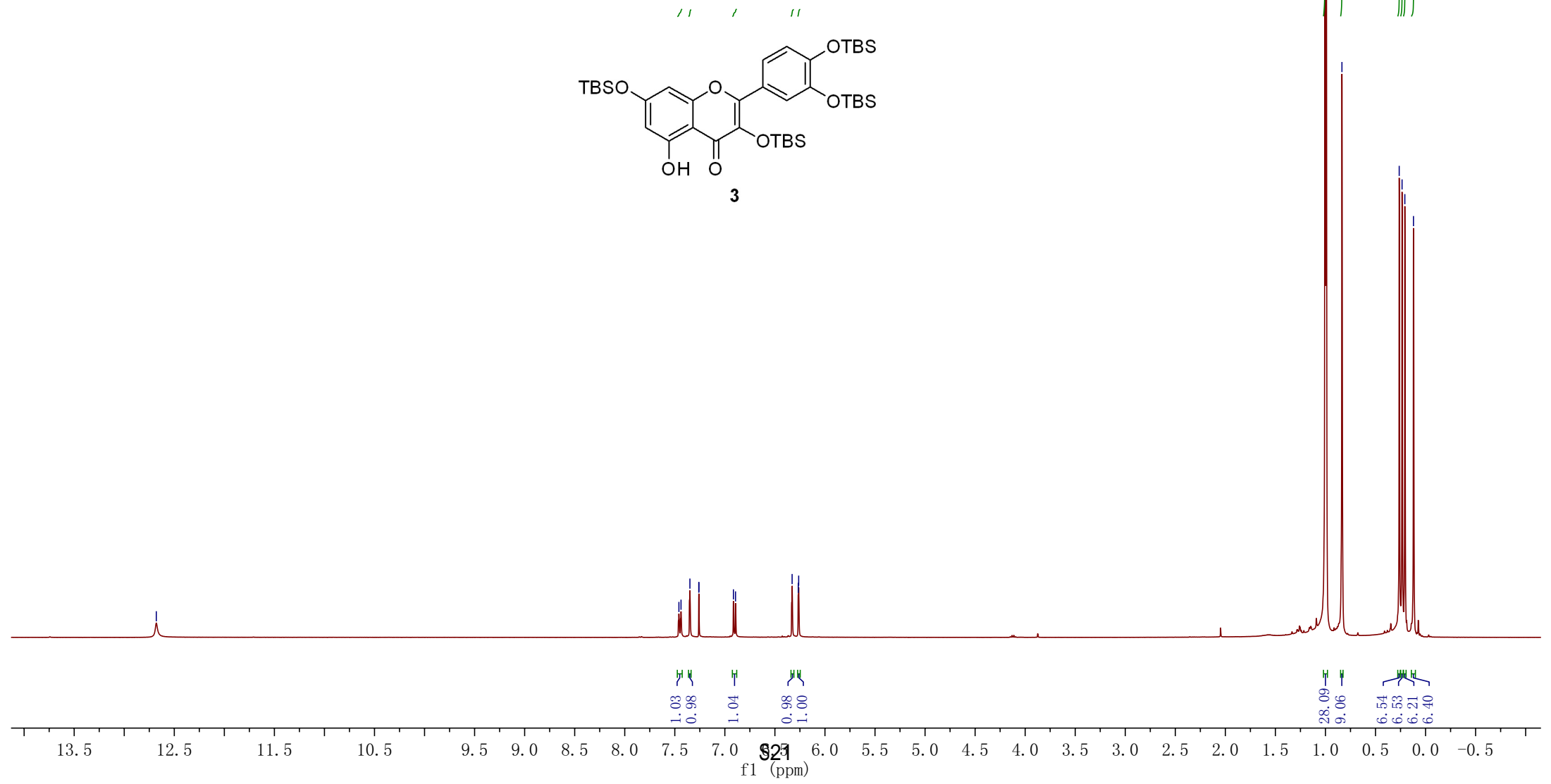
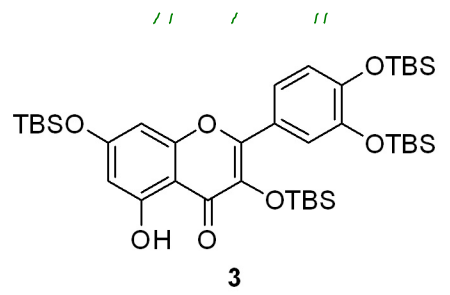


12.6798

7.4589
7.4379
7.3490
7.2600
7.2596
6.9144
6.8934
6.3280
6.2666
6.2625

1.0060
0.9969
0.9918
0.8354
0.2632
0.2347
0.2070
0.1207

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	1H



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161.8045
161.7582
156.4417
153.2640
149.2328
146.7606

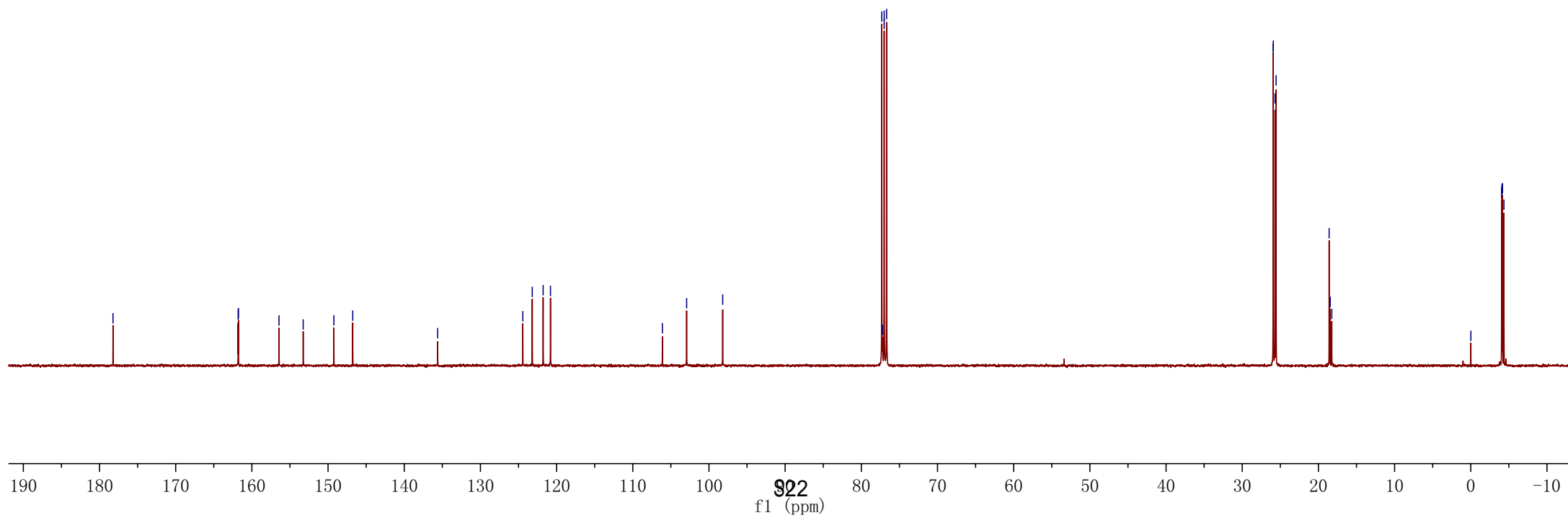
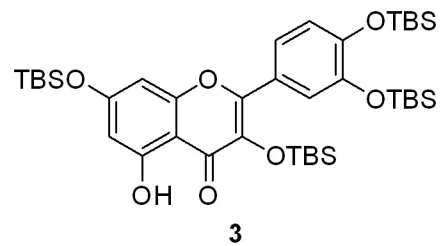
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123.1953
121.7663
120.8029
106.1140
102.9309
98.1965

77.3176
77.2034
77.0000
76.9999
76.6827

25.9431
25.9223
25.6942
25.5563
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18.4488
18.2449

-0.0130
-4.0464
-4.0959
-4.1695
-4.3525

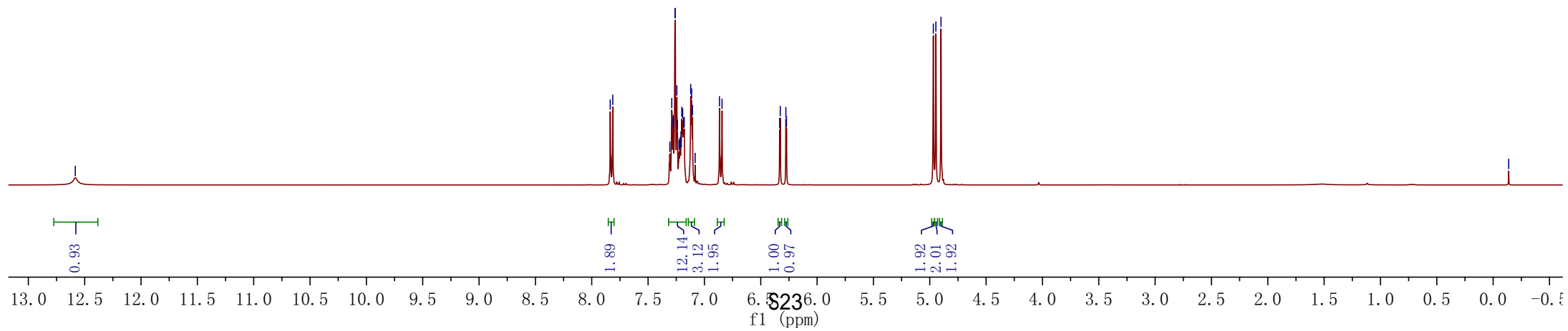
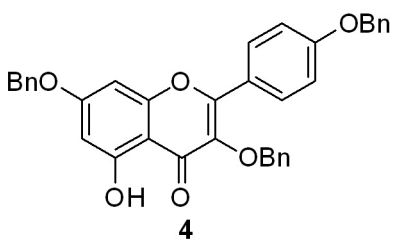
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Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C



12.5834

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	¹ H

7.8357
7.8132
7.2897
7.2602
7.2600
7.2446
7.1216
7.1134
6.8662
6.8493
6.8269
6.2772
6.2718
4.9684
4.9458
4.9002



0.1380

— 178.7165

— 164.3579

— 161.9884

— 160.6761

— 156.6516

— 156.5730

— 137.2647

— 136.3981

— 136.2768

— 135.7474

— 128.6602

— 128.6241

— 128.2158

— 127.3989

— 123.0189

— 114.6156

— 106.1129

— 98.5190

— 92.9603

— 77.3170

— 77.0000

— 76.9997

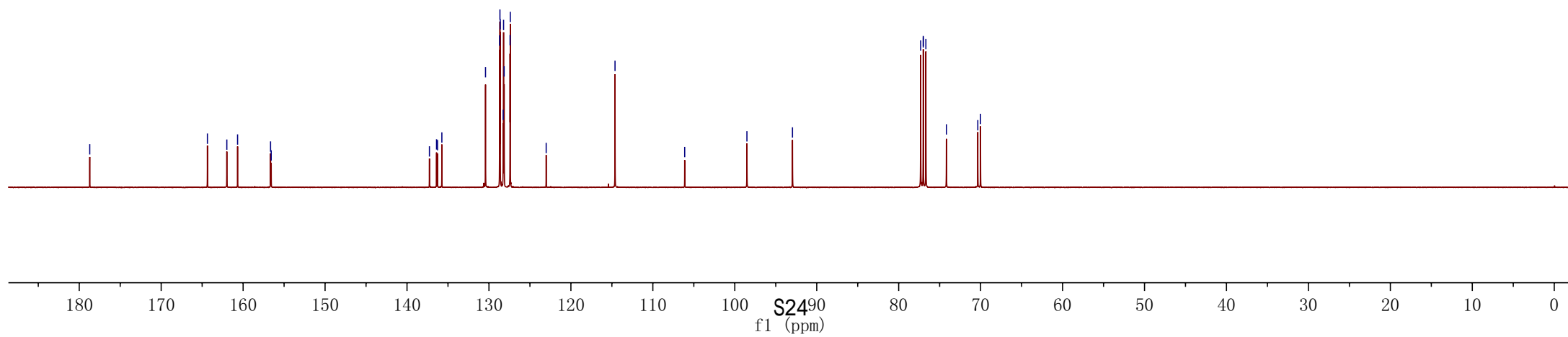
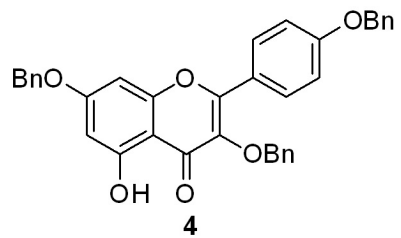
— 76.6815

— 74.1755

— 70.3446

— 70.0101

Parameter	Value
Solvent	CDCl3
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	¹³ C



130.4217
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128.6639
128.6288
128.2691
128.2202
128.1516
127.4318
127.4051

114.6087

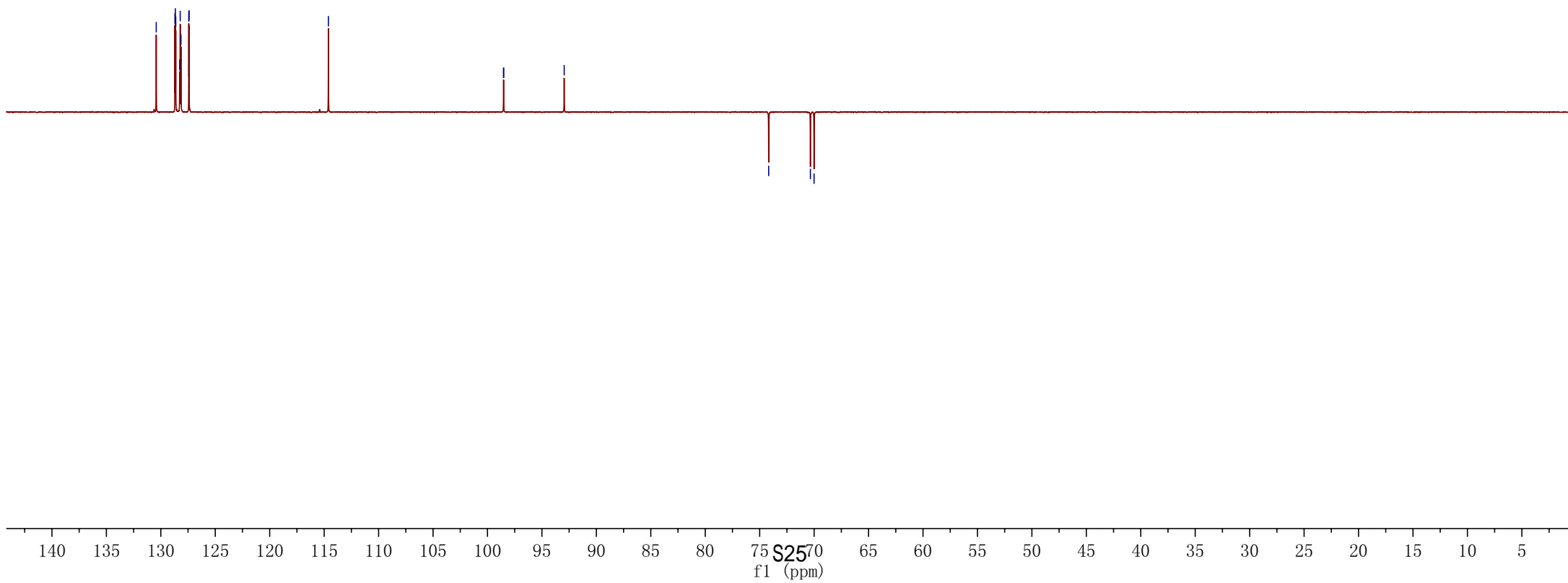
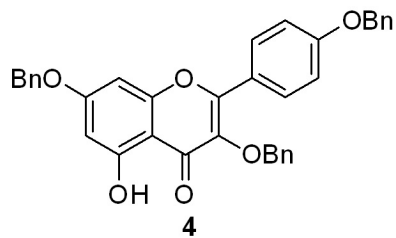
98.5190
98.5186

92.9542

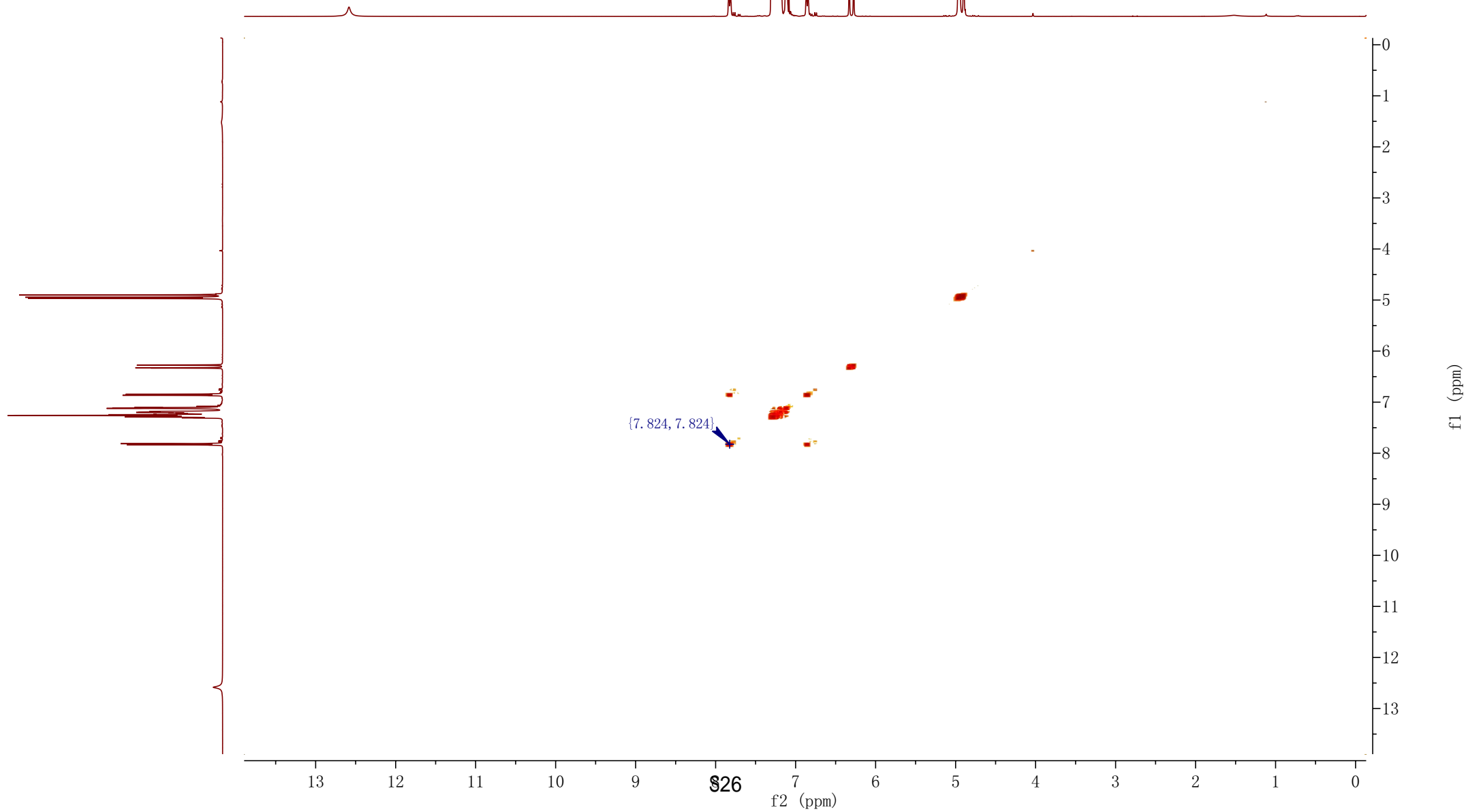
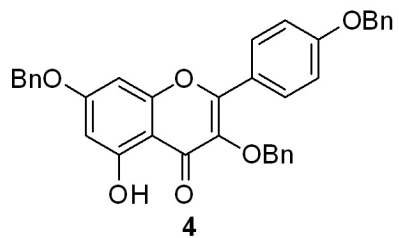
74.1730

70.3404
70.0043

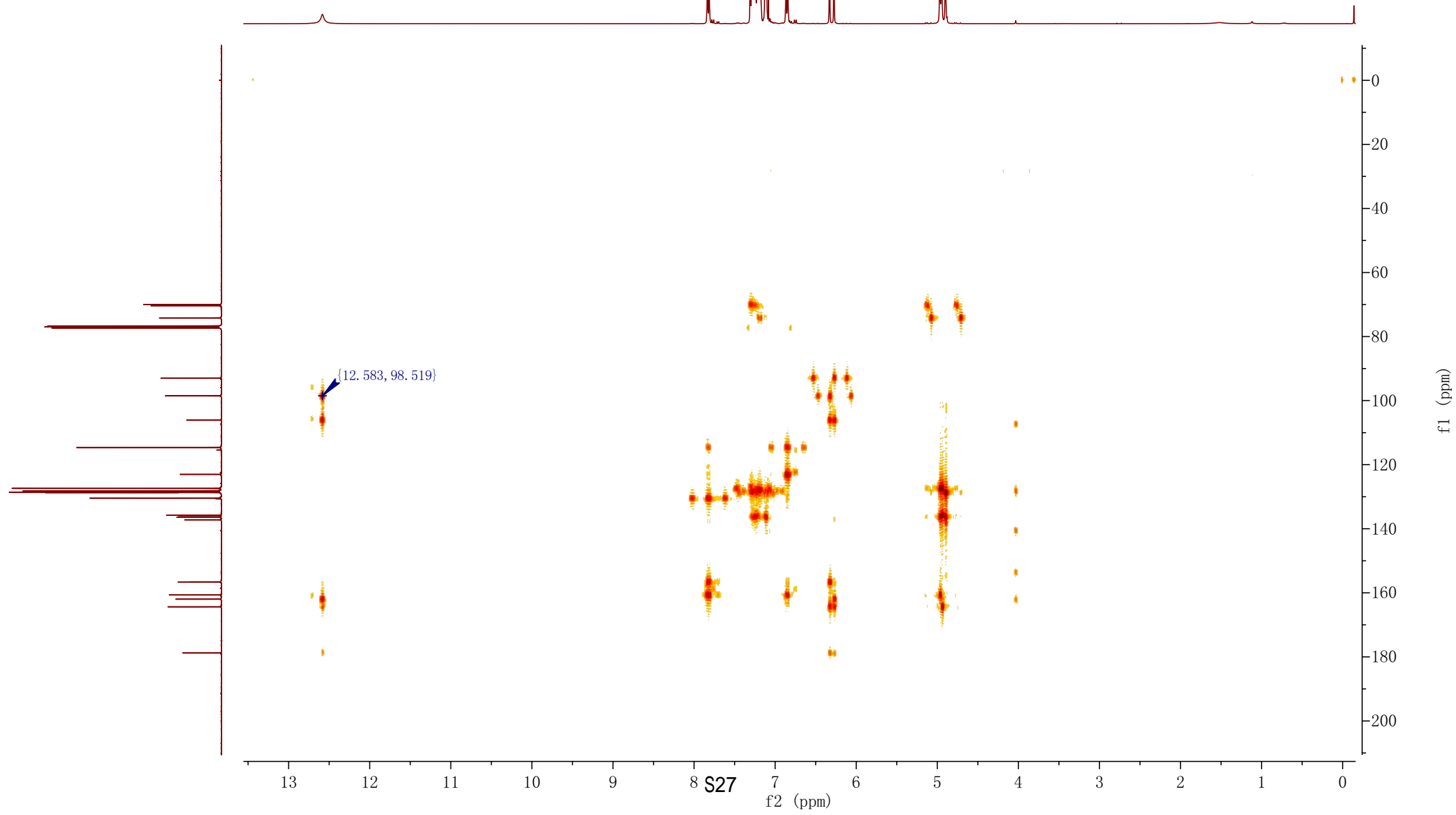
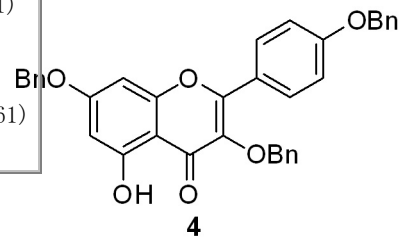
Parameter	Value
Solvent	CDC13
Experiment	1D-DEPT-135
Spectrometer Frequency	100.61
Nucleus	¹³ C



Parameter	Value (f2, f1)
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2 Experiment	2D-COSY
3 Spectrometer Frequency	(400.13, 400.13)
4 Nucleus	(1H, 1H)



Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-HMBC
3 Spectrometer Frequency	(400.13, 100.61)
4 Nucleus	(1H, 13C)

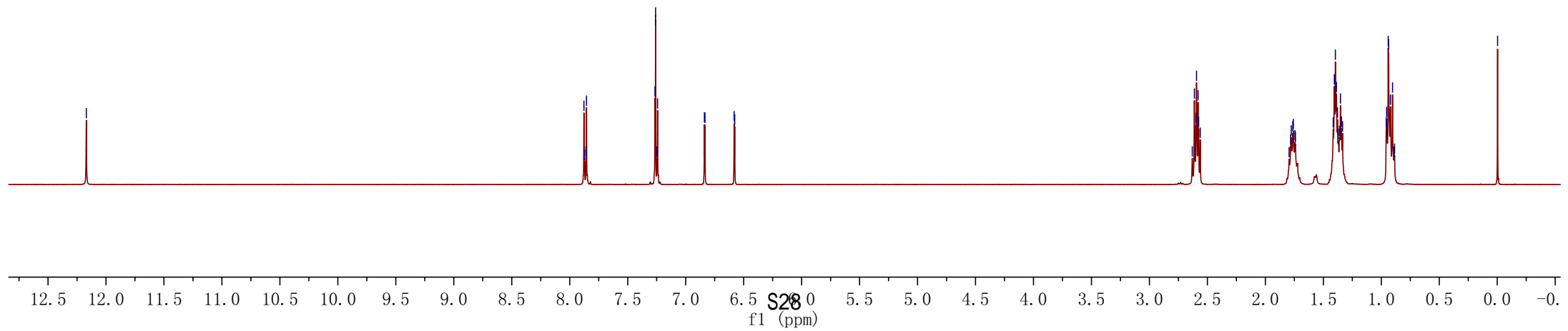
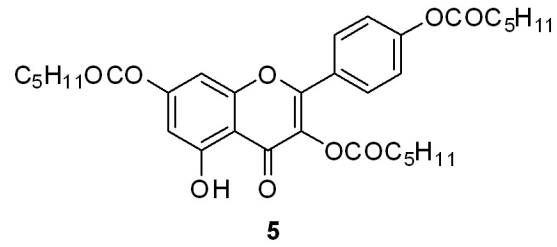


12.1696

Parameter	Value
Solvent	CDCl3
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	¹ H

7.8775
7.8726
7.8602
7.8554
7.2645
7.2600
7.2596
7.2425
6.8384
6.8334
6.5820
6.5770

2.6302
2.6123
2.5989
2.5938
2.5805
2.5752
2.5617
1.7769
1.7635
1.7589
1.7449
1.4050
1.3960
1.3872
0.9577
0.9539
0.9489
0.9404
0.9364
0.9213
0.9031
0.8854
0.8630



176.2979
171.6853
171.1172
170.6086

161.6678
156.4841
156.3663
155.9748
153.2083

131.9675
129.7215
126.6709

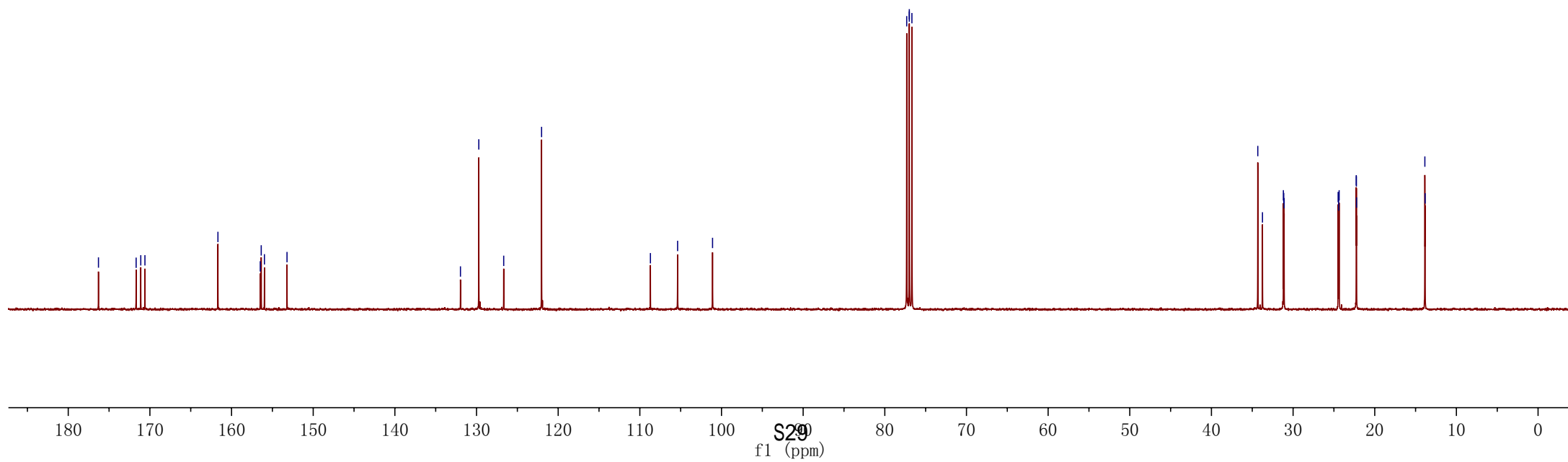
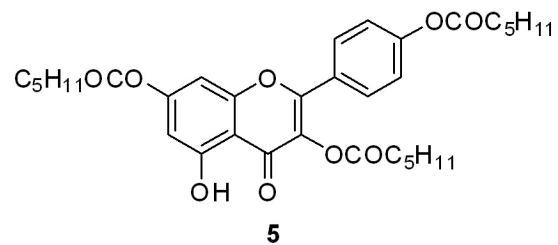
122.0326

108.7036
105.3739
101.0953

77.3167
77.0000
76.9995
76.6813

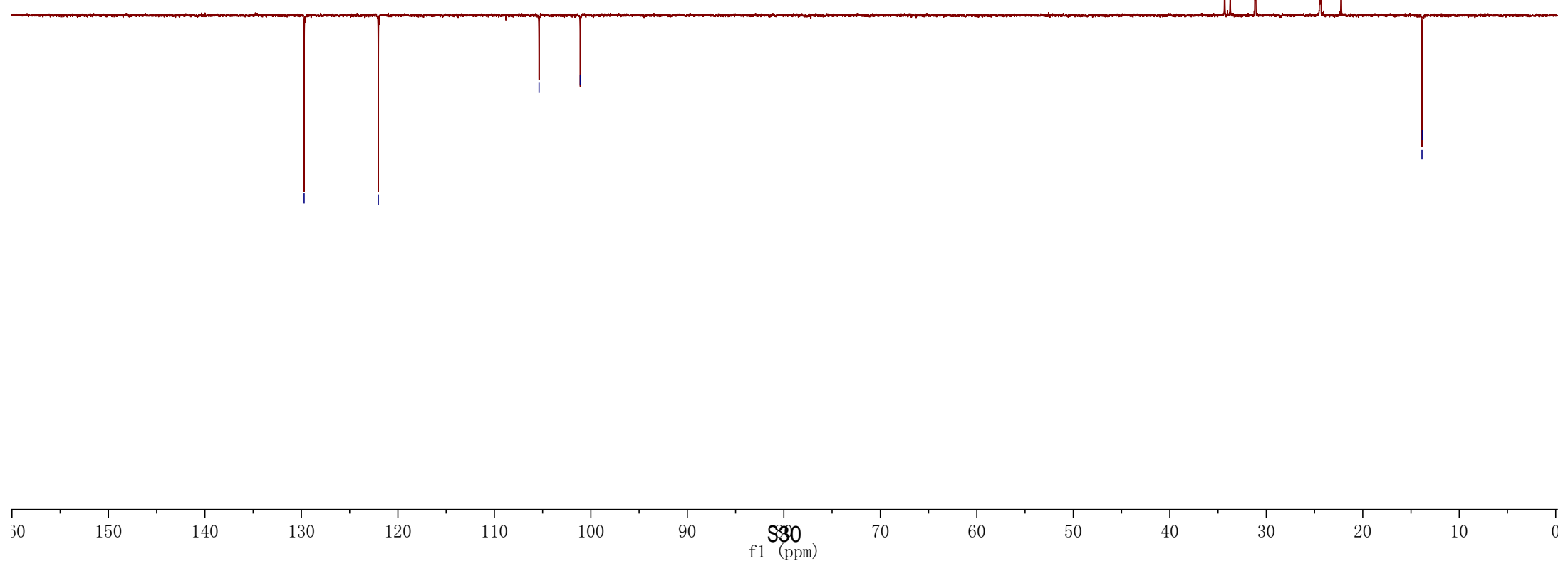
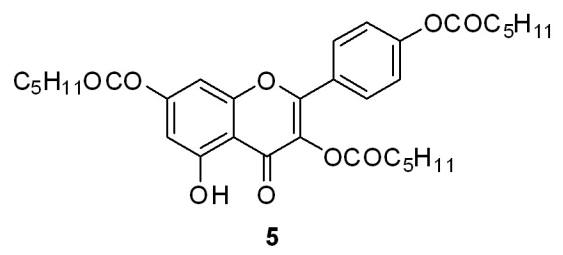
34.3225
33.7486
31.1887
31.1449
31.0974
24.4826
24.4188
24.3587
22.2650
22.2508
22.2250
13.8625
13.8298

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C

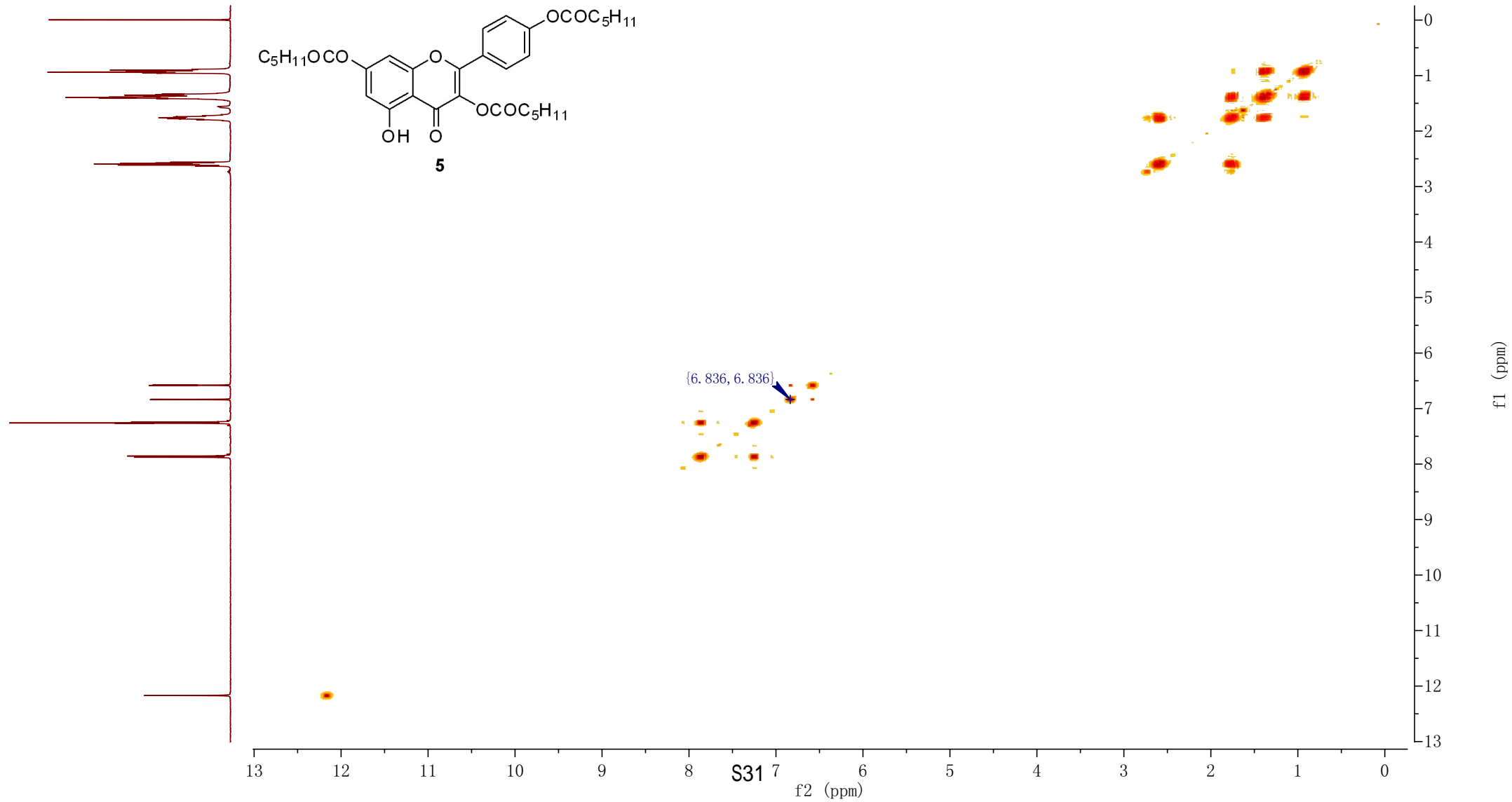
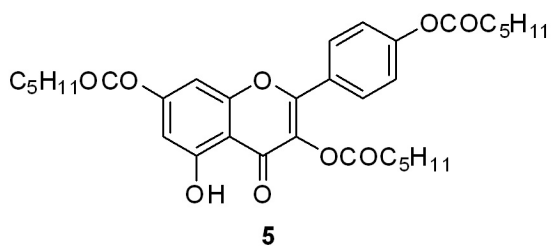
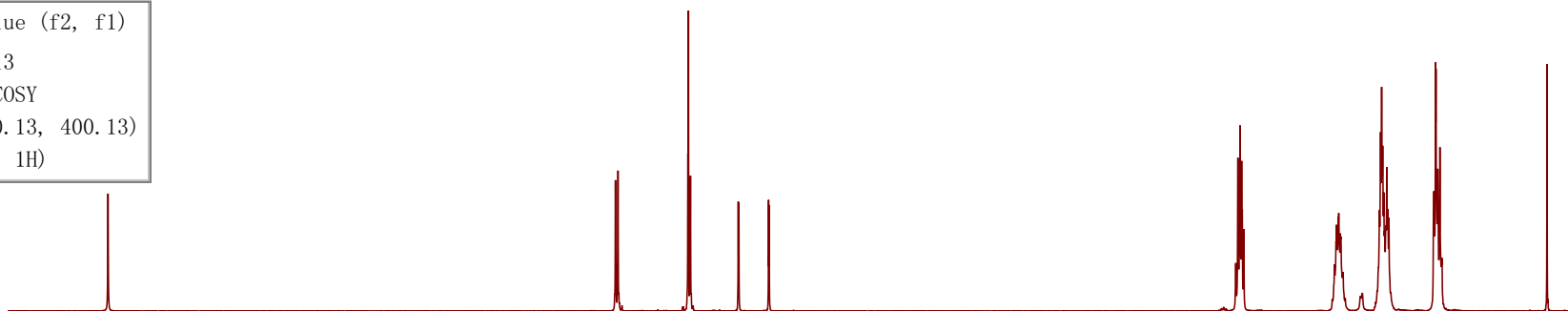


Parameter Value
Solvent CDC13
Experiment 1D-DEPT-135
Spectrometer Frequency 100.61
Nucleus 13C

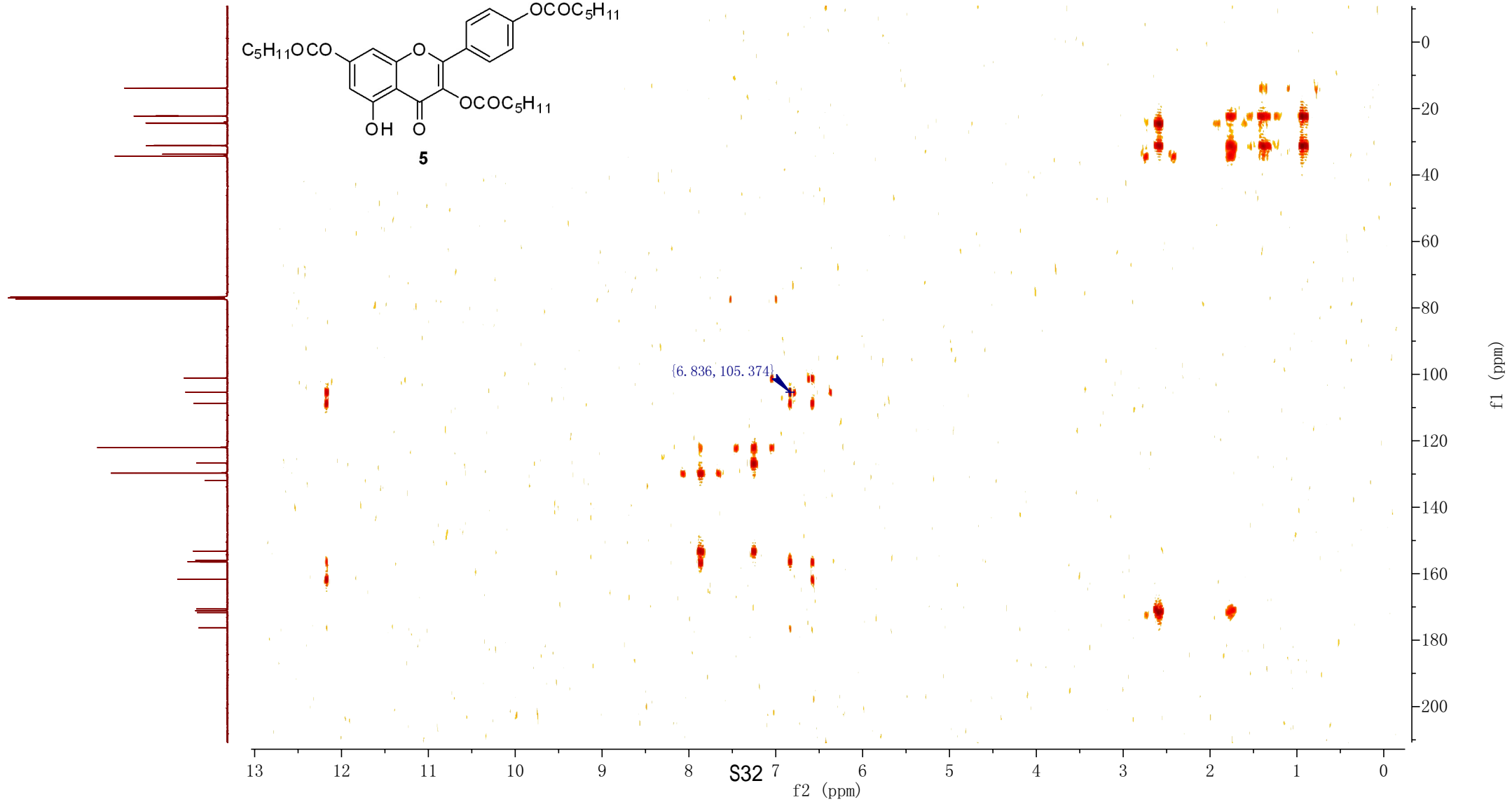
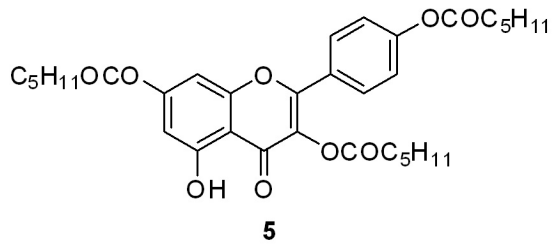
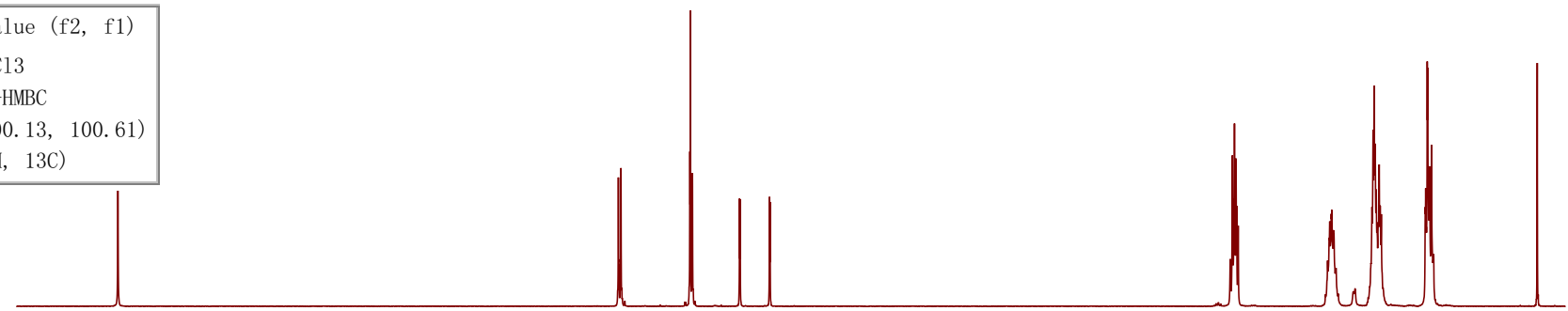
34.312
33.739
31.179
31.135
31.089
24.475
24.411
24.350
22.263
22.245
22.221
13.862
13.829



Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-COSY
3 Spectrometer Frequency	(400.13, 400.13)
4 Nucleus	(1H, 1H)



Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-HMBC
3 Spectrometer Frequency	(400.13, 100.61)
4 Nucleus	(¹ H, ¹³ C)



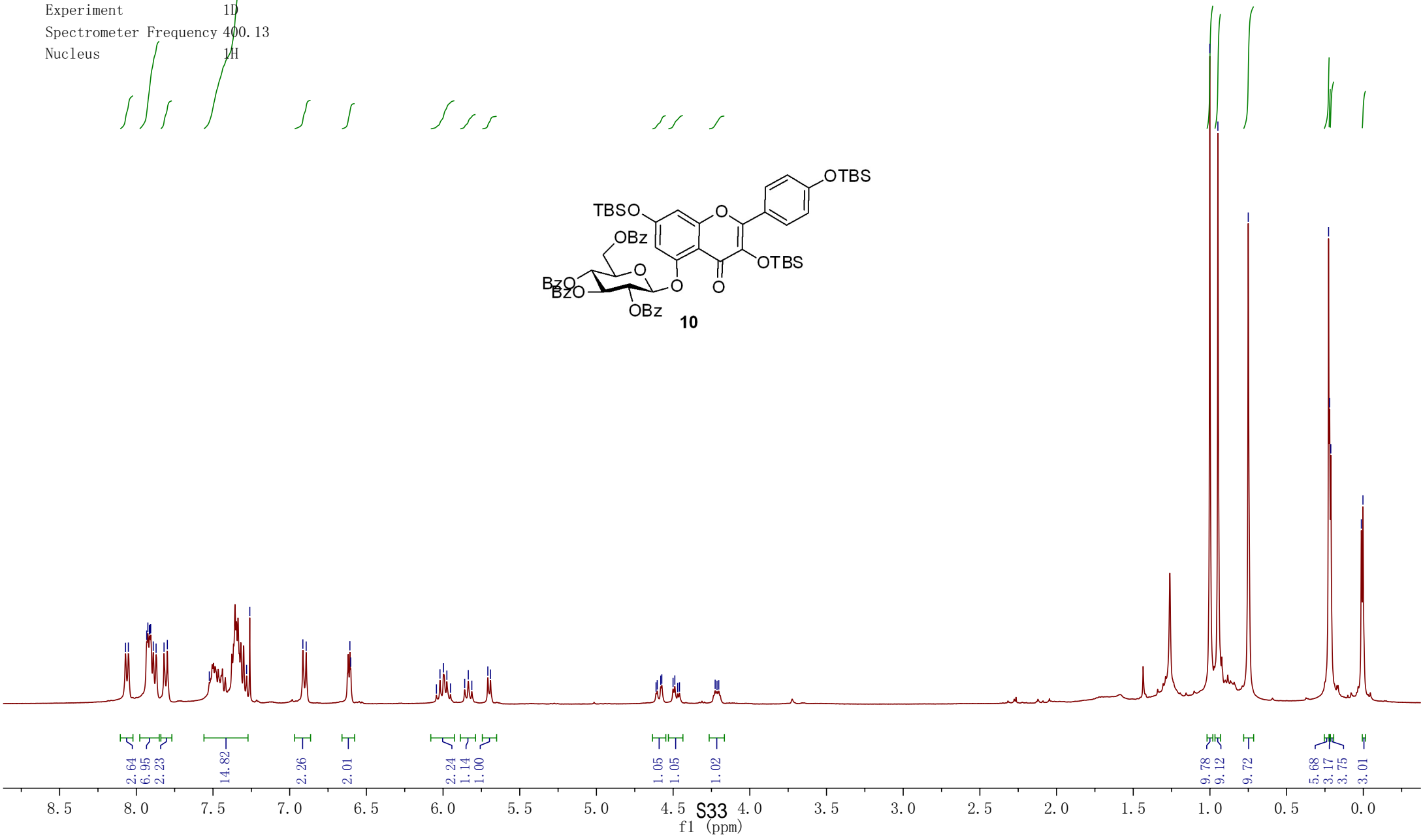
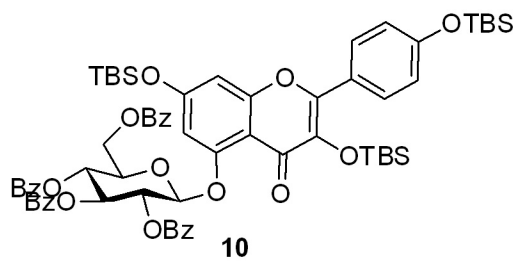
8.0702
8.0518
7.9322
7.9246
7.9145
7.9116
7.9062
7.8895
7.8710
7.8192
7.7976
7.5240
7.2808
7.2600
6.9141
6.8924
6.6074
6.6021
6.0432
6.0201
5.9970
5.9751
5.9518
5.8590
5.8355
5.8124
5.7080
5.6907

4.6113
4.6036
4.5807
4.5737
4.5004
4.4889
4.4703
4.4585
4.2260
4.2138
4.2024

1.0009
0.9481
0.7502

0.2264
0.2196
0.2119
0.0128
0.0023

Parameter Value
Solvent CDCl3
Experiment 1D
Spectrometer Frequency 400.13
Nucleus 1H



172.5182
166.0122
165.8121
165.2161
165.1202
159.3297
157.5692
157.0806
155.8864
149.4758

137.6914
132.9745
130.1471
129.8314
129.8054
129.6741
128.3526
128.2669
128.2383
128.2063

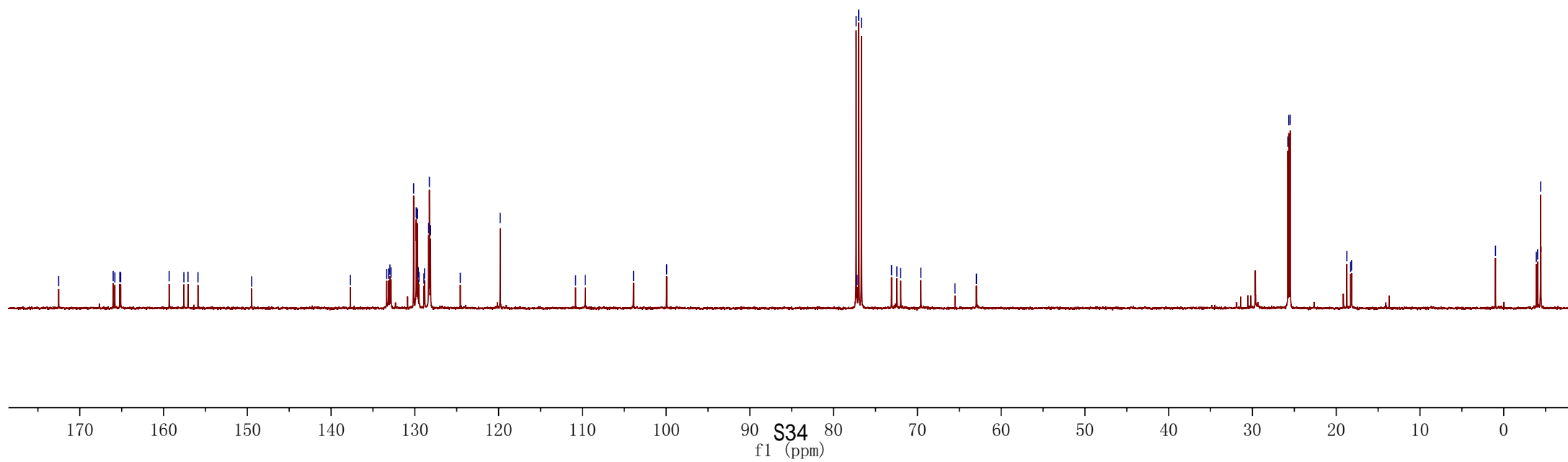
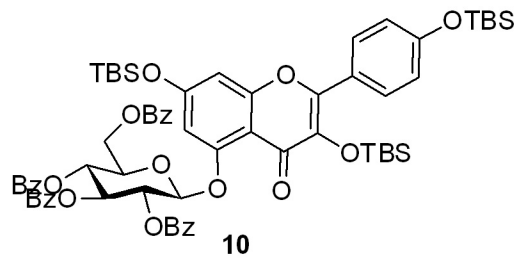
110.8096
109.6529
103.8974
99.9438

77.3186
77.2031
77.0005
77.0000
76.6831
73.0916
72.4497
71.9934
69.5894
65.5167
62.9548

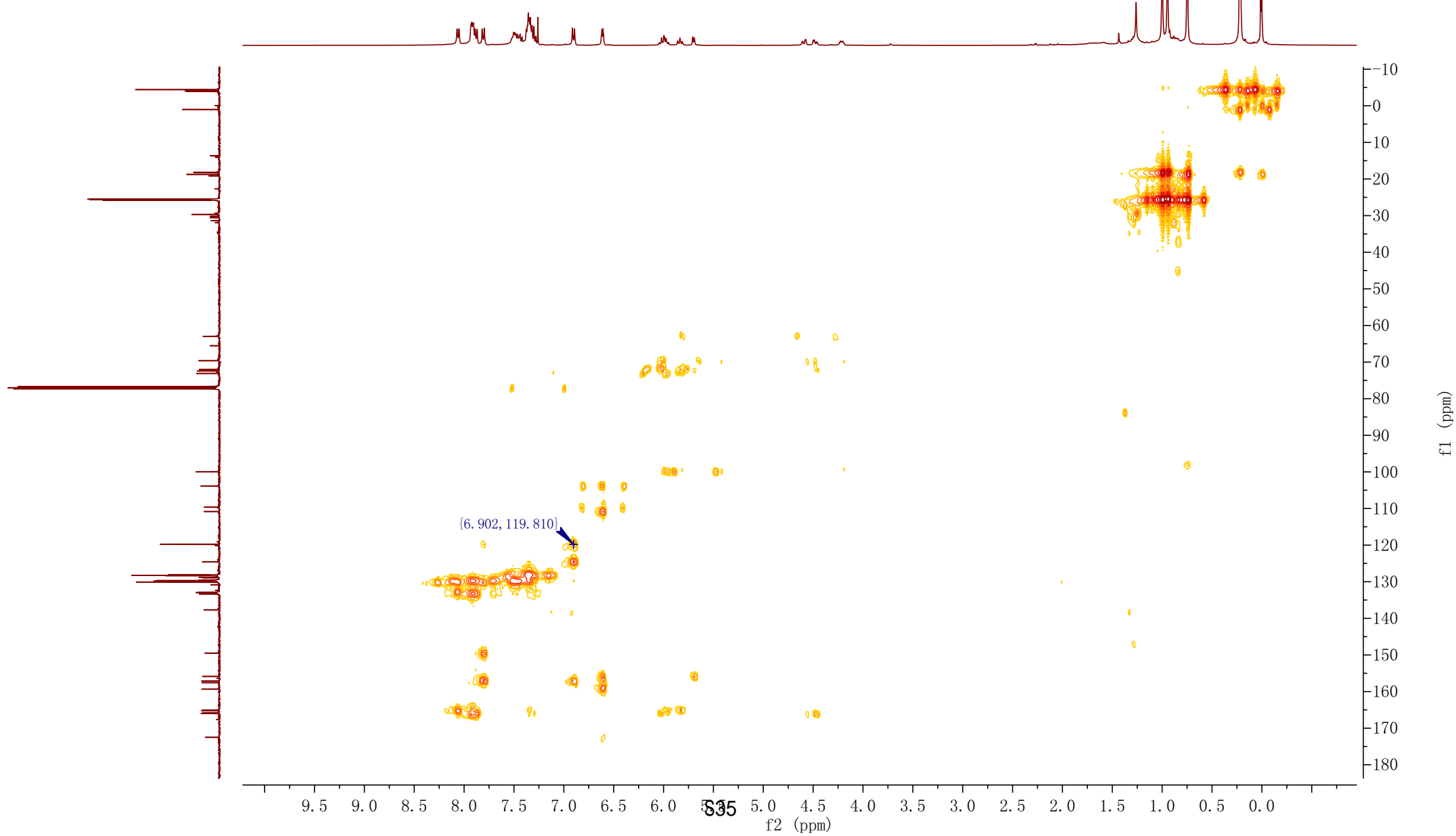
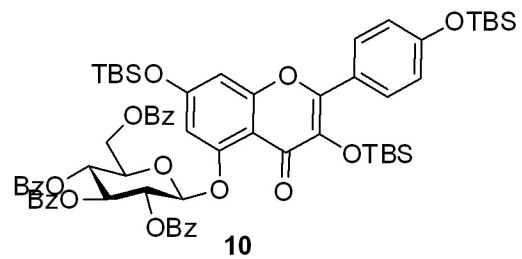
25.7767
25.6592
25.4957
18.7295
18.2750
18.1753

0.9890
-3.8894
-4.0439
-4.4099

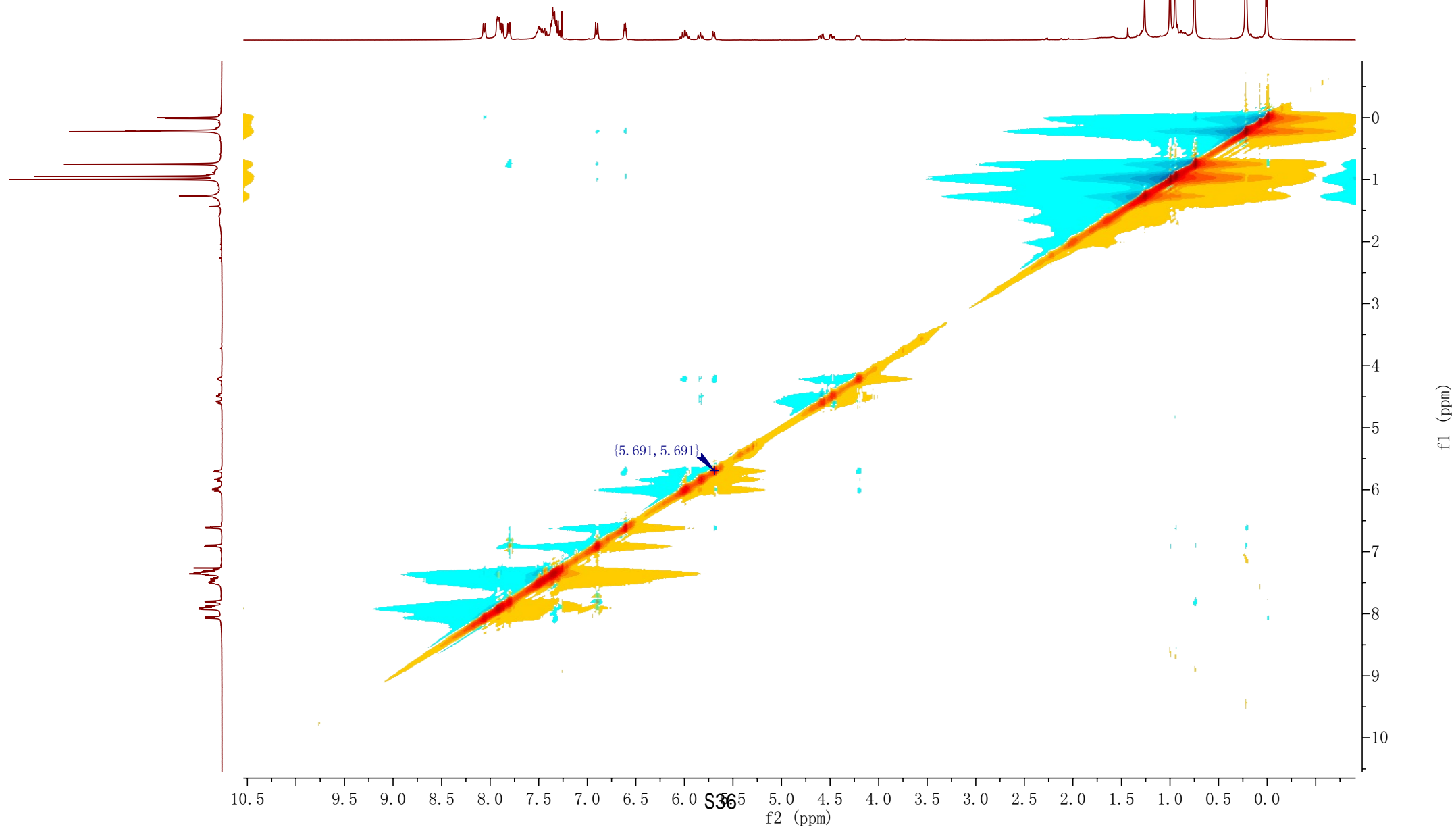
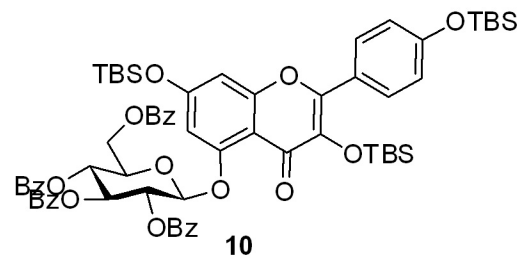
Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C



Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-HMBC
3 Spectrometer Frequency	(400.13, 100.61)
4 Nucleus	(1H, 13C)



Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-NOESY
3 Spectrometer Frequency	(400.13, 400.13)
4 Nucleus	(1H, 1H)



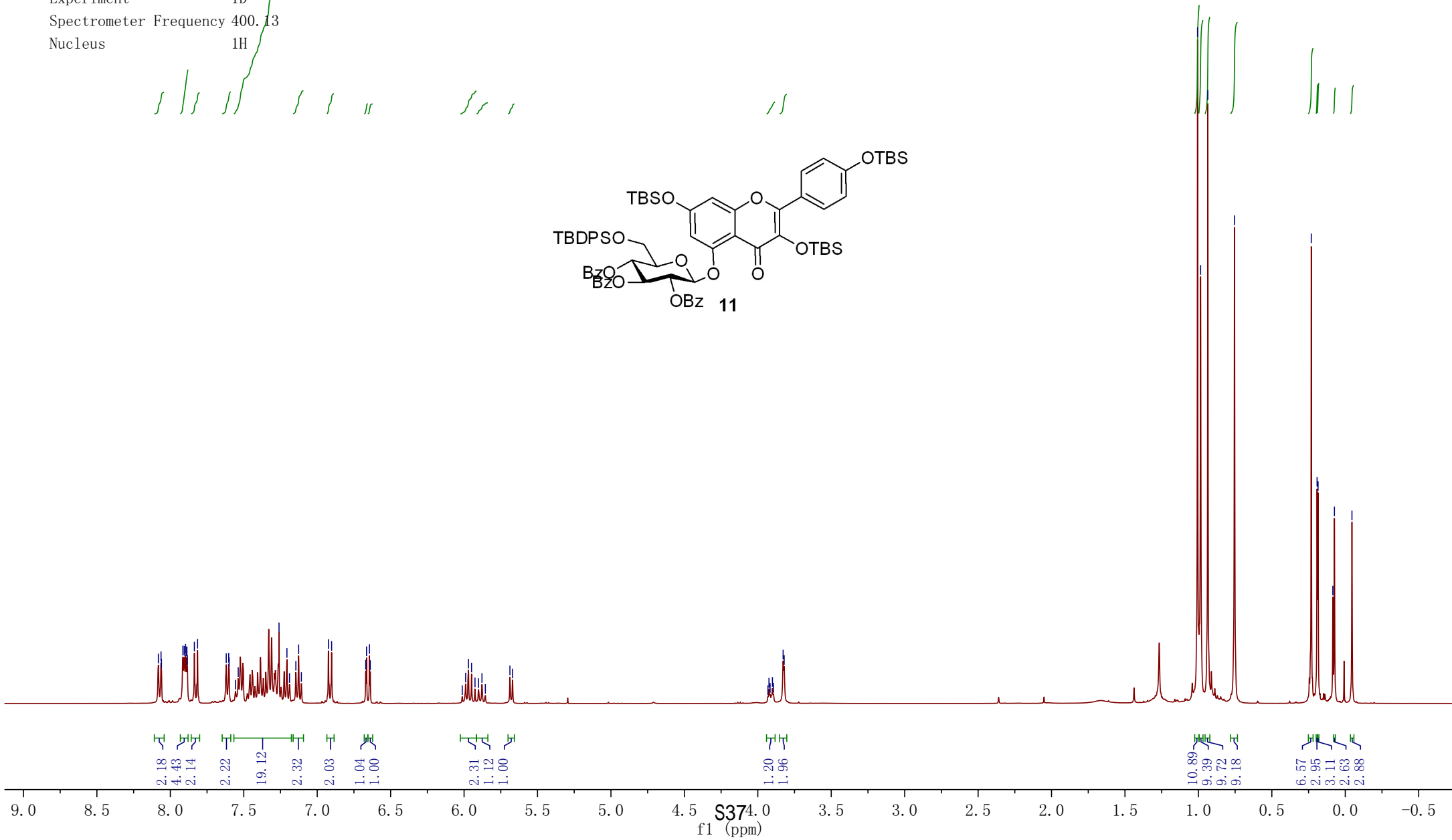
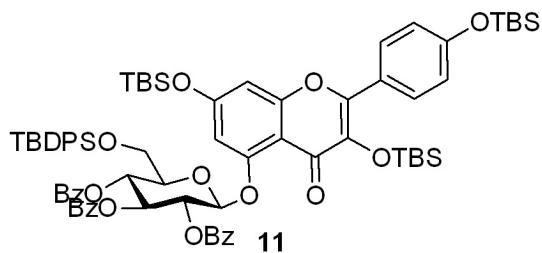
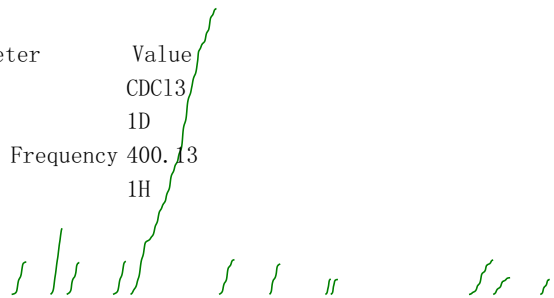
8.0814
8.0634
8.0604
7.9143
7.9050
7.8964
7.8931
7.8871
7.8840
7.8364
7.8146
7.6195
7.6028
7.5997
7.5564
7.5378
7.2600
7.2061
7.1453
7.1264
6.9237
6.8999
6.8696
6.6639
6.6444
6.6387
6.0125
5.9892
5.9703
5.9490
5.9256
5.9020
5.8781
5.8552
5.8777
5.6698

3.9310
3.9239
3.9164
3.9003
3.8932
3.8276
3.8207

1.0060
0.9851
0.9358
0.7542

0.2315
0.1920
0.1854
0.0847
0.0738
-0.0455

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	1H



172.5546
 165.9693
 165.2147
 164.8751
 159.4050
 157.6240
 157.0435
 156.4351

149.3830
 135.5580
 135.4155
 133.1299
 133.0157
 130.1649
 129.8585
 129.7720
 129.5160
 129.4639
 128.3255
 128.2276
 128.0733
 127.6129
 127.5304
 127.5248

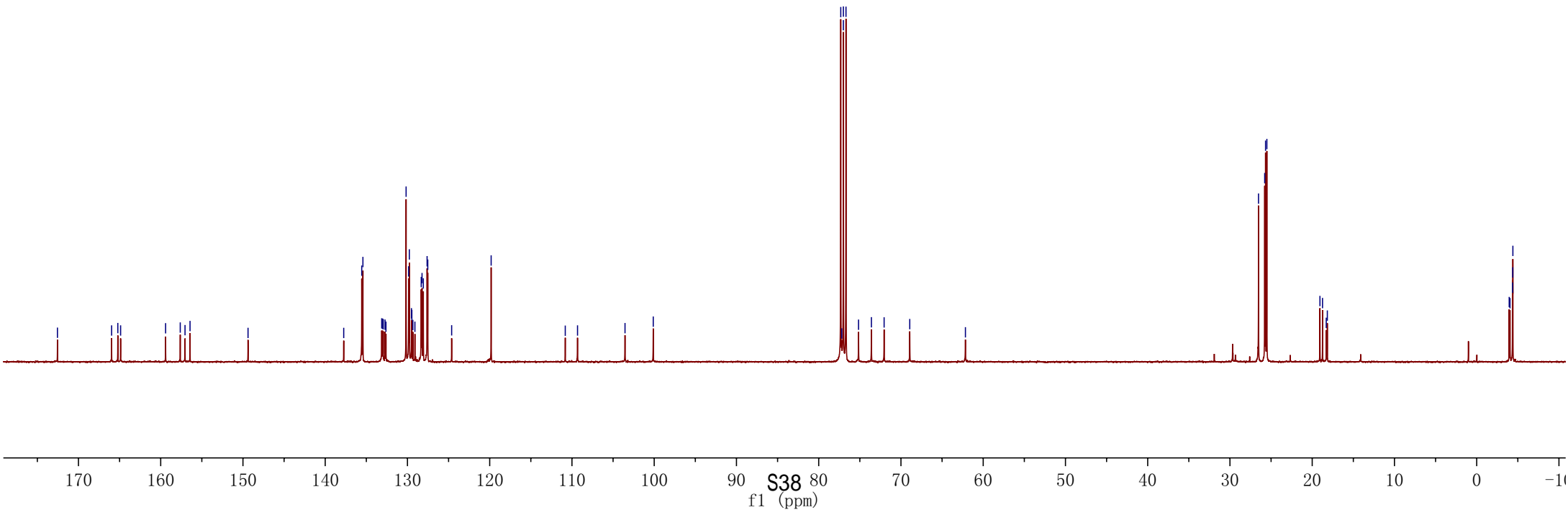
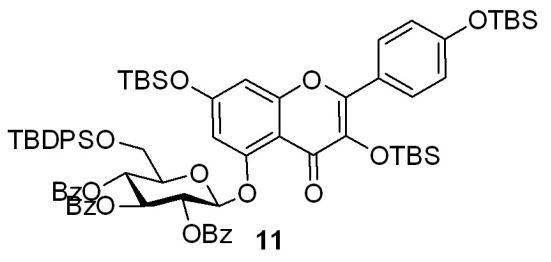
110.8140
 109.3231
 103.5495
 100.1166

77.3173
 77.2024
 77.0000
 76.9999
 76.6823
 75.1568
 73.5923
 72.0467
 68.9301
 62.1626

26.5261
 25.7757
 25.6726
 25.5122
 19.0589
 18.7455
 18.2924
 18.1614

3.9505
 4.0471
 4.3523
 4.3834
 4.3981

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C



8.1376
8.1192
8.0578
8.0393
7.9440
7.9254
7.8433
7.8245
7.8170
7.7951
7.6470
7.6285
7.6100
7.5424
7.2600
7.2383

6.9141
6.8924

6.6987
6.6260
6.6205

6.2473
6.2414
6.2214
6.0789

6.0666
5.6945
5.6769
5.6684
5.6488
5.6290

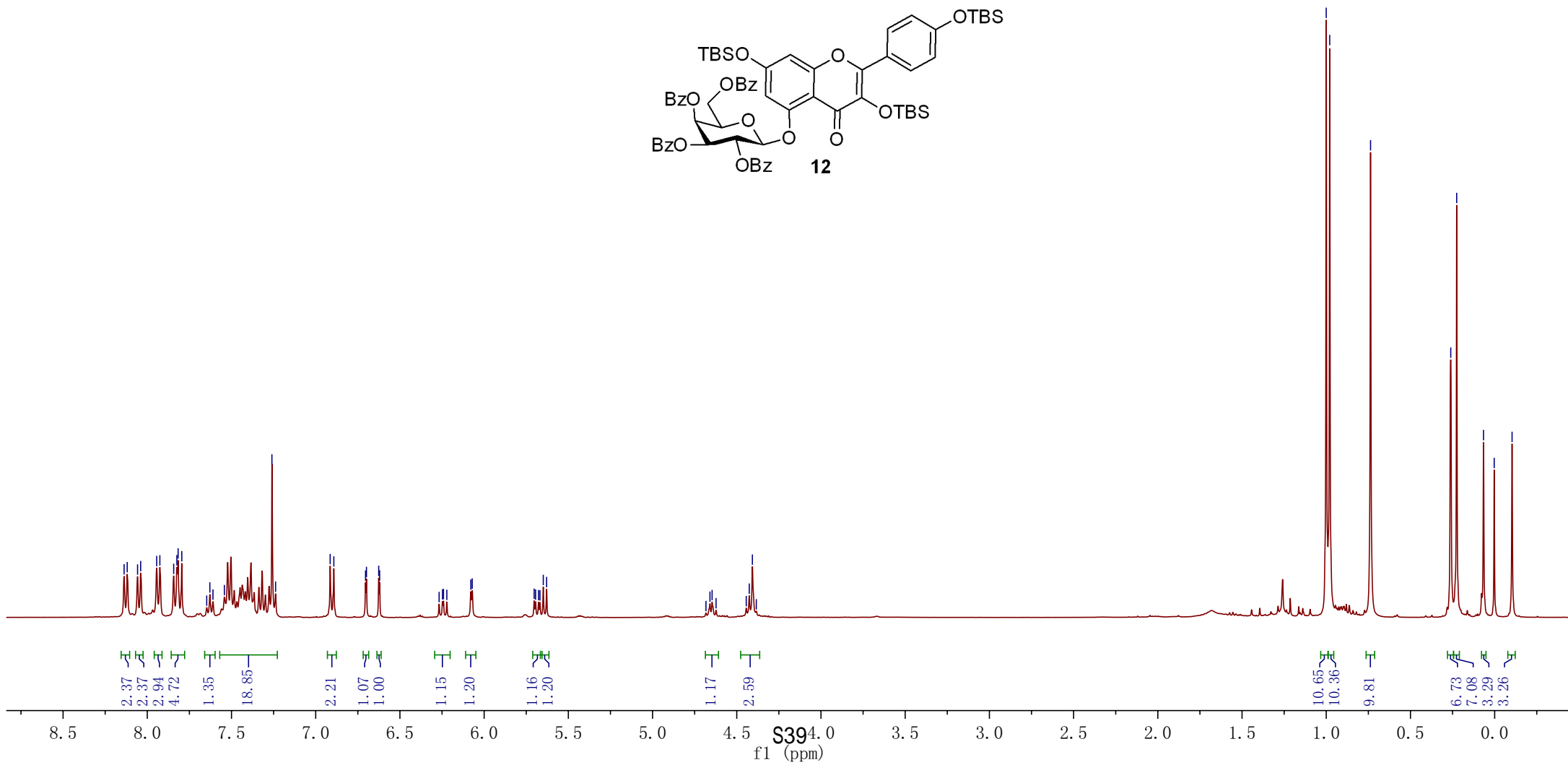
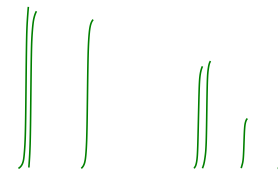
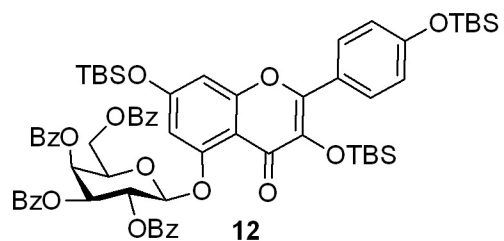
4.6829
4.6592
4.6464
4.6229
4.4437
4.4258
4.4072
4.3841

1.0001
0.9795

0.7370

0.2607
0.2254
0.0661
0.0027
-0.1033

Parameter	Value
Solvent	CDCl3
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	1H



172.5240
 165.9407
 165.6217
 165.2987
 159.4066
 157.6073
 157.0754
 156.3541
 149.4567

137.7299
 130.1611
 130.0836
 129.8242
 129.7341
 128.6140
 128.4020
 128.2583
 128.1131
 128.1177

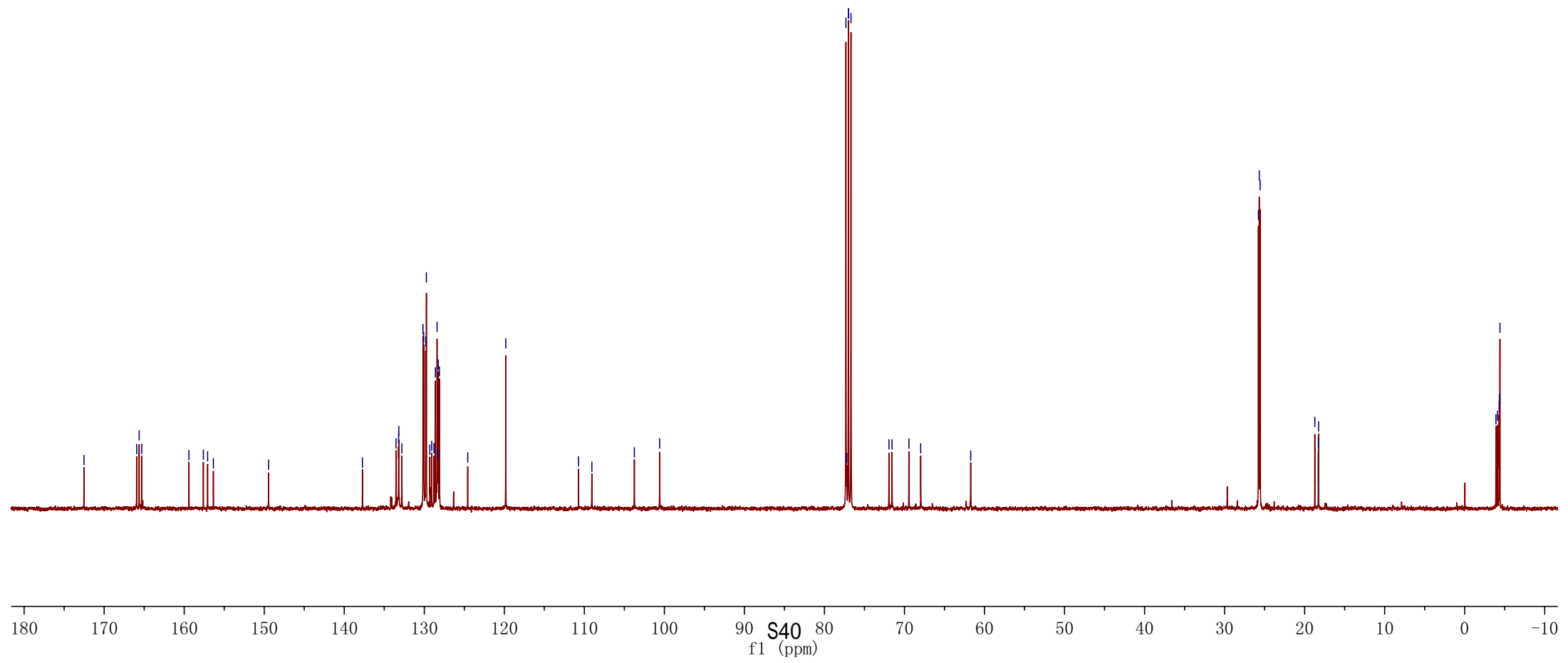
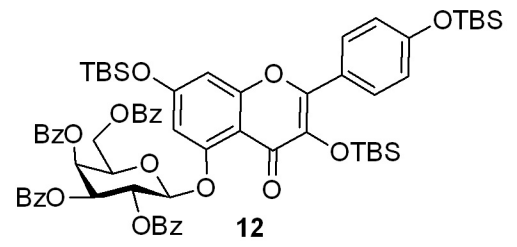
110.7243
 109.0590
 103.7510
 100.5911

77.3176
 77.2037
 77.0003
 77.0000
 76.6824
 71.9379
 71.5563
 69.4448
 67.9722
 61.7251

25.7706
 25.6674
 25.5576
 18.7253
 18.2864
 18.2553

-3.9032
 -4.1095
 -4.3098
 -4.3396
 -4.4044

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	¹³ C



8.1722
8.1543
8.0474
8.0292
7.9347
7.9129
7.8878
7.8697
7.5354
7.5161
7.4027
7.3834
7.2860
7.2663
7.2604
7.2509
7.2512
6.9295
6.6213
6.6162
6.5448
6.5397
6.5323
6.5068
6.1336
6.1291
6.1259
6.1254
5.8132
5.7884
5.7634

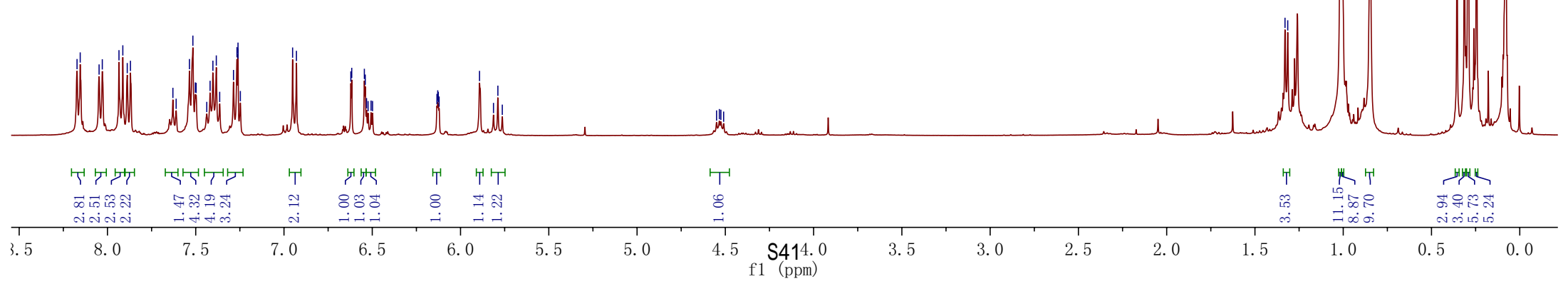
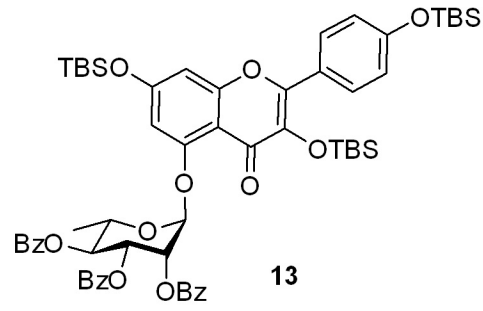
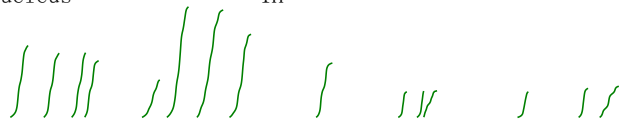
4.5496
4.5339
4.5253
4.5097

1.3298
1.3143

1.0131
1.0067
0.8474

0.3553
0.3136
0.2941
0.2908
0.2448
0.0800

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	1H



— 172.7287
 — 165.9621
 — 165.4809
 — 164.9201
 — 159.7063
 — 157.9198
 — 157.0669
 — 155.4782
 — 149.0835

— 138.0220
 — 130.1206
 — 129.9673
 — 129.8918
 — 129.7323
 — 129.5278
 — 128.5641
 — 128.3026
 — 128.1589
 — 128.0889

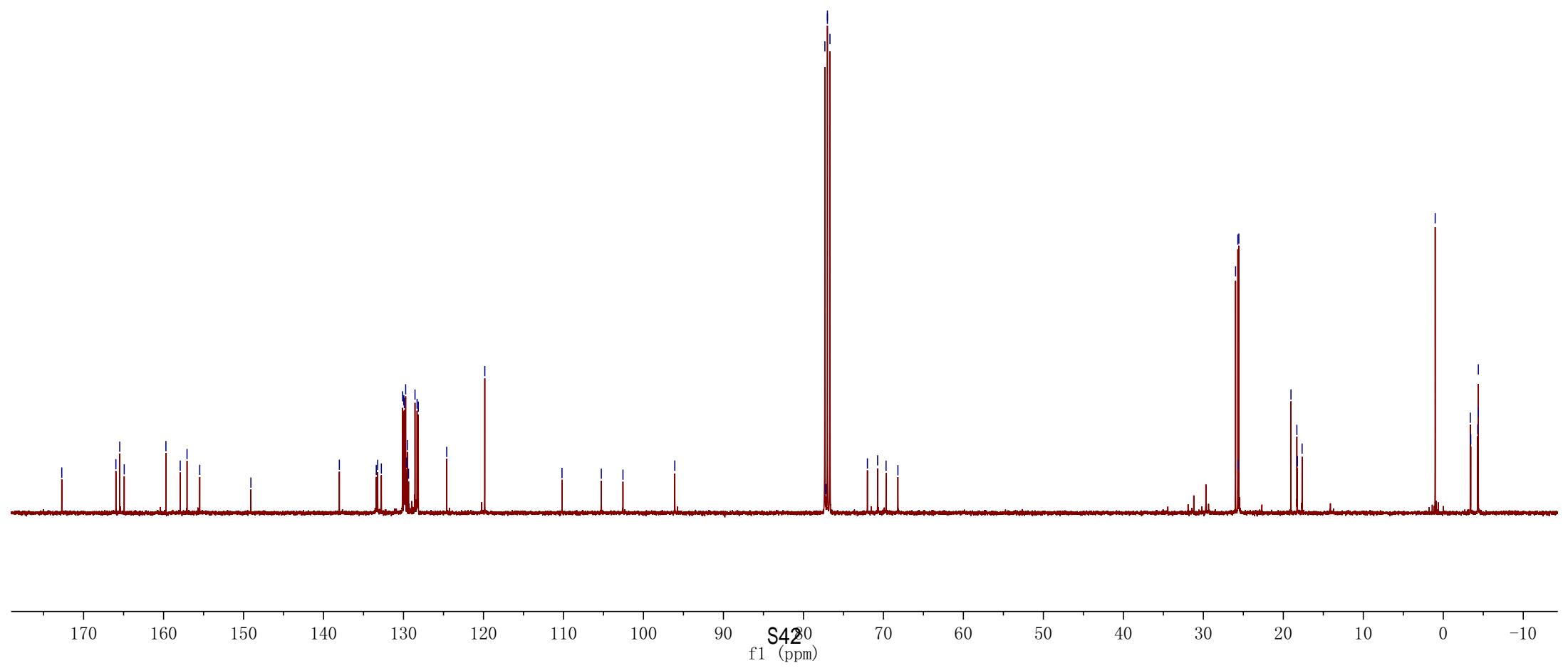
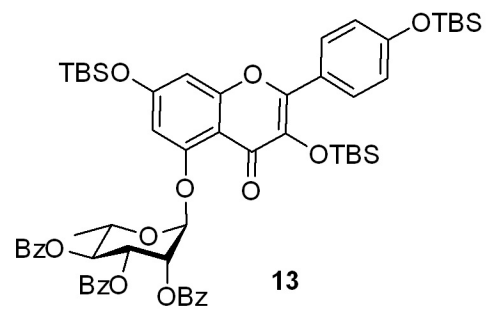
— 110.1843
 — 105.2709
 — 102.5634
 — 96.0846

— 77.3176
 — 77.2023
 — 77.0003
 — 77.0000
 — 76.8821
 — 72.0003
 — 70.7216
 — 69.6673
 — 68.1869

— 25.9687
 — 25.6844
 — 25.6640
 — 25.5617
 — 19.0429
 — 18.3064
 — 18.2416
 — 17.6521

— 1.0108
 — 3.3778
 — 3.4353
 — 4.3035
 — 4.3622
 — 4.3812

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C



Parameter Value
 Solvent CDC13
 Experiment 1D
 Spectrometer Frequency 400.13
 Nucleus 1H

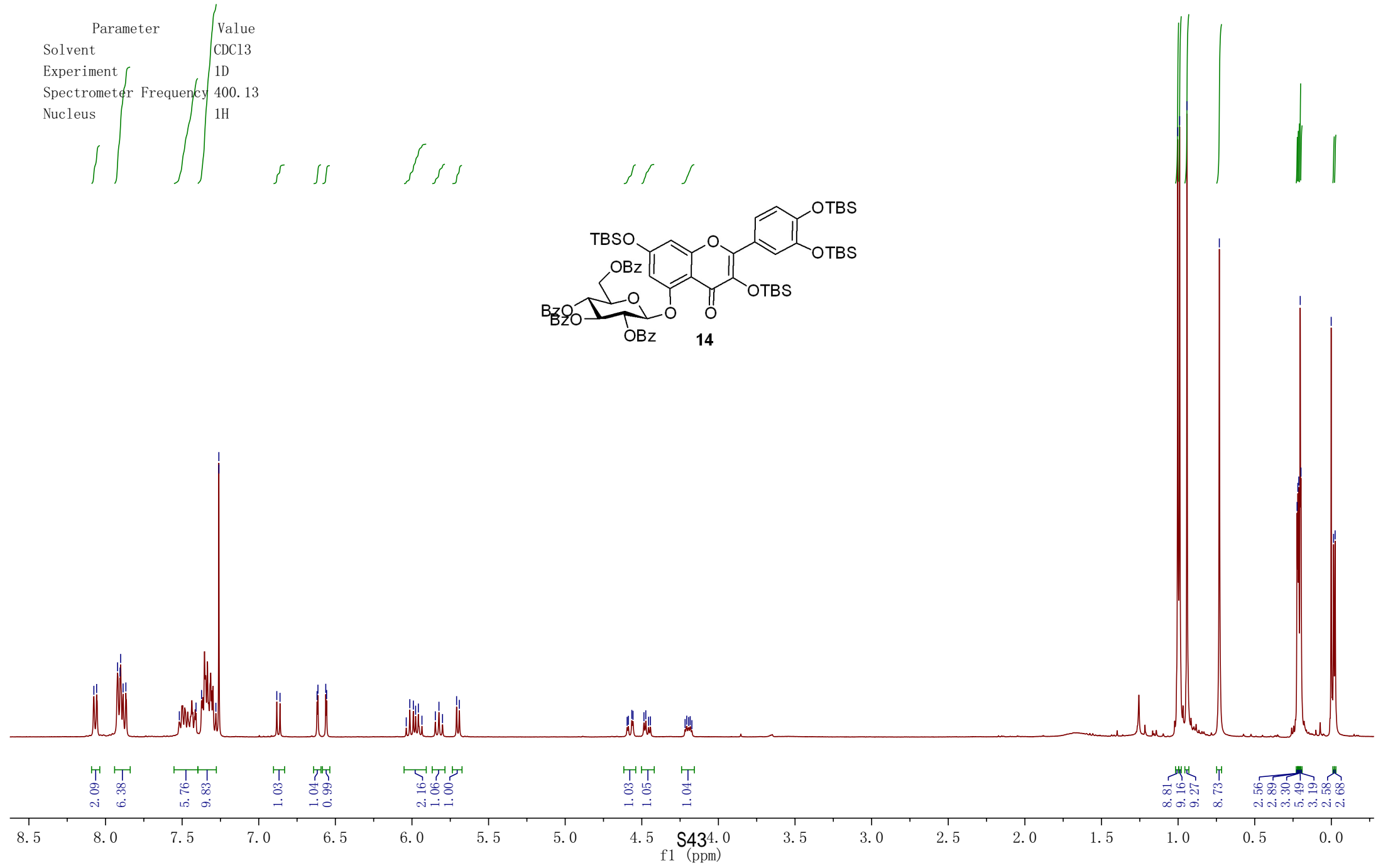
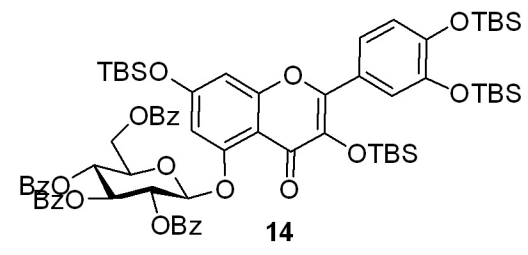
8.0760
8.0579
7.9212
7.9050
7.9012
7.8852
7.8671
7.5181
7.4092
7.3732
7.2798
7.2602
7.2600

6.8821
6.8611
6.6192
6.6136
6.5626
6.5569
6.0373
6.0140
5.9911
5.9762
5.9583
5.9348
5.8476
5.8238
5.8005
5.7087
5.6908

4.5957
4.5875
4.5652
4.5574
4.4860
4.4739
4.4556
4.4436
4.2175
4.2066
4.1938
4.1840
4.1731

1.0024
0.9897
0.9418
0.7308

0.2234
0.2184
0.2124
0.2030
0.1979
0.0008
0.0148
0.0248



172.6151
 166.0082
 165.8018
 165.2496
 165.1221
 159.2897
 157.5365
 155.8641
 149.6337
 148.6240
 146.5785

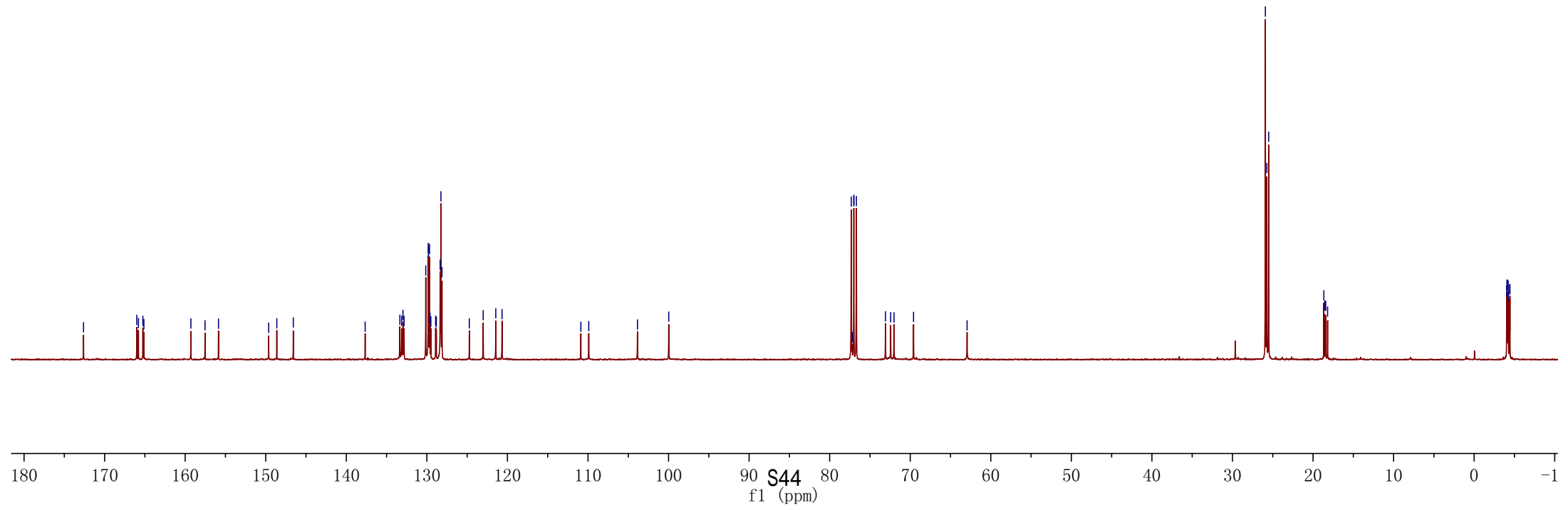
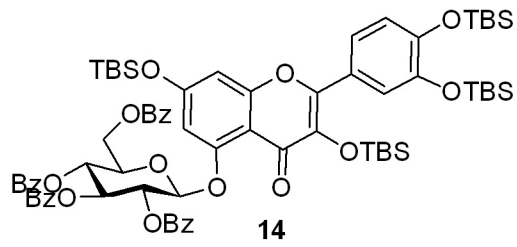
137.6591
 132.9639
 130.1343
 129.8262
 129.7987
 129.6660
 129.6027
 128.3480
 128.2536
 128.1242
 123.0082
 121.4447
 118.6897
 109.9027
 103.8578
 99.9744

77.3178
 77.2022
 77.0003
 77.0000
 76.6824
 73.0729
 72.4270
 72.0141
 69.5898
 62.9436

25.9188
 25.7361
 25.5051
 18.6587
 18.5456
 18.4274
 18.1937

4.0343
 4.0706
 4.1121
 4.1812
 4.2117
 4.2467
 4.4081
 4.4410

Parameter Value
 Solvent CDC13
 Experiment 1D
 Spectrometer Frequency 100.61
 Nucleus 13C



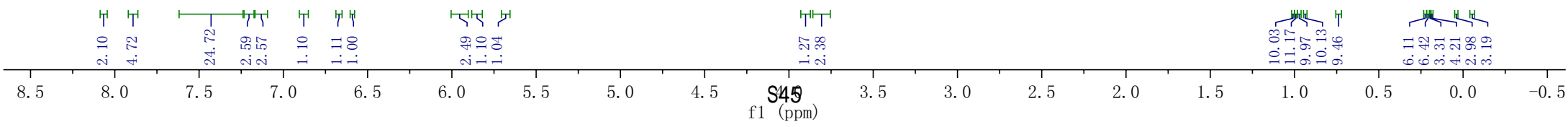
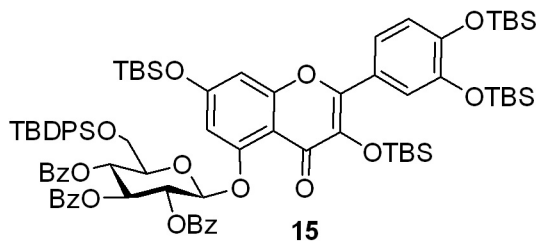
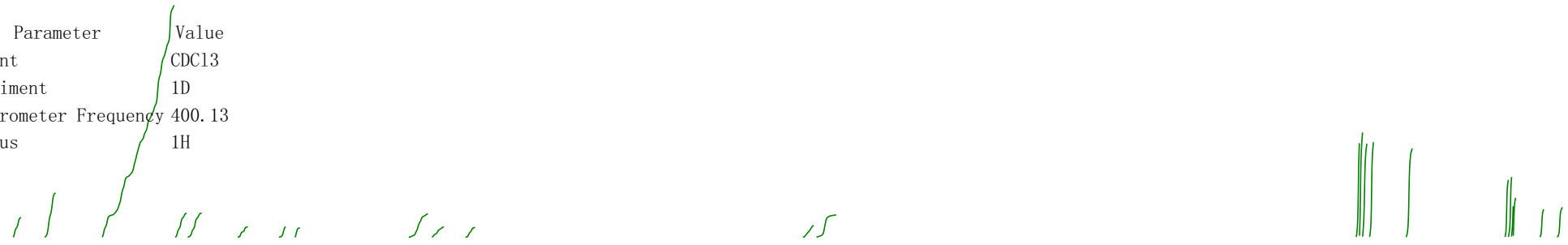
8.0792
8.0605
7.9001
7.8803
7.6093
7.5922
7.5318
7.5176
7.2600
7.2038
7.1474
6.8895
6.8685
6.6668
6.6615
6.5981
6.5928
5.9911
5.9683
5.9557
5.9386
5.9151
5.8759
5.8525
5.8296
5.6903
5.6727

3.9130
3.8891
3.8176
3.8113

1.0059
0.9947
0.9735
0.9363
0.7396

0.2252
0.2050
0.1924
0.1877
0.0404
0.0042
-0.0541

Parameter Value
Solvent CDC13
Experiment 1D
Spectrometer Frequency 400.13
Nucleus 1H



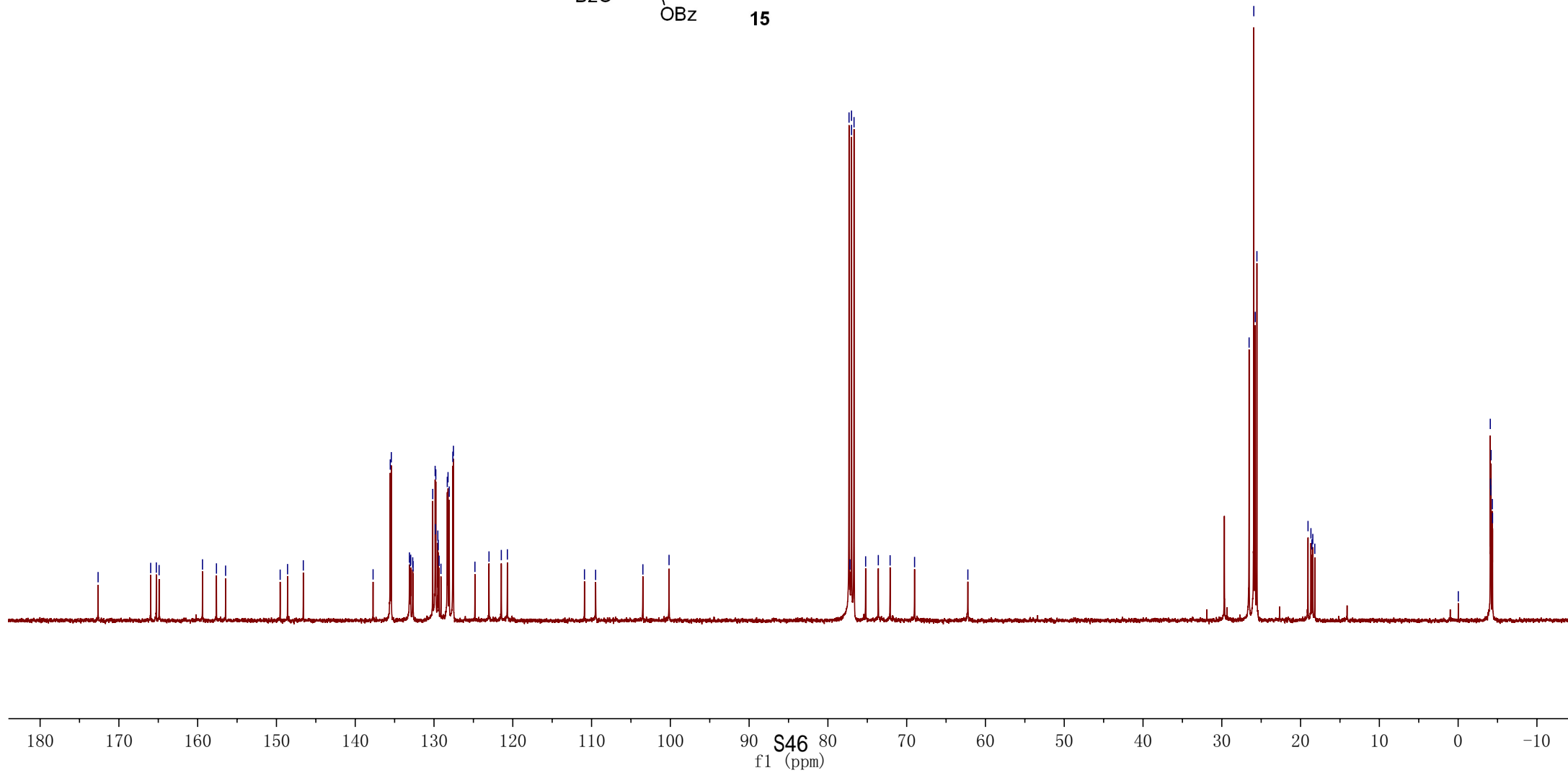
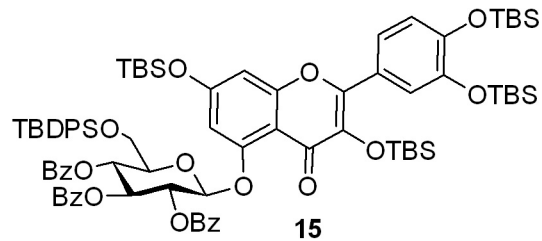
172.6408
 165.9638
 165.2497
 164.8952
 159.3881
 157.6158
 156.4546
 149.5288
 148.5895
 146.5905
 135.5538
 135.4199
 130.1639
 129.8561
 129.8149
 129.7711
 129.5163
 129.4656
 128.3149
 128.2202
 128.0699
 127.6139
 127.5329
 123.0193
 121.4556
 118.8878
 118.8878
 109.4846
 103.4861
 100.1645

77.3177
 77.2024
 77.0003
 77.0000
 76.6826
 75.2094
 73.6011
 72.1030
 68.9988
 62.2331

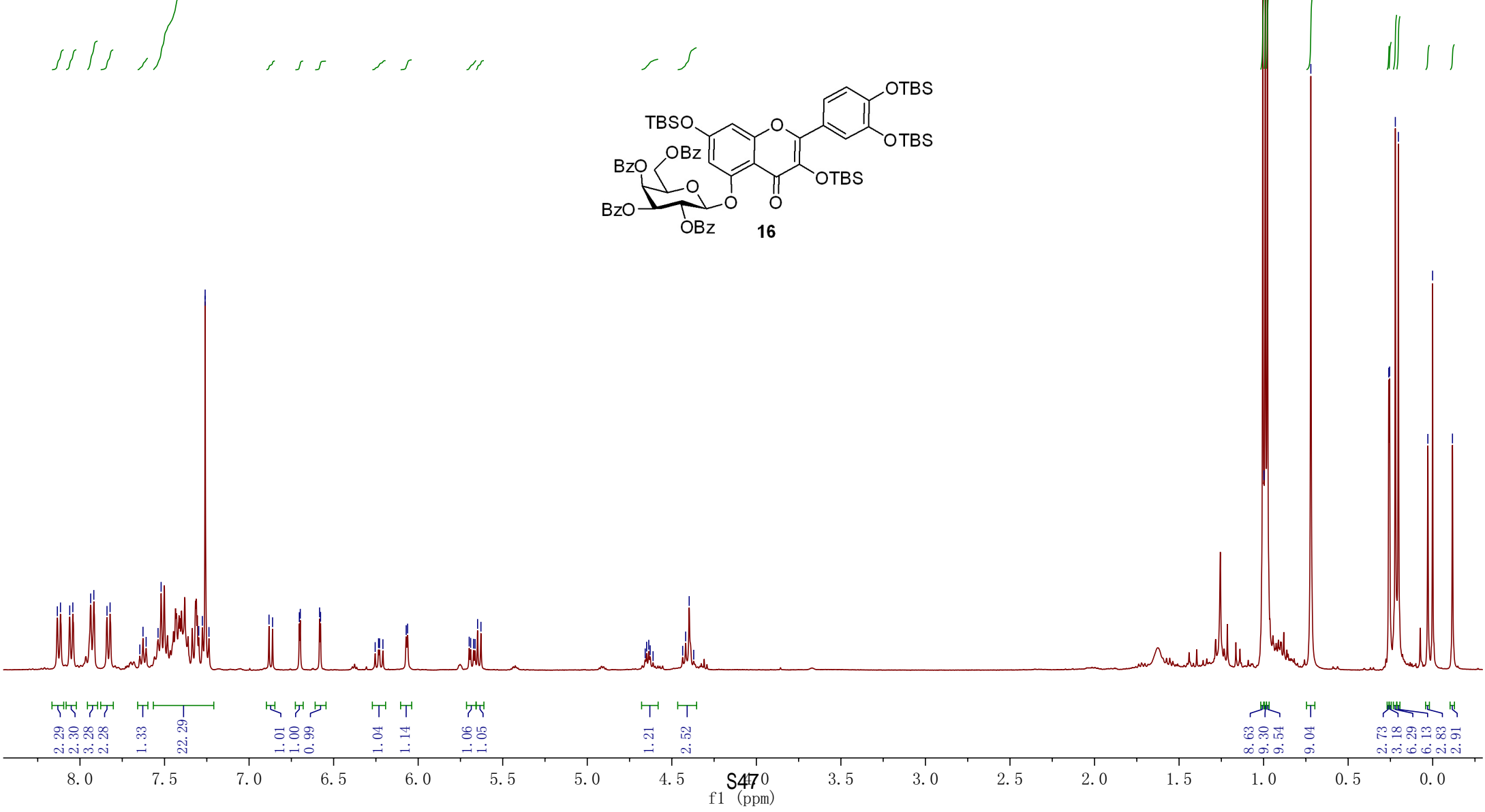
26.5334
 25.9370
 25.7539
 25.5415
 19.0553
 18.6853
 18.5607
 18.4486
 18.1939

-0.0220
 -4.0806
 -4.1124
 -4.1471
 -4.1793
 -4.3450
 -4.3703

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C



Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	¹ H



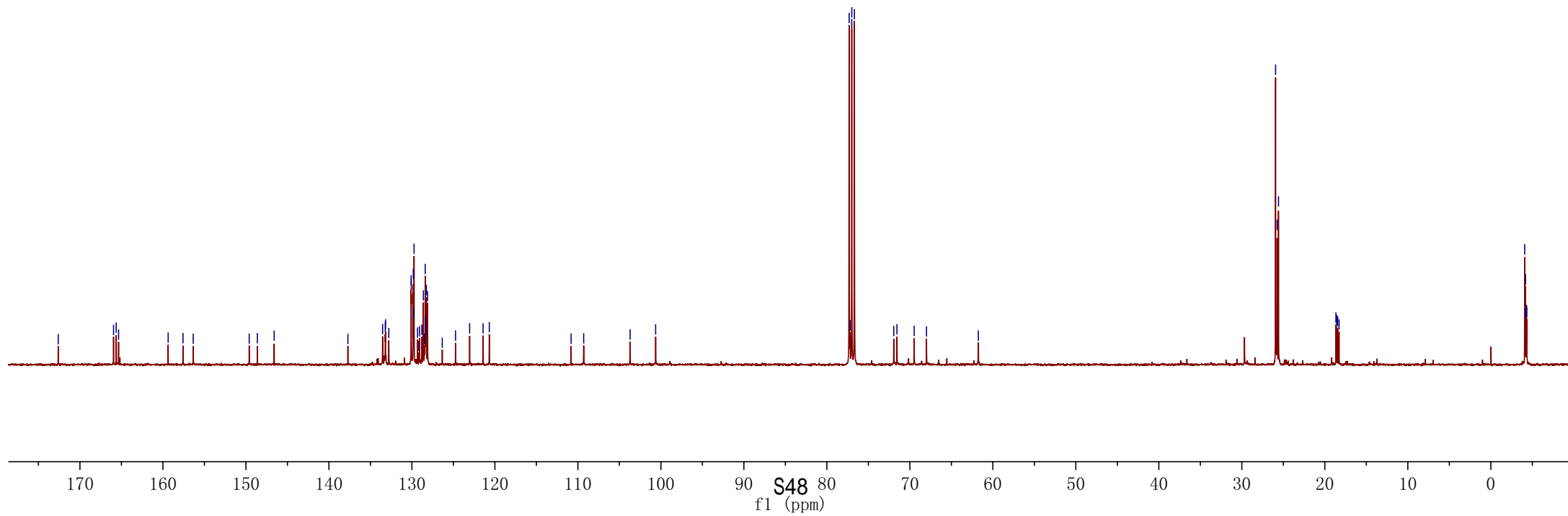
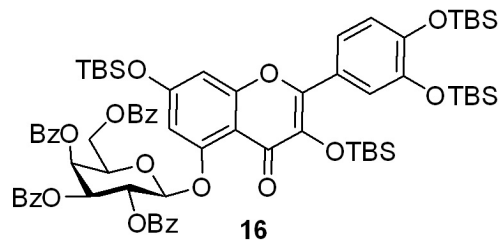
172.6131
 165.9490
 165.6339
 165.3427
 159.3708
 157.5817
 156.3495
 149.6037
 148.6226
 146.5953
 137.7118
 133.2105
 133.1775
 130.0957
 130.0725
 129.8323
 129.7848
 129.7401
 128.6192
 128.3993
 128.3582
 128.2625
 128.1148
 118.8189
 109.3012
 103.7064
 100.6323

77.3175
 77.2028
 77.0000
 76.9996
 76.6825
 71.9396
 71.5542
 69.4833
 67.9966
 61.7503

25.9360
 25.7418
 25.5837
 18.6650
 18.5642
 18.4538
 18.2873

-4.0817
 -4.1853
 -4.2295
 -4.3029
 -4.3327

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	¹³ C



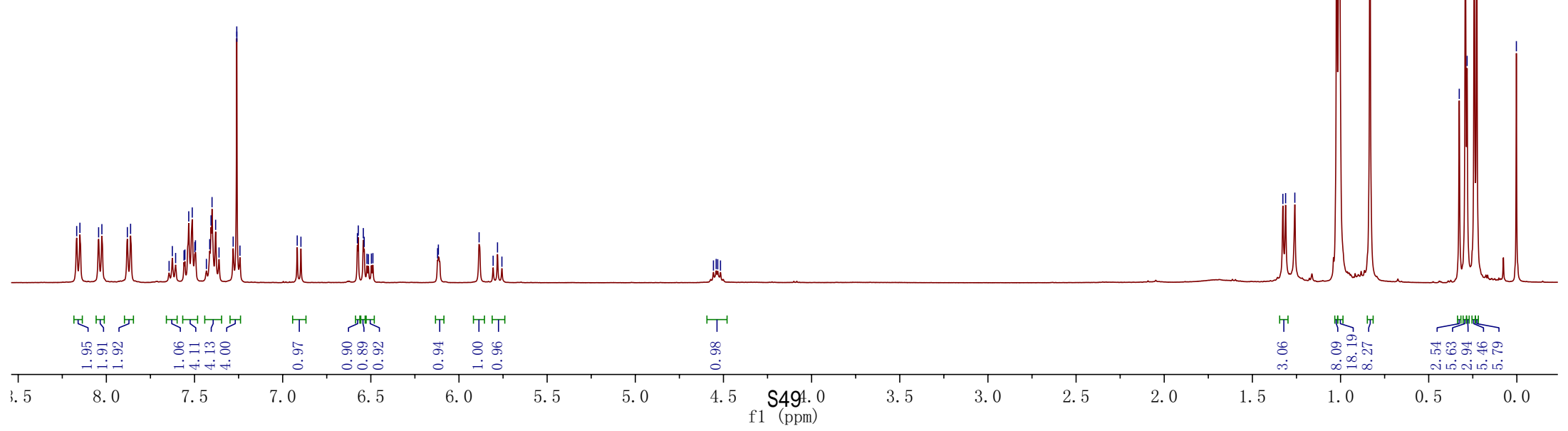
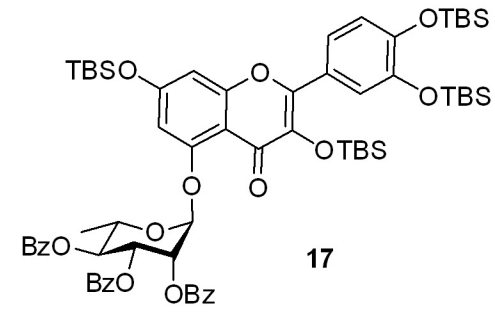
8.1682
8.1499
8.0439
8.0254
7.8809
7.8626
7.5328
7.5129
7.4063
7.4006
7.3802
7.2808
7.2603
6.9999
6.8964
6.5762
6.5712
6.5426
6.5377
6.4966
6.4882
6.1213
6.1169
5.8858
5.8064
5.7815
5.7565

4.5568
4.5413
4.5325
4.5108

1.3271
1.3116
1.2593
1.0216
1.0073
0.8331

0.3267
0.2921
0.2822
0.2417
0.2276
0.0028

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	¹ H



172.8146
 165.9662
 165.4809
 164.9270
 159.6899
 157.9067
 155.5571
 149.2280
 148.6012
 146.6189

138.0285
 133.3929
 133.2127
 129.9675
 129.8904
 129.7312
 129.6364
 129.4041
 128.5575
 128.2981
 128.1432
 123.0182
 121.3423
 119.9887
 119.9887

105.2136
 102.4329

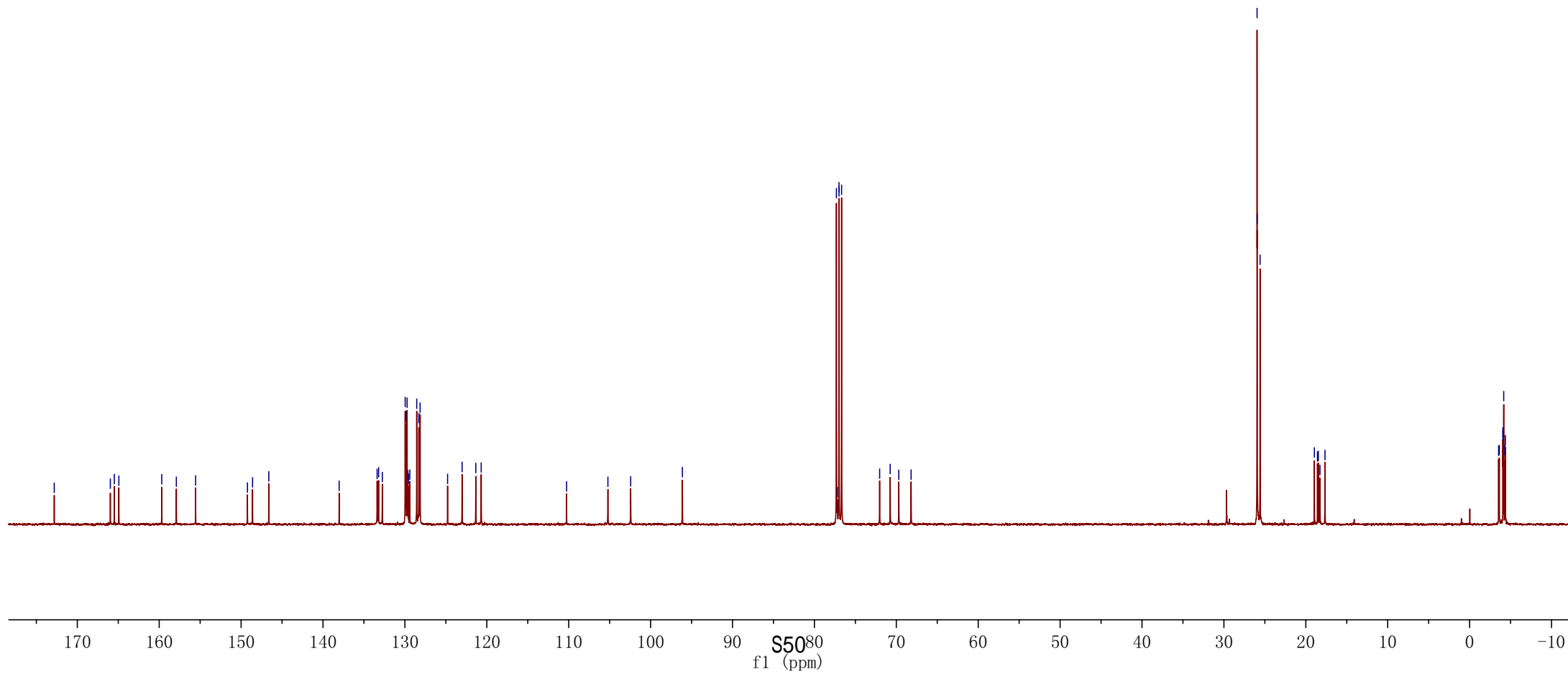
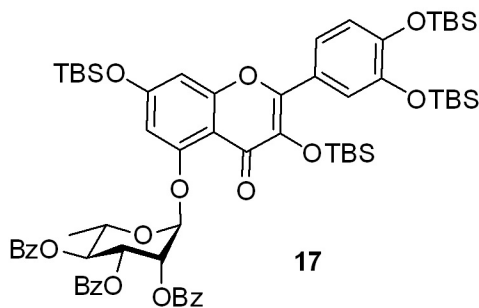
96.1218

77.3169
 77.2026
 77.0000
 76.9997
 76.6818
 72.0360
 70.7484
 69.6958
 68.1949

25.9536
 25.9359
 25.5846
 18.9573
 18.5769
 18.4747
 18.2687
 17.6584

-3.5395
 -3.6239
 -4.0554
 -4.0738
 -4.1633
 -4.3062
 -4.3613

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C



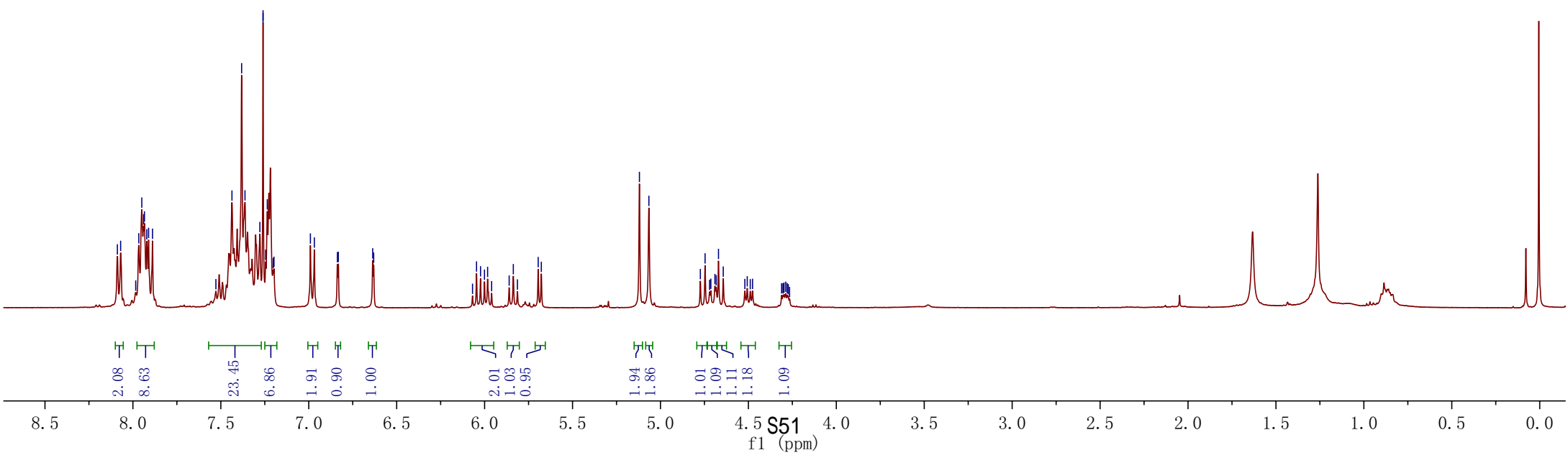
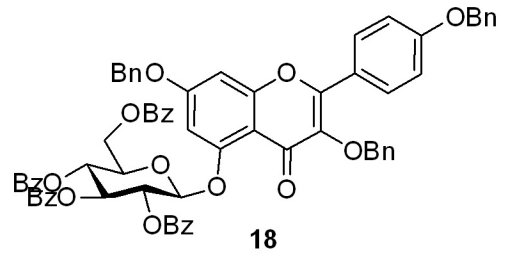
8.0882
8.0697
7.9840
7.9665
7.9494
7.9389
7.9344
7.9211
7.9107
7.8884

7.4367
7.3817
7.3625
7.2600
7.2599
6.9908
6.9682
6.8373
6.8316
6.6364
6.6307

6.0687
6.0459
6.0232
6.0007
5.9829
5.9600
5.8603
5.8367
5.8133
5.6952
5.6775

5.1196
5.0658
4.7731
4.7462
4.7207
4.7134
4.6903
4.6831
4.6699
4.6429
4.5201
4.5065
4.4894
4.4764
4.3110
4.3032
4.2974
4.2875
4.2789
4.2733
4.2657

Parameter Value
Solvent CDCl3
Experiment 1D
Spectrometer Frequency 400.13
Nucleus 1H



172.6858
166.0315
165.8040
165.2922
165.1604
162.0217
160.1797
157.8092
156.6317
153.3034

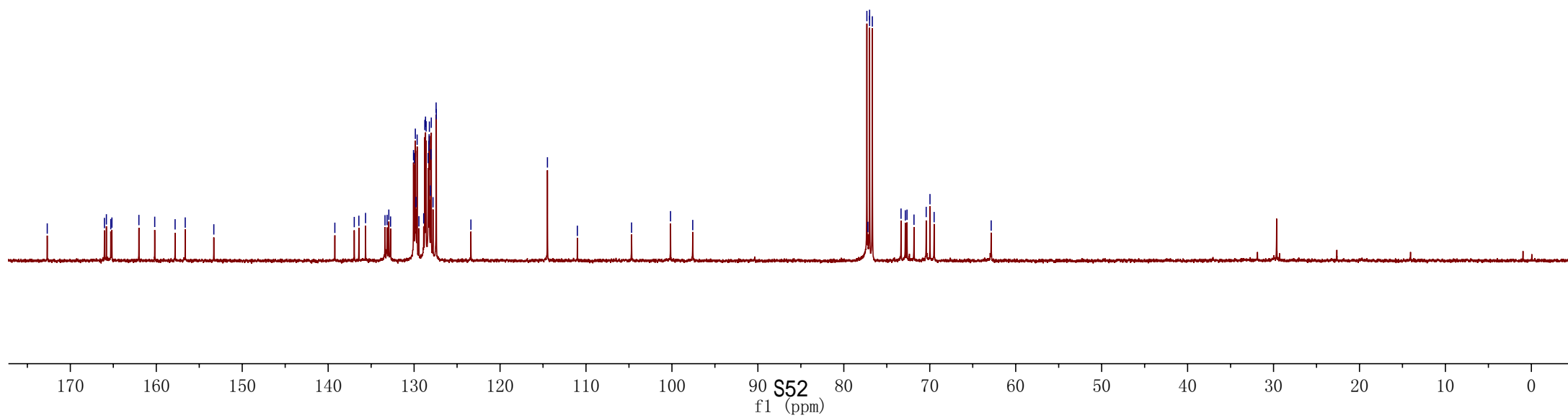
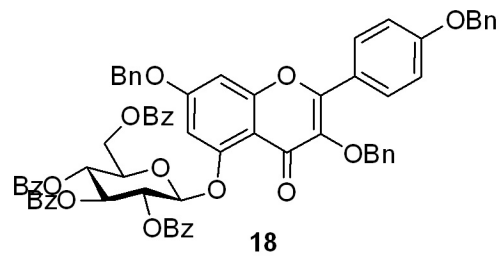
130.0682
129.8577
129.6467
128.7536
128.6718
128.6001
128.3669
128.2885
128.2508
128.2220
128.0328
128.0006
127.4377
127.4152
123.3898

114.4864
111.0033

104.6963
100.1622
97.5793

77.3179
77.2031
77.0005
77.0000
76.6825
73.3438
72.8450
72.6479
71.8363
70.4157
69.9753
69.4927
62.8530

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	¹³ C



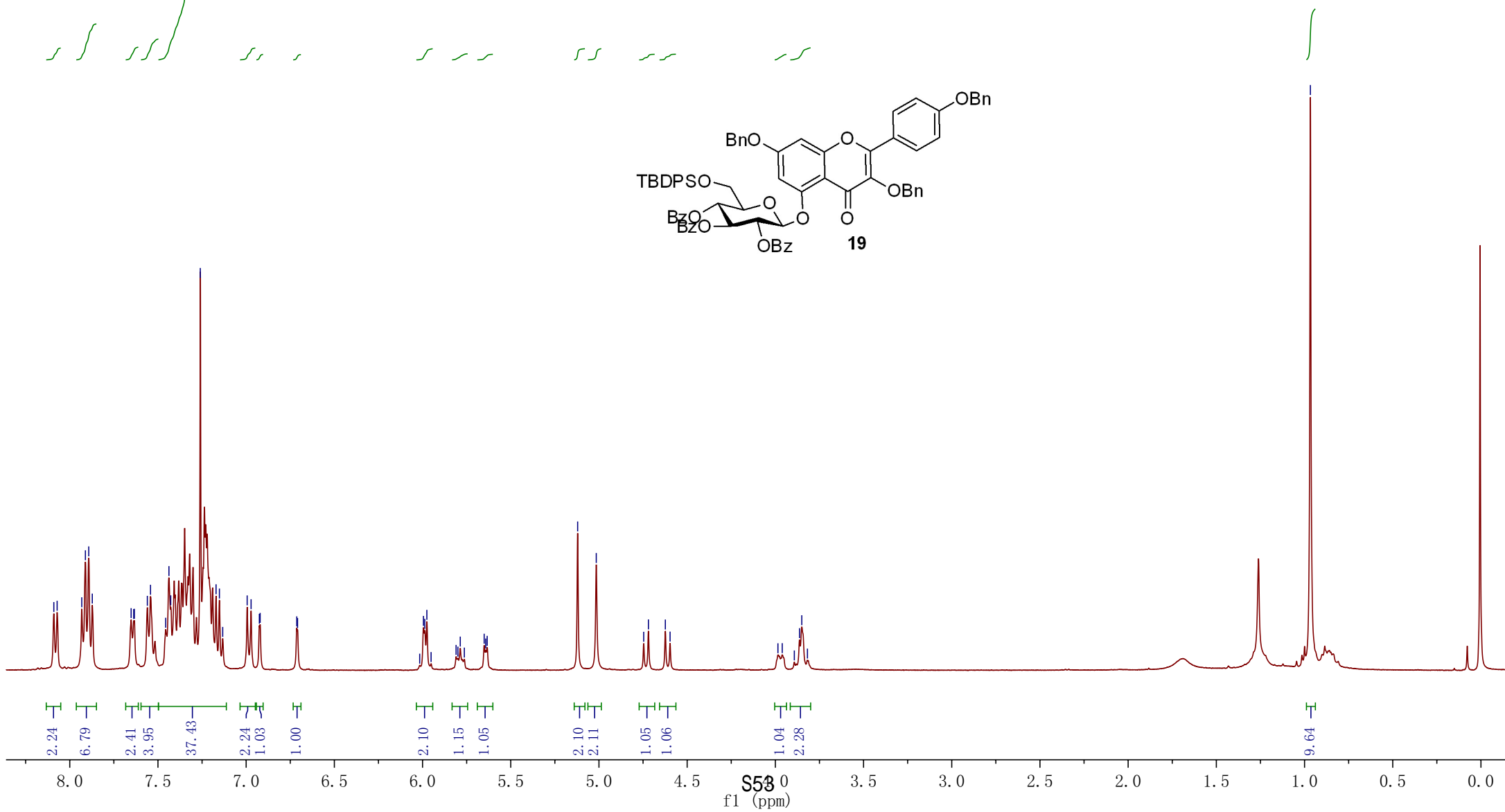
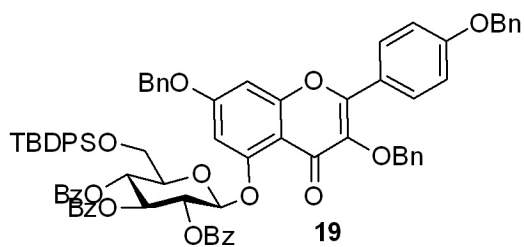
8.0903
8.0716
7.9319
7.9113
7.8924
7.8723
7.6521
7.6337
7.5602
7.5422
7.4378
7.4276
7.2600
7.1707
7.1516
6.9943
6.9731
6.7087

6.0163
5.9949
5.9874
5.9756
5.9516
5.8099
5.7996
5.7862
5.7631
5.6507
5.6420
5.6337
5.1208
5.0152
4.7463
4.7196
4.6236
4.5968

3.9854
3.9610
3.8924
3.8630
3.8501
3.8181

0.9669

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	1H



172.6515
165.9300
165.3902
164.9474
162.1567
160.1708
157.9617
157.1163
153.2009

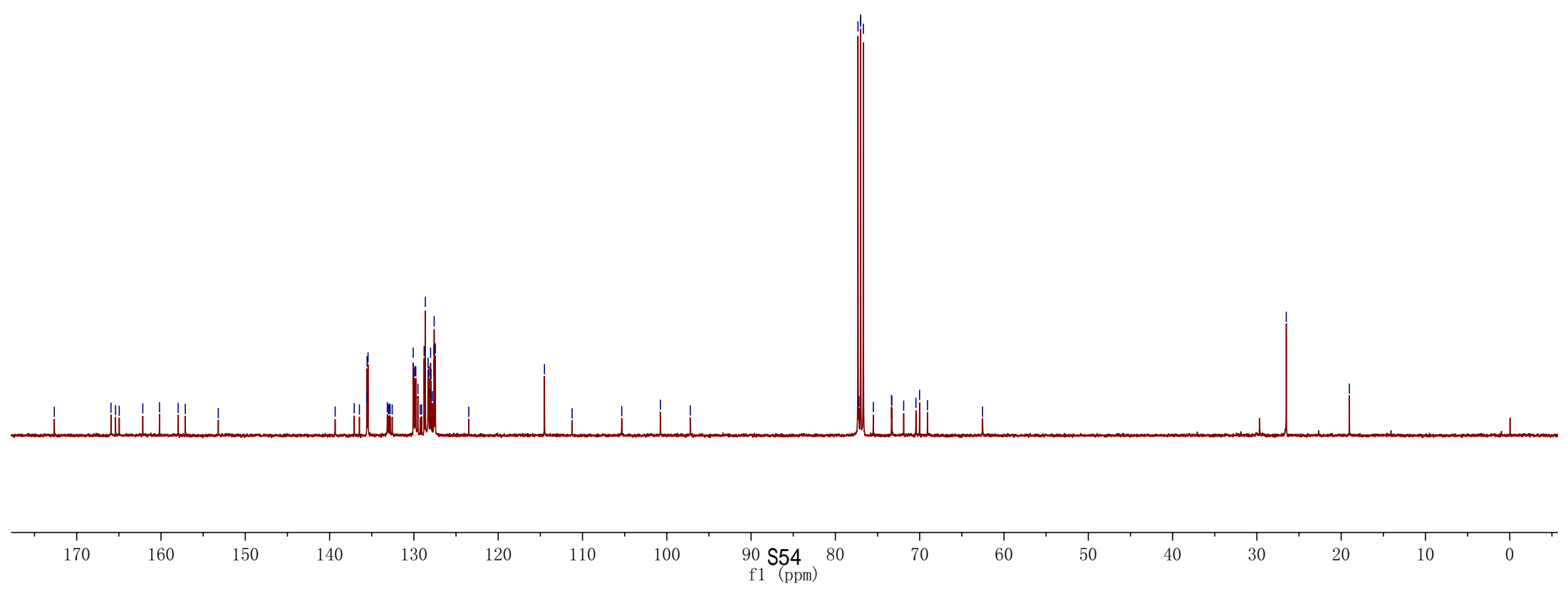
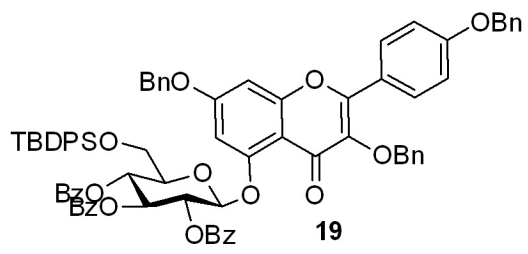
135.5491
135.4379
130.0754
130.0160
129.8840
129.7734
128.7817
128.6409
128.3205
128.2284
128.0191
127.9736
127.6196
127.5913
127.4456
123.4896

114.5119
111.2304
105.3417
100.7454
97.2017

77.3182
77.2034
77.0001
77.0000
76.6830
75.5003
73.3393
73.3033
71.8981
70.4399
70.0113
69.0747
62.5409

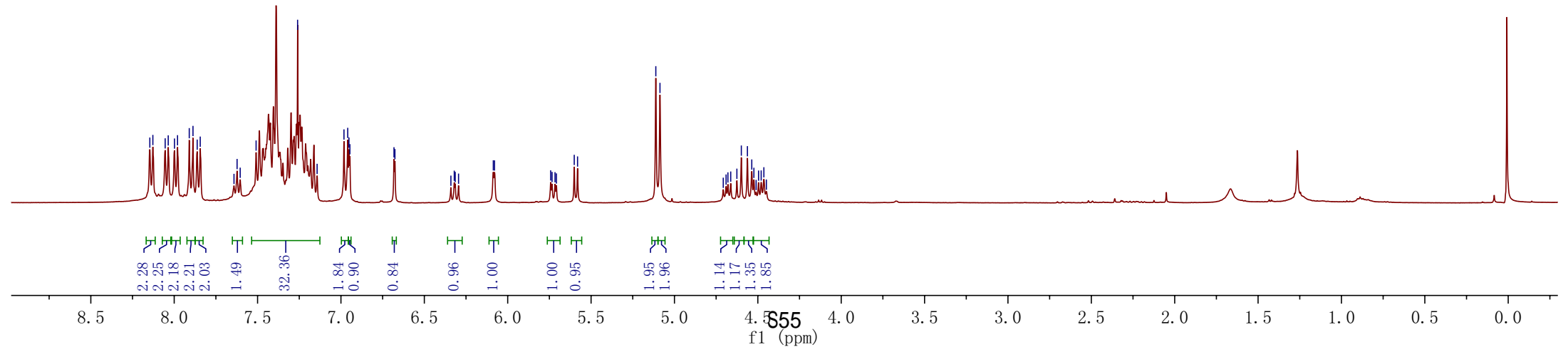
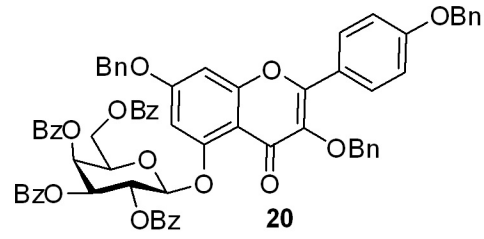
26.5140
19.0259

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	¹³ C



8.1462
8.1280
8.0541
8.0358
7.9982
7.9800
7.9097
7.8874
7.8622
7.8439
7.6229
7.6043
7.5889
7.5800
7.1429
6.9819
6.9594
6.9521
6.9464
6.6820
6.6763
6.3406
6.3205
6.3148
6.2947
6.0864
6.0791
5.7424
5.7340
5.7163
5.7078
5.6010
5.5811
5.1117
5.0868
4.7073
4.6903
4.6794
4.6626
4.6256
4.5989
4.5624
4.5363
4.5236
4.5102
4.4956
4.4799
4.4637
4.4488

Parameter Value
Solvent CDC13
Experiment 1D
Spectrometer Frequency 400.13
Nucleus 1H

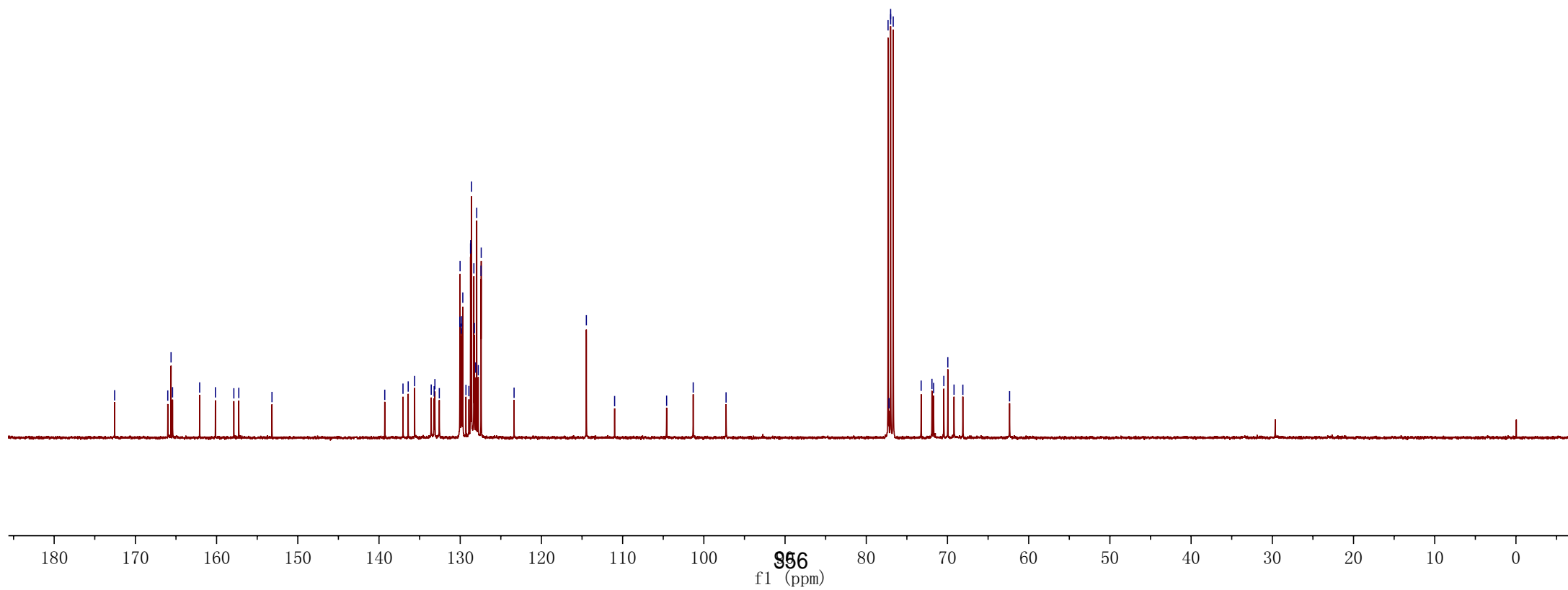
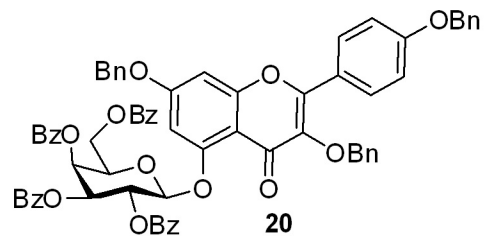


172.5536
 166.0108
 165.6068
 165.4217
 162.0846
 160.1461
 157.8746
 157.2657
 153.1796
 130.0445
 130.0175
 129.8698
 129.8199
 129.6827
 128.7320
 128.7125
 128.6007
 128.3188
 128.2583
 128.0947
 127.9667
 127.4368
 127.4173
 123.3676

114.4693
 110.9876
 104.5836
 101.3110
 97.2641

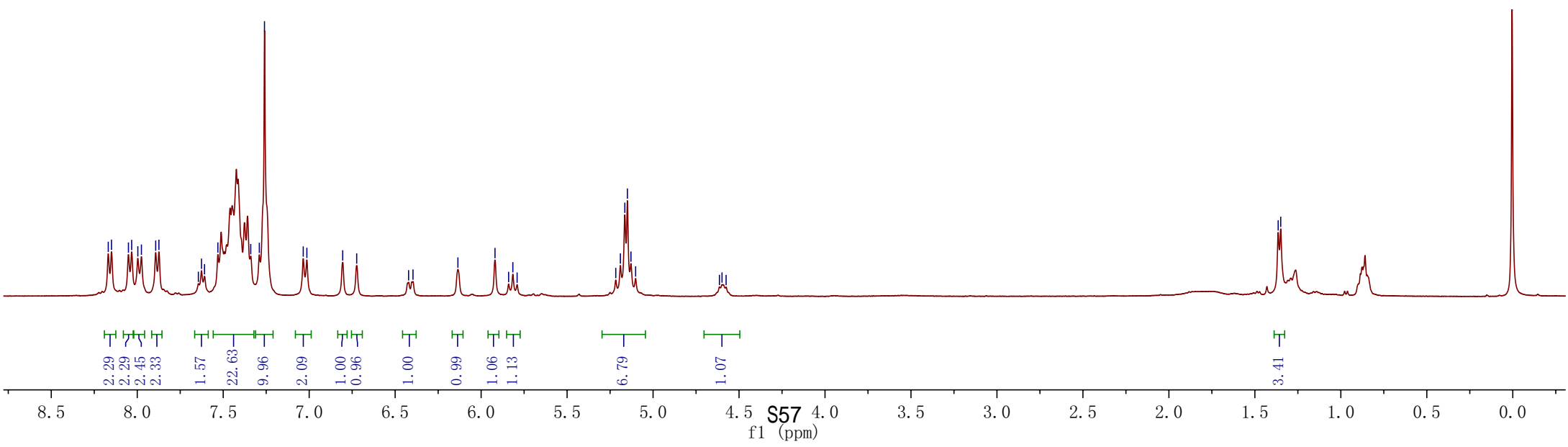
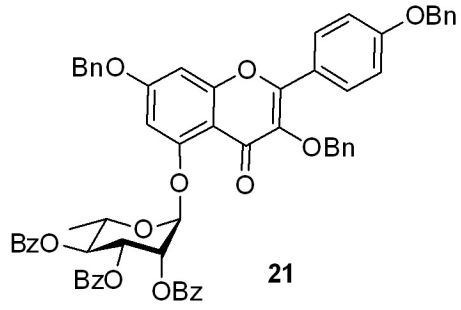
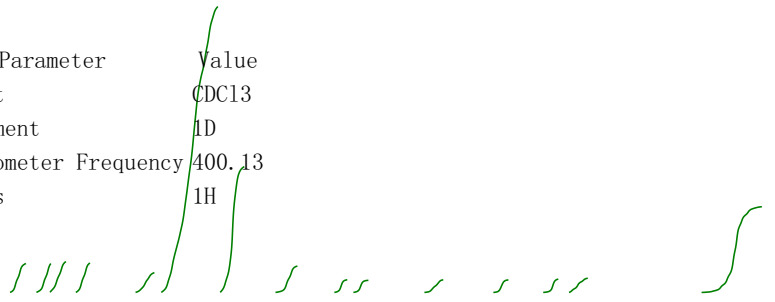
77.3170
 77.2027
 77.0000
 76.9999
 76.6816
 73.2424
 71.9124
 71.7063
 70.4488
 69.9582
 69.1937
 68.1061
 62.3529

Parameter	Value
Solvent	CDCl ₃
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	¹³ C



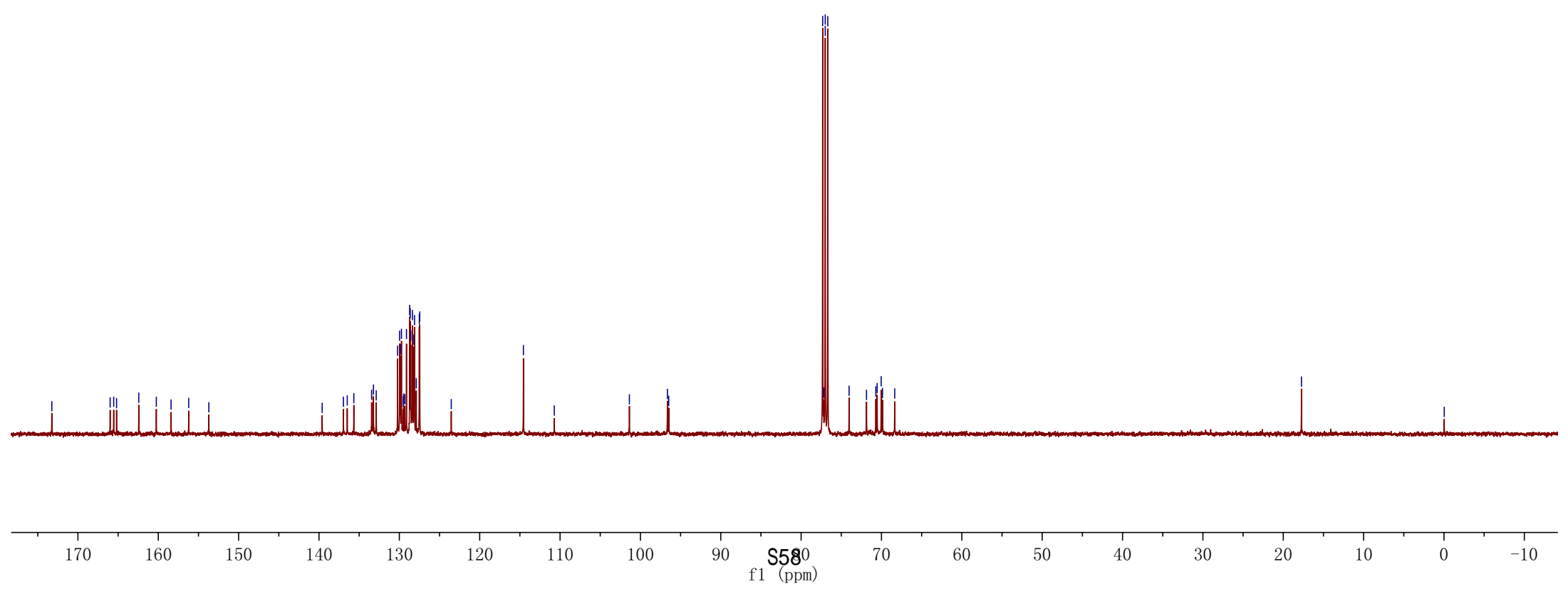
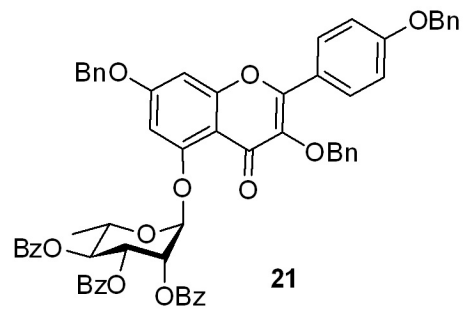
Parameter	Value
Solvent	CDCl3
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	1H

8.1685
8.1497
8.0511
8.0324
7.9966
7.9757
7.8927
7.8739
7.6262
7.6087
7.5368
7.2900
7.2600
7.0345
7.0134
6.8050
6.7237
6.4219
6.3962
6.1351
5.9193
5.8401
5.8155
5.7907
5.2169
5.1901
5.1643
5.1492
5.1286
5.1015
4.6141
4.5990
4.5753
1.3644
1.3497



— 173.2490
 — 165.9896
 — 165.5460
 — 165.1921
 — 162.4278
 — 160.2437
 — 158.4089
 — 156.2124
 — 153.7032
 — 130.2217
 — 129.9701
 — 129.8728
 — 129.7359
 — 129.1104
 — 128.7221
 — 128.6473
 — 128.5784
 — 128.3682
 — 128.1884
 — 128.1091
 — 127.8918
 — 127.5172
 — 127.4614
 — 123.5886
 — 114.5598
 — 110.7163
 — 101.3711
 — 96.6392
 — 96.4740
 — 77.3182
 — 77.2034
 — 77.0004
 — 77.0000
 — 76.6831
 — 74.0297
 — 71.8627
 — 70.7021
 — 70.5372
 — 70.0379
 — 69.8743
 — 68.3537
 — 17.7350
 — 0.0331

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C



8.0111
 7.9931
 7.9899
 7.9817
 7.9636
 7.9606
 7.9385
 7.9202
 7.9014
 7.8984
 7.7930
 7.7730
 7.5410
 7.4321
 7.4037
 7.2961
 7.2601
 7.2600
 7.2099
 7.1880
 7.0858
 7.0806
 6.9803
 6.9648
 6.9595

Parameter Value
 Solvent CDC13
 Experiment 1D
 Spectrometer Frequency 400.13
 Nucleus 1H

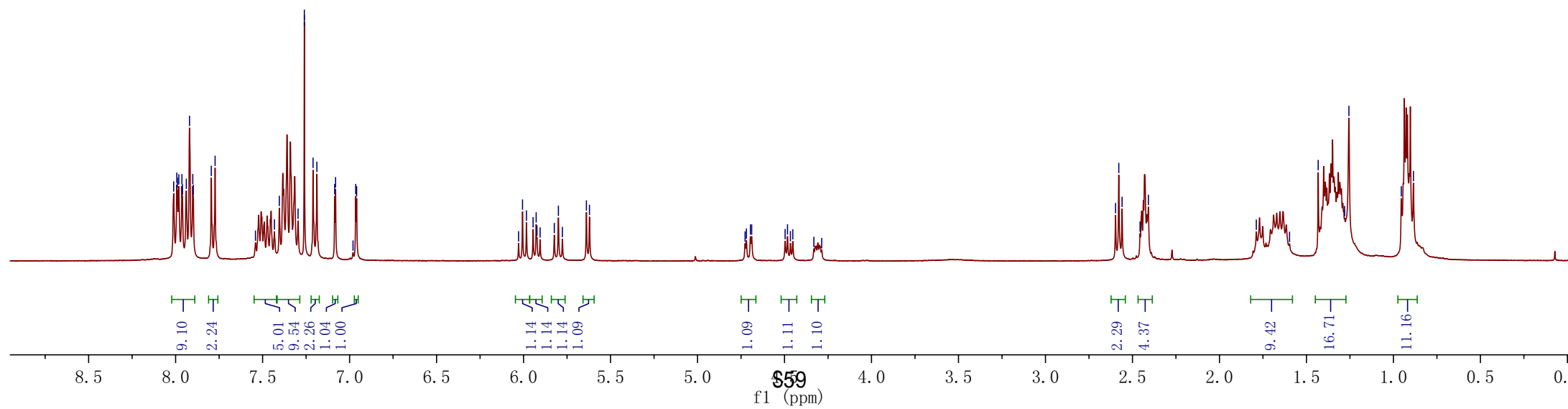
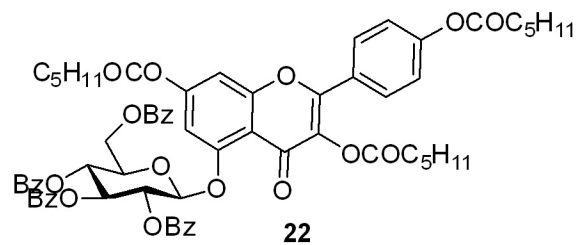
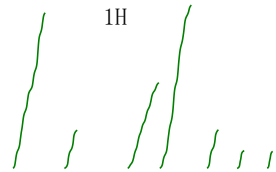
6.0286
 6.0060
 5.9833
 5.9452
 5.9275
 5.9230
 5.9049
 5.8234
 5.7998
 5.7766
 5.6388
 5.6211

4.7266
 4.7189
 4.6961
 4.6887
 4.4966
 4.4828
 4.4660
 4.4525
 4.3313
 4.2863

2.5972
 2.5786
 2.5597
 2.4563
 2.4087

1.7882
 1.5972
 1.4326
 1.2805
 1.2558

0.9549
 0.8852



171.7411
170.9494
170.4085
169.3605
165.9845
165.7500
165.2762
165.1392
157.1188
156.5234
154.1883
153.2690
152.7383

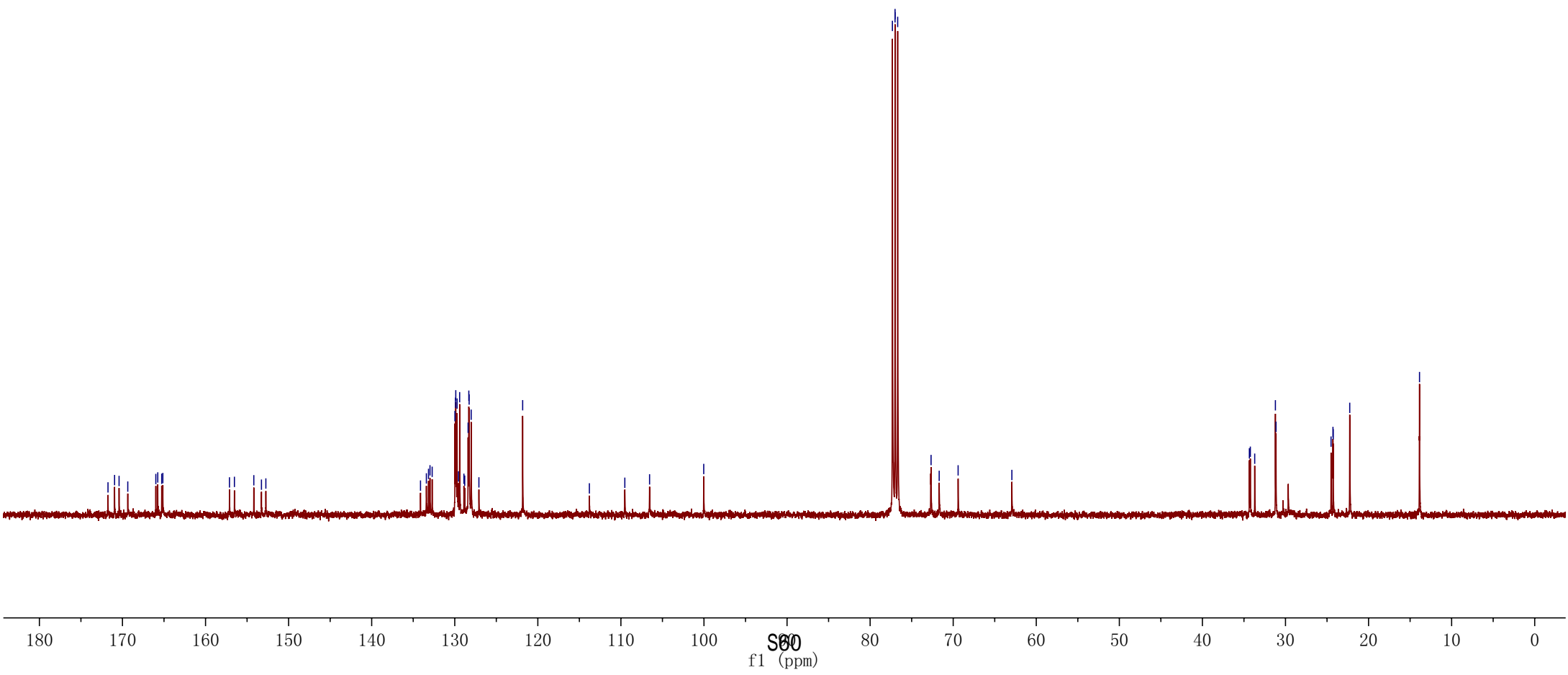
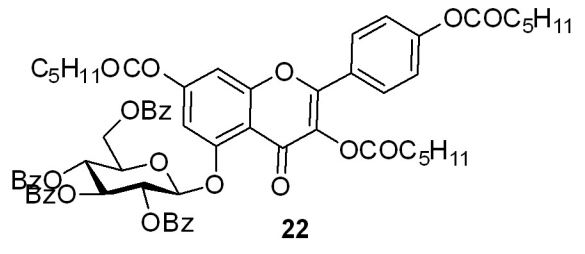
133.4165
133.1589
132.9809
132.7188
129.9807
129.9142
129.8771
129.7220
129.5491
129.4111
128.3936
128.3067
128.2686
128.0244
127.8251

113.7952
109.5280
106.5482
100.0287

77.3168
77.0000
76.9996
76.6816
72.6642
71.6855
69.4073
62.9365

34.3467
34.2305
33.7047
31.2139
31.1391
24.5151
24.2846
24.2531
22.2655
13.8658

Parameter Value
Solvent CDC13
Experiment 1D
Spectrometer Frequency 100.61
Nucleus 13C



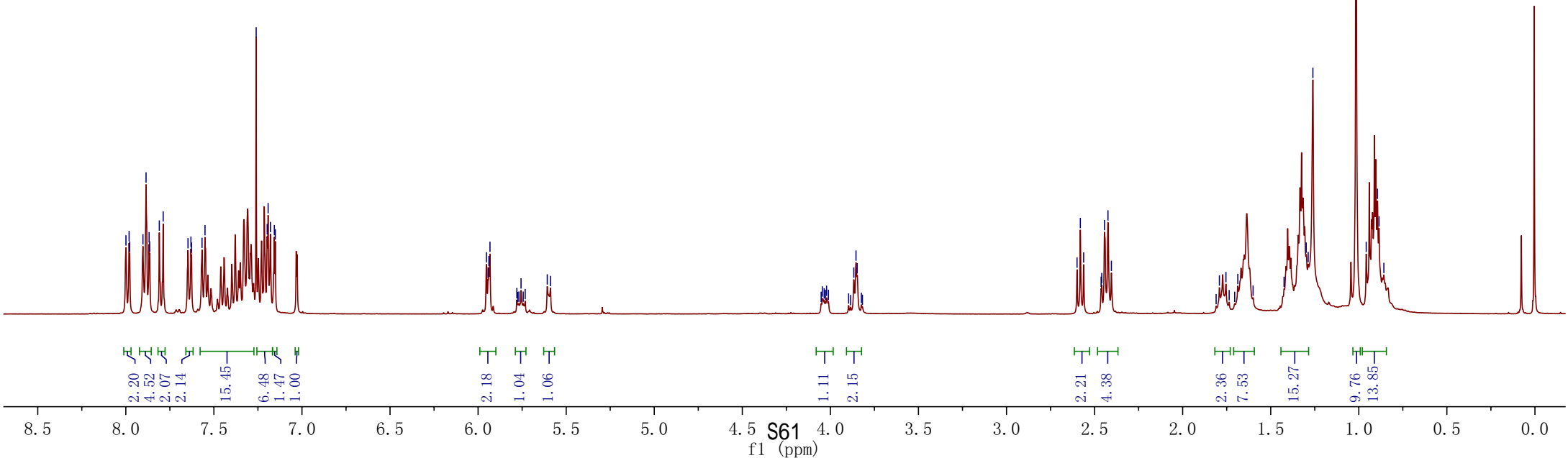
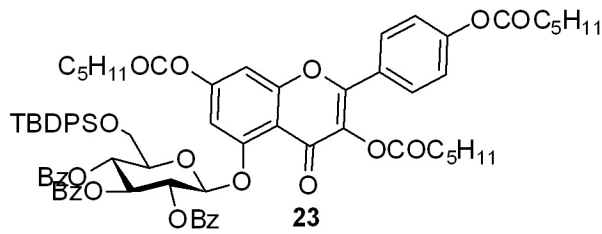
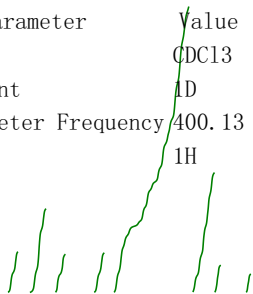
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7.9813
7.9783
7.9028
7.8852
7.8677
7.8648
7.8099
7.7879
7.6470
7.6303
7.6272
7.5674
7.5504
7.2600
7.1973
7.1921
7.1790
7.1568
7.1513

5.9528
5.9435
5.9387
5.9326
5.7800
5.7749
5.7684
5.7562
5.7440
5.7327
5.6073
5.5891

4.0523
4.0458
4.0352
4.0284
4.0216
4.0110
3.8964
3.8850
3.8668
3.8546
3.8476
3.8241
3.8180

2.5995
2.5809
2.5621
2.4630
2.4593
2.4436
2.4240
2.4046
1.8099
1.7914
1.7543
1.7359
1.7047
1.6869
1.6001
1.4243
1.2985
1.2875
1.2606
1.0155
0.9579
0.8936
0.8850
0.8577

Parameter Value
Solvent CDCl3
Experiment 1D
Spectrometer Frequency 400.13
Nucleus 1H



171.7372
170.9245
170.4021
169.3550
165.8678
165.3581
164.9009

157.1500
157.0941
154.2566
153.2461
152.7201

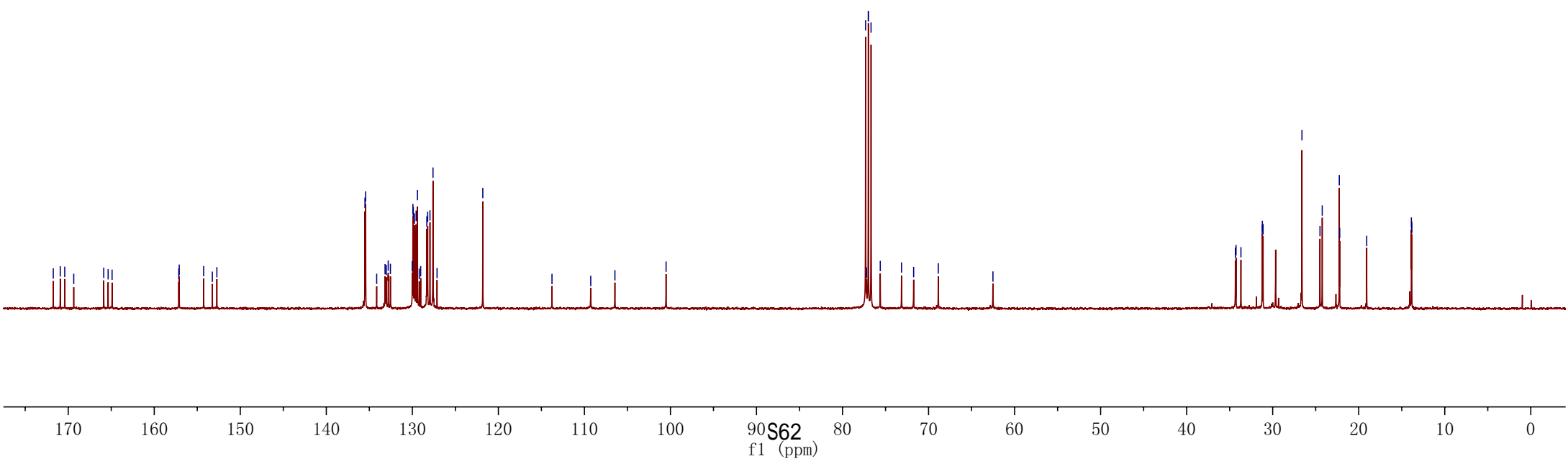
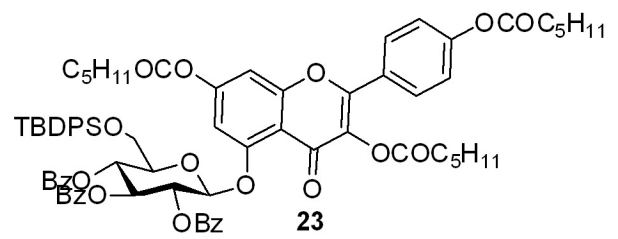
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133.1733
132.8061
132.5472
130.0146
129.9336
129.8896
129.7602
129.5575
129.4065
128.3171
128.2165
127.9509
127.8764
127.8704

113.7688
109.2646
106.4542
100.5093

77.3185
77.2034
77.0004
77.0000
76.6829
75.6124
73.1390
71.7322
68.8659
62.5137

34.3365
34.2602
33.6914
31.2201
31.1980
31.1163
26.5986
24.5040
24.2421
22.2582
22.2117
19.0712
13.8799
13.8522
13.8300

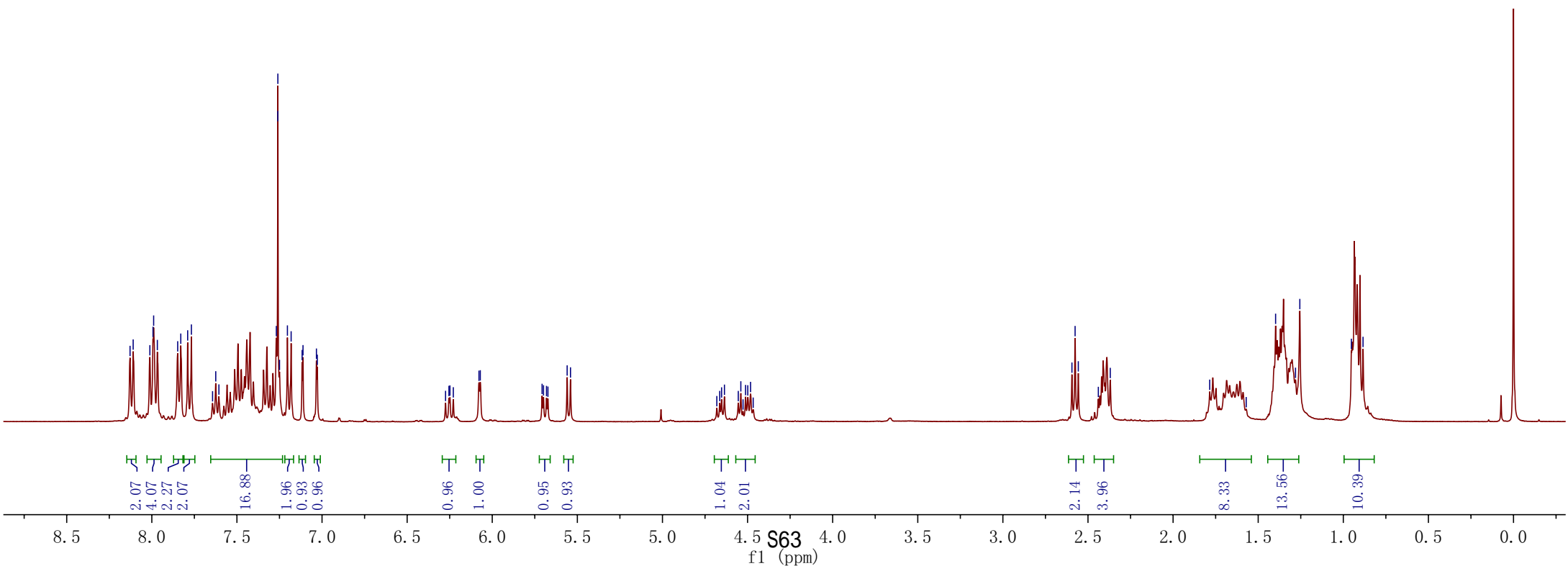
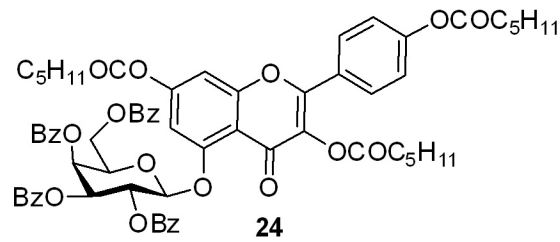
Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	¹³ C



8.1279
8.1096
8.0115
7.9930
7.9893
7.9676
7.8480
7.8298
7.7894
7.7675
7.6431
7.6244
7.6058
7.2685
7.2600
7.2595
7.2497
7.2034
7.1815
7.1170
7.1118
7.0329
7.0278
6.2743
6.2545
6.2486
6.2288
6.0780
6.0703
5.7072
5.6988
5.6812
5.6728
5.5600
5.5403
4.6805
4.6635
4.6527
4.6359
4.5545
4.5395
4.5266
4.5117
4.4987
4.4824
4.4670

2.5943
2.5757
2.5569
2.4392
2.3691
1.7848
1.5705
1.3977
1.2808
1.2554
0.9524
0.8841

Parameter Value
Solvent CDCl₃
Experiment 1D
Spectrometer Frequency 400.13
Nucleus ¹H



S63
f1 (ppm)

171.7440
171.0371
170.3510
169.3035
165.9904
165.5689
165.4651
157.1448
157.0629
154.2329
153.2644
152.7121
133.5904
133.2336
133.1895
132.5840
130.0674
129.9833
129.8461
129.7544
129.3912
128.8999
128.6177
128.4222
128.2726
127.8683
127.8683

113.6822
109.0947
106.5840
100.9971

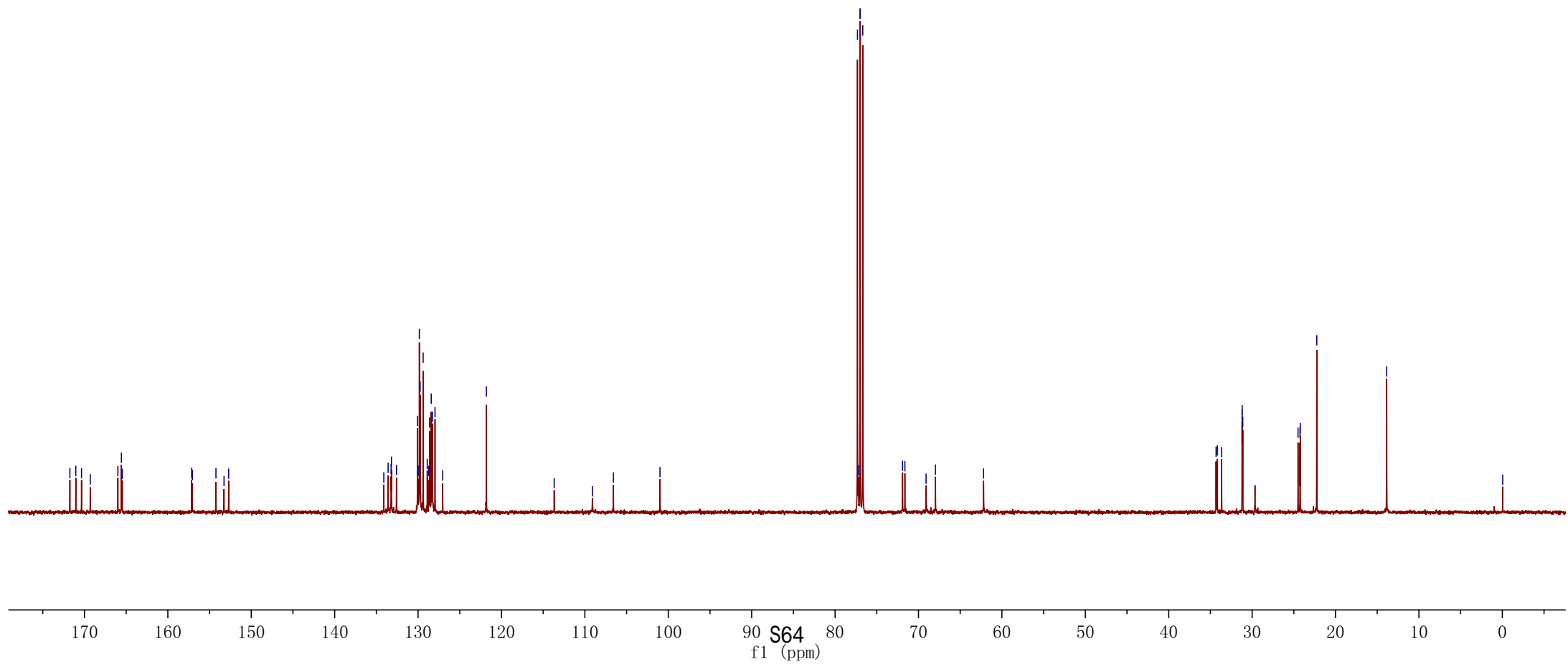
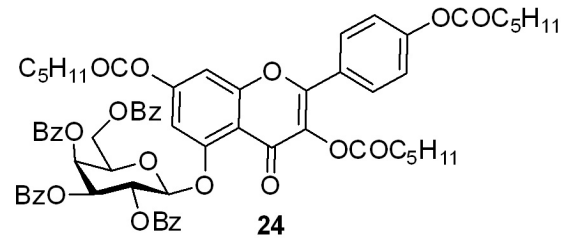
77.3176
77.2030
77.0000
77.0000
76.6819
71.9114
71.6283
69.0899
67.9682
62.1968

34.3212
34.1694
33.6545
31.2037
31.1901
31.1180
24.4934
24.2587
24.2252
22.2446

13.8646

-0.0460

Parameter Value
Solvent CDC13
Experiment 1D
Spectrometer Frequency 100.61
Nucleus 13C



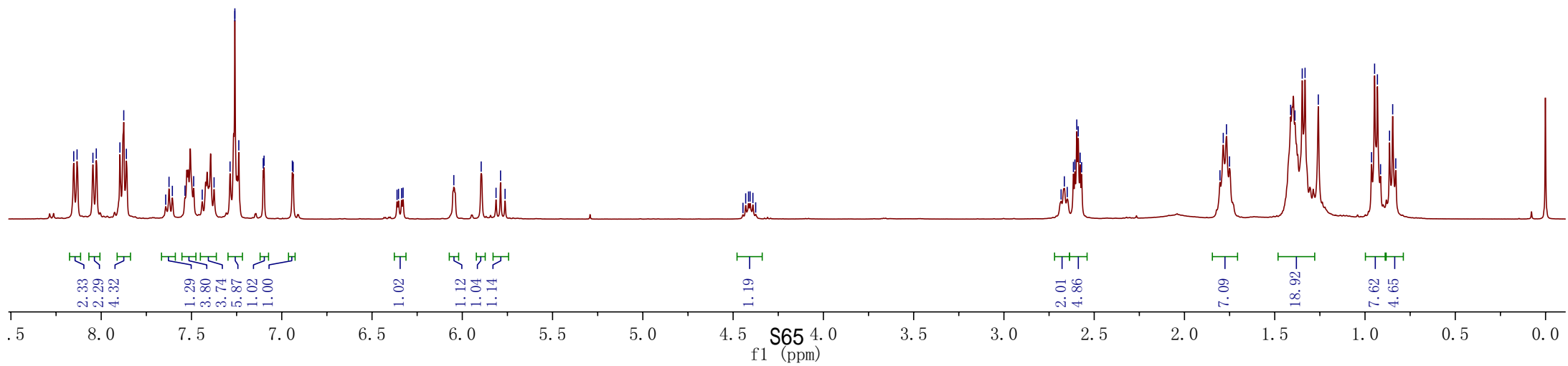
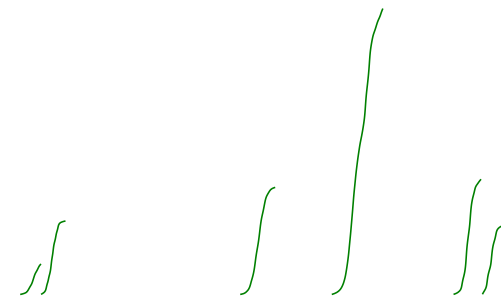
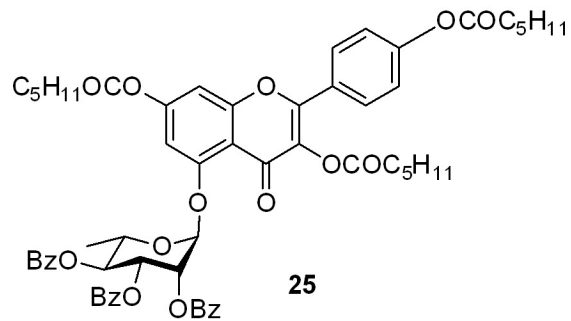
8.1521
8.1337
8.0459
8.0272
7.8963
7.8751
7.8607
7.6244
7.6059
7.5359
7.4879
7.4405
7.3749
7.2863
7.2600
7.2597
7.2379
7.1025
7.0980
6.9414
6.9370
6.3614
6.3361
6.3278
6.0470
5.8954
5.8130
5.7881
5.7631

4.4454
4.4304
4.4148
4.4060
4.3904
4.3750

2.6834
2.6654
2.6494
2.6151
2.6069
2.5964
2.5884
2.5778
2.5696

1.8034
1.7852
1.7673
1.7505
1.4120
1.3882
1.3477
1.3321
1.2587
0.9638
0.9469
0.9313
0.9140
0.8641
0.8468
0.8297

Parameter Value
Solvent CDC13
Experiment 1D
Spectrometer Frequency 400.13
Nucleus 1H



171.7405
171.0458
170.9825
169.9995
165.9218
165.4273
165.0125

157.5725
156.1173
154.5703
153.5722
152.7870

134.2525
133.4794
133.2239
132.8584
129.9380
129.9001
129.7029
129.5178
129.4560
129.3285
129.2614
128.5658
128.3365
128.1594
127.1473
121.8774

113.1250

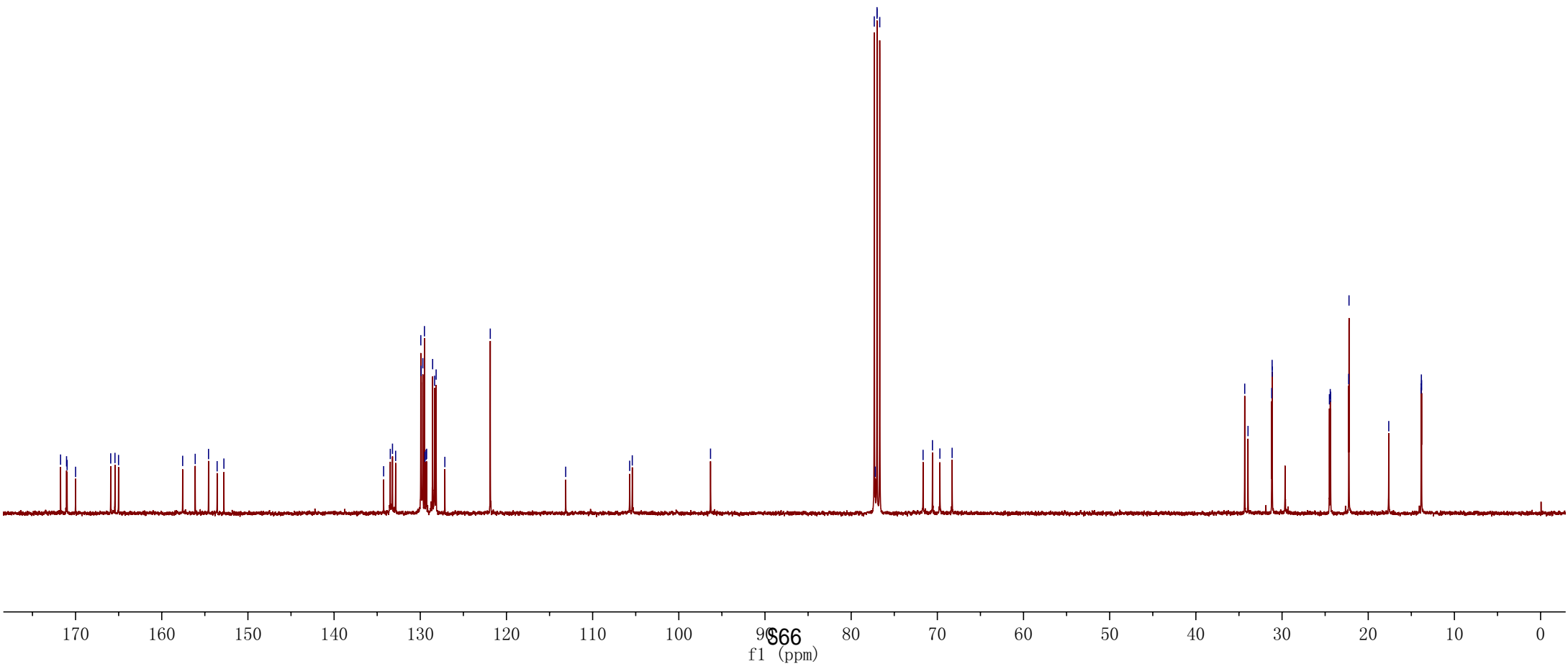
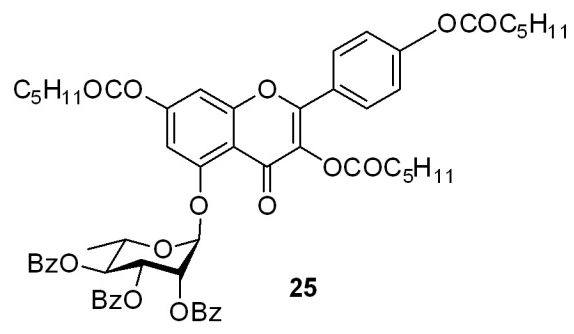
105.7013
105.3991

96.3186

77.3180
77.2016
77.0000
76.9999
76.6825
71.6557
70.5670
69.7039
68.2854

34.3325
33.9498
31.1964
31.1511
31.1380
24.5036
24.4071
24.3672
22.2635
22.2301
17.6190
13.8569
13.8334
13.8065

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C



8.0141
7.9961
7.9930
7.9739
7.9559
7.9011
7.8832
7.8127
7.7908
7.5467
7.5281
7.5095
7.3035
7.2845
7.2600
7.2194
7.1975
7.0757
7.0345
7.0295

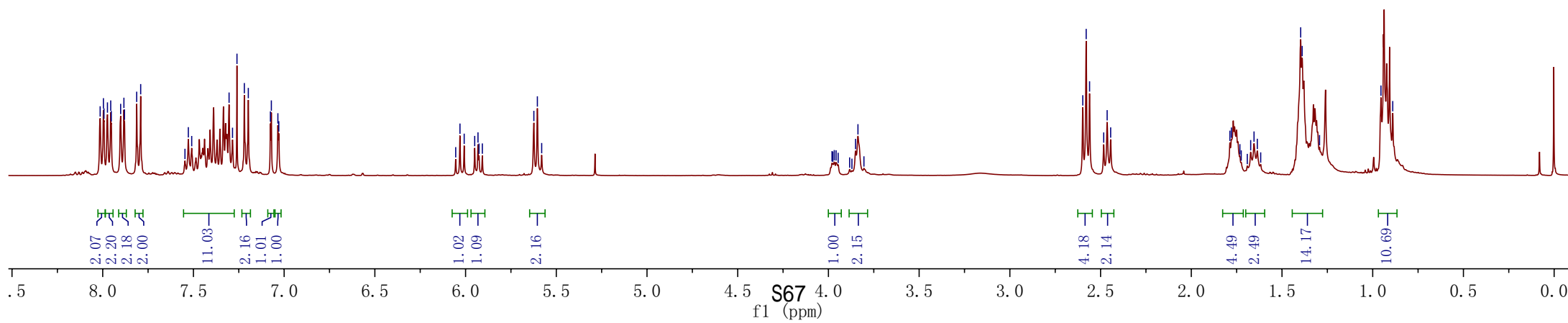
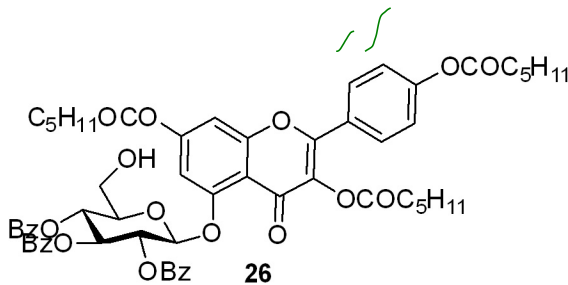
6.0544
6.0309
6.0076
5.9497
5.9316
5.9259
5.9076
5.6236
5.6043
5.5805

3.9803
3.9760
3.9678
3.9578
3.9464
3.8831
3.8705
3.8504
3.8373
3.8043

2.5981
2.5793
2.5606
2.4826
2.4637
2.4444
1.7872
1.7789
1.7321
1.7248
1.6913
1.6726
1.6541
1.6361
1.6174
1.3970
1.3890
1.2932

0.9545
0.8895

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	¹ H



171.7250
171.2147
170.5001
169.6044
165.7806
165.7392
165.2463

157.1954
156.2732
154.1433
153.4089
152.7605

134.0788
133.5320
133.1536
132.7243
129.9392
129.8920
129.8058
129.7066
129.4286
128.8918
128.6824
128.4298
128.2529
128.0109
126.9633
121.8342

113.9139

110.1672

106.4510

100.3416

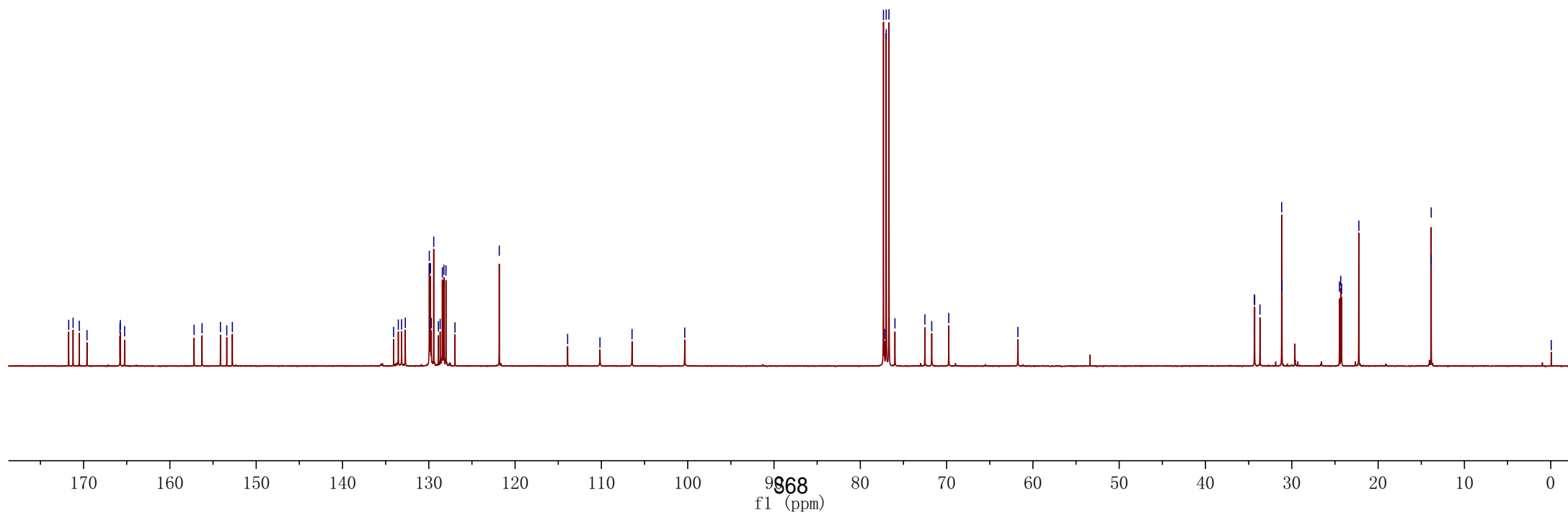
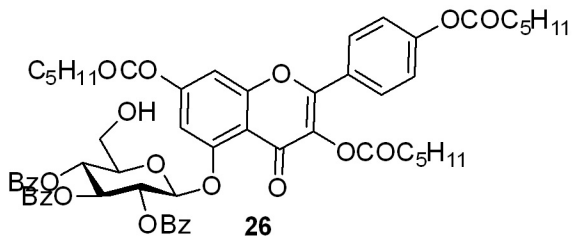
77.3173
77.2017
77.0000
76.9995
76.6819
75.9864
72.5169
71.7237
69.7545
61.7404

34.3417
34.3070
33.6917
31.1774
31.1389
24.4808
24.3314
24.2309
22.2321

13.8671
13.8495

-0.0580

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	¹³ C



8.0348
8.0156
7.9981
7.9517
7.9319
7.9124
7.7798
7.7754
7.7577
7.5945
7.5761
7.5574
7.3218
7.3020
7.2600
7.2598
7.2342
7.1945
7.1727
7.0757
7.0713
7.0545

6.0522
6.0295
6.0068
5.9405
5.9226
5.8997
5.7069
5.6896
5.6817
5.6718
5.6537
5.6307
5.5897
5.5657

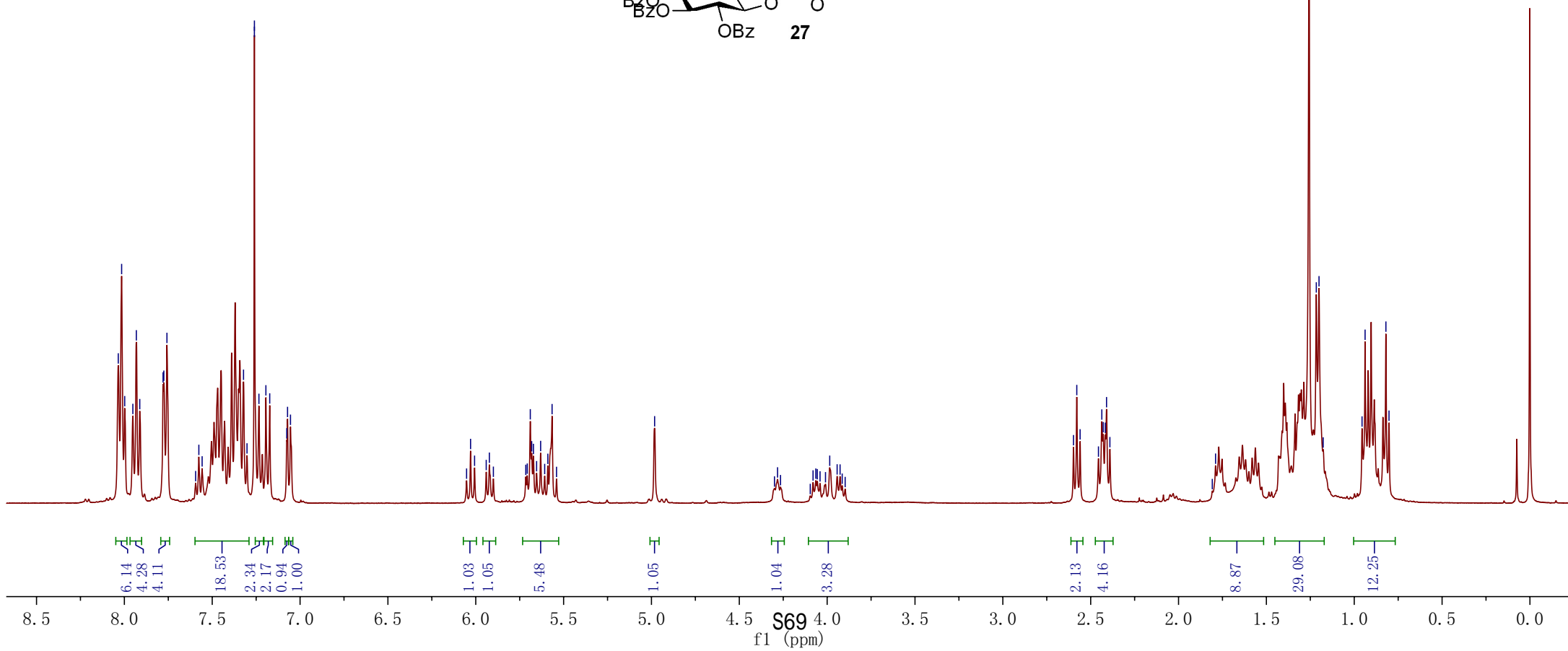
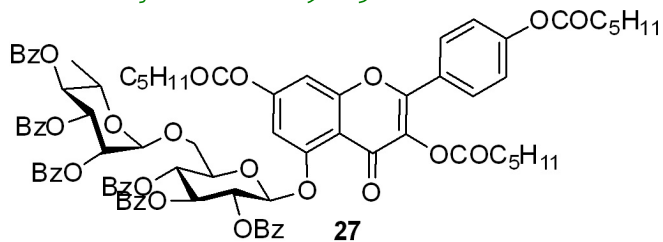
4.2999
4.2823
4.2654
4.0961
4.0802
4.0646
4.0561
4.0405
4.0094
3.9853
3.9432
3.9264
3.9143
3.8975

2.5978
2.5792
2.5603
2.4558
2.4366
2.4288
2.4171
2.4098
2.3907

1.8079
1.7893

1.2159
1.2004
1.1768
0.9556
0.9382
0.8197
0.8021

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	1H



6.14
4.28
4.11
18.53
2.34
2.17
0.94
1.00

1.03
1.05
5.48
1.05

1.04
3.28

2.13
4.16

8.87
29.08

12.25

171.7526
171.0713
170.3930
169.4976
165.7403
165.2869
165.1303
165.0734
156.4302
154.3023
153.3050
152.6766

133.2364
130.0320
129.9341
129.8512
129.7403
129.6292
129.4610
129.2814
128.4811
128.4641
128.3606
128.2794
128.1760
128.0163
127.9697

113.7832
109.8452
106.7533

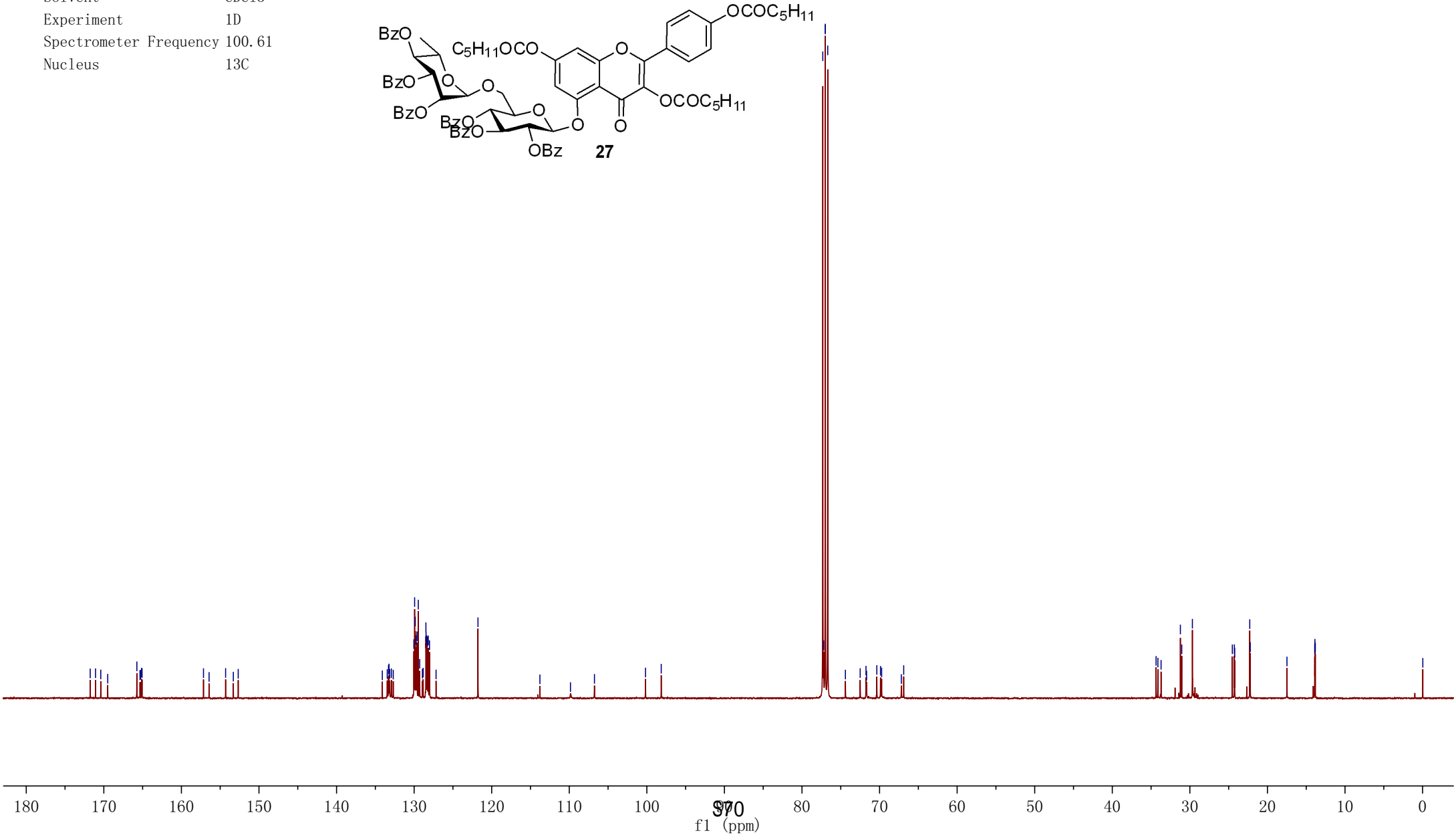
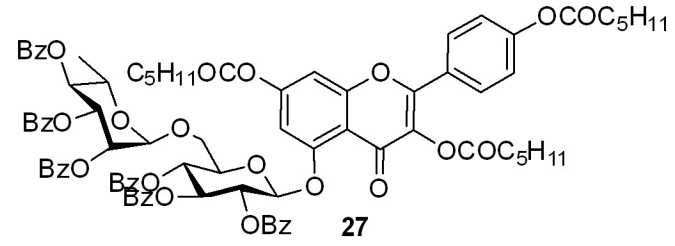
100.1736
98.1445

77.3176
77.2032
77.0002
77.0000
76.6823
74.4037
72.4989
71.7486
71.6712
70.8526
69.8794
69.7328
67.1914
66.8876

34.3541
34.1223
33.7106
31.2220
31.0445
29.6731
24.5238
24.2634
22.2791
22.2145
17.9044
13.8805
13.8290

-0.0310

Parameter Value
Solvent CDC13
Experiment 1D
Spectrometer Frequency 100.61
Nucleus 13C



8.0618
8.0427
8.0240
7.9605
7.9447
7.9243

7.4638
7.4449
7.4259
7.2984
7.2600
7.2595
7.0079
7.0059
6.9869
6.8676
6.6759
6.6494

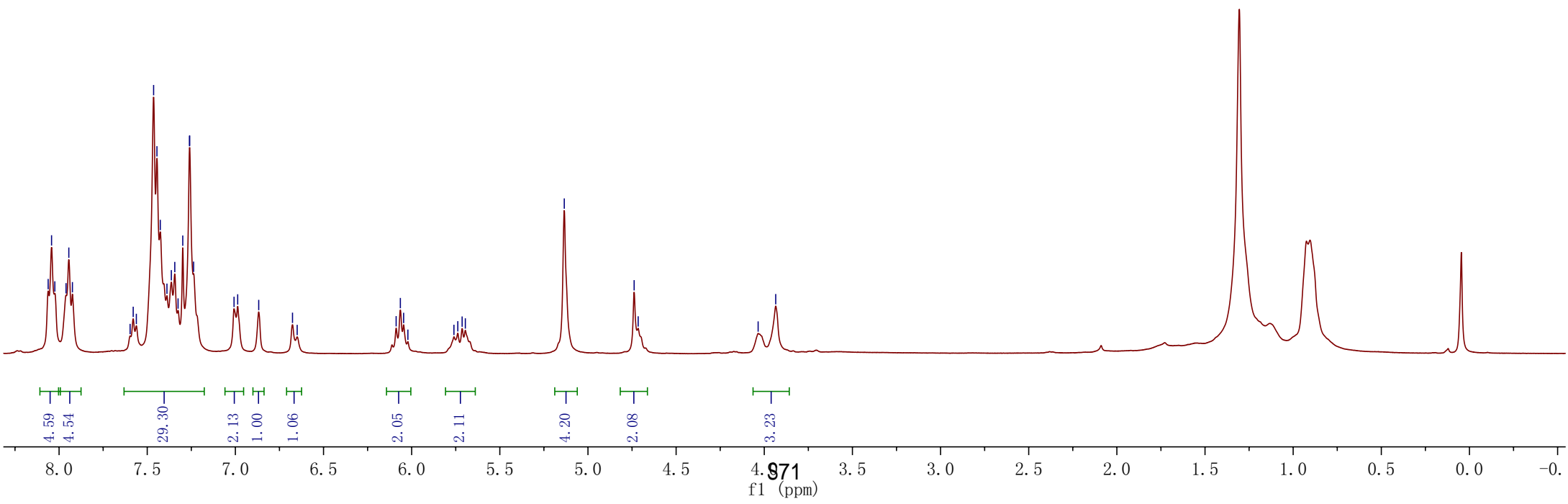
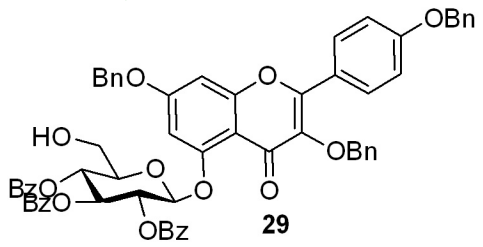
6.0881
6.0642
6.0457
6.0215
5.7603
5.7382
5.7138
5.6956

5.1344

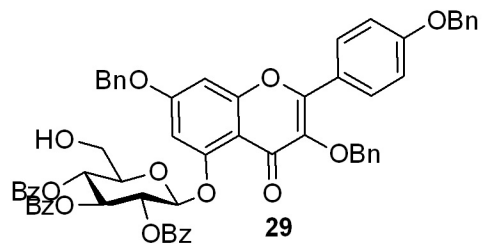
4.7381
4.7152

4.0348
3.9350

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	1H



Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	¹³ C



— 172.6957
 { 165.8647
 { 165.6030
 { 165.0464
 { 162.2862
 { 160.0508
 { 157.6589
 { 157.3715

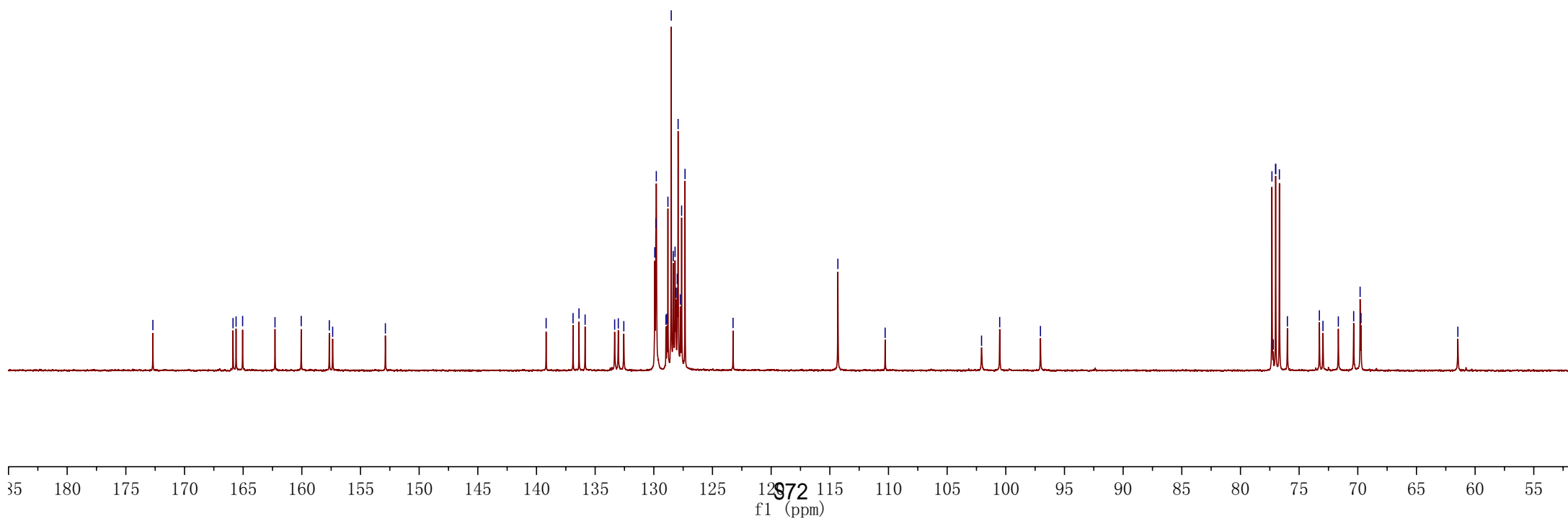
— 152.8791
 { 139.1770
 { 136.8842
 { 136.3779
 { 135.8555
 { 133.3375
 { 133.0271
 { 129.9181
 { 129.8258
 { 129.7875
 { 128.9662
 { 128.8861
 { 128.7976
 { 128.5149
 { 128.3391
 { 128.1897
 { 128.1126
 { 127.9989
 { 127.9294
 { 127.7417
 { 127.6310
 { 127.3305
 { 125.2267

— 114.3120
 — 110.2843

— 102.0678
 — 100.5206
 — 97.0460

{ 77.3181
 { 77.2025
 { 77.0000
 { 76.9999
 { 76.6817
 { 76.0008
 { 73.2737
 { 72.9685
 { 71.6586
 { 70.3508
 { 69.8023
 { 69.7257

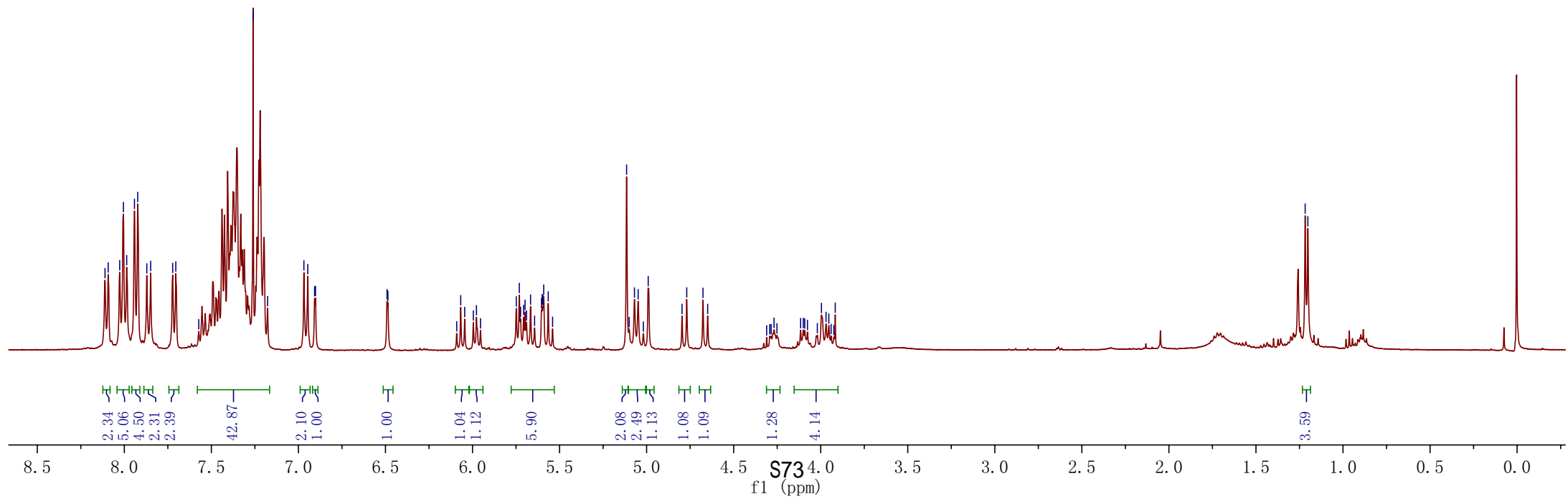
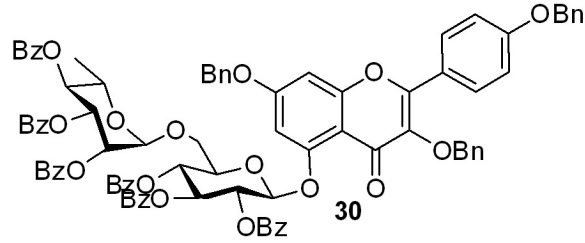
— 61.4706



Parameter	Value
Solvent	CDCl3
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	1H

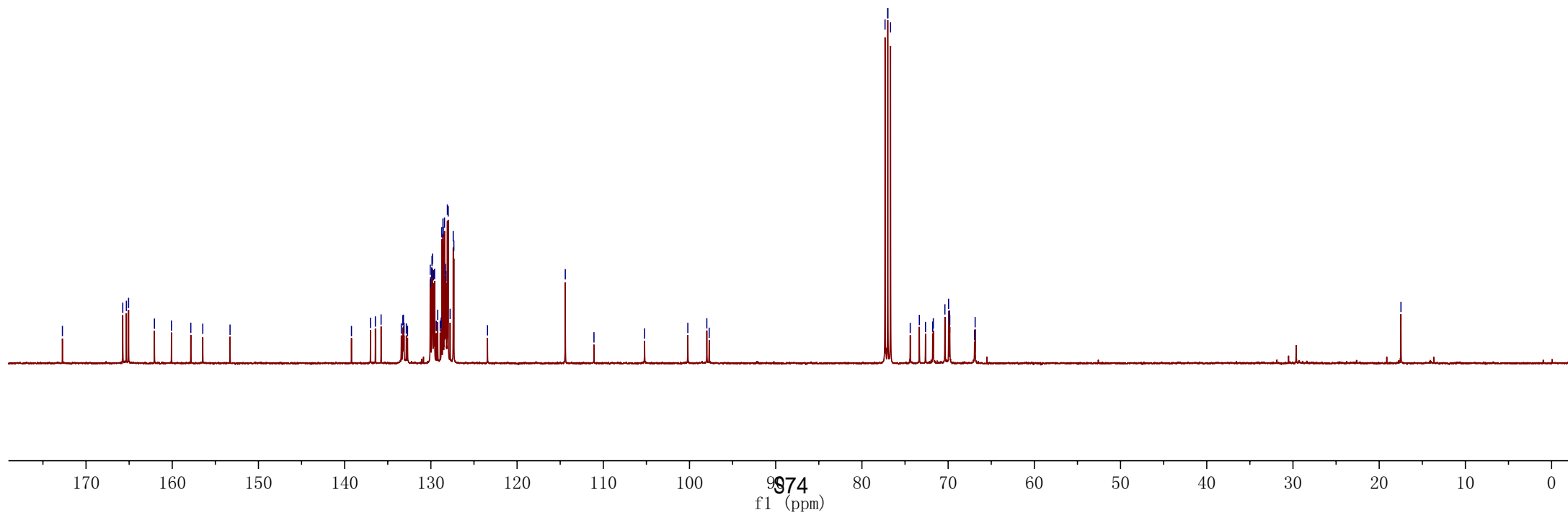
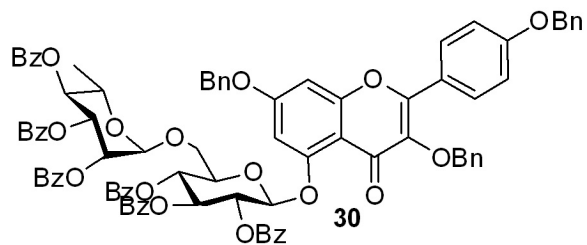
8.1110
8.0926
8.0265
8.0051
7.9863
7.9417
7.9229
7.8709
7.8486
7.7223
7.7042
7.5725
7.2600
7.1770
6.9685
6.9462
6.9070
6.9020
6.4909
6.4860
6.0908
6.0677
6.0448
5.9953
5.9774
5.9541
5.7313
5.6666
5.6002
5.5650
5.1149
5.0697
5.0486
4.9809
4.9609
4.7695
4.6762
4.6493
4.3105
4.2929
4.2846
4.2680
4.2514
4.1155
4.1001
4.0917
4.0761
4.0194
3.9957
3.9694
3.9534
3.9403
3.9243
3.9166

1.2174
1.2018





Parameter Value
 Solvent CDC13
 Experiment 1D
 Spectrometer Frequency 100.61
 Nucleus 13C



7.8595
7.8376
7.2600
7.2595
7.2484
7.2265
7.1468
7.1419
6.9171
6.9123

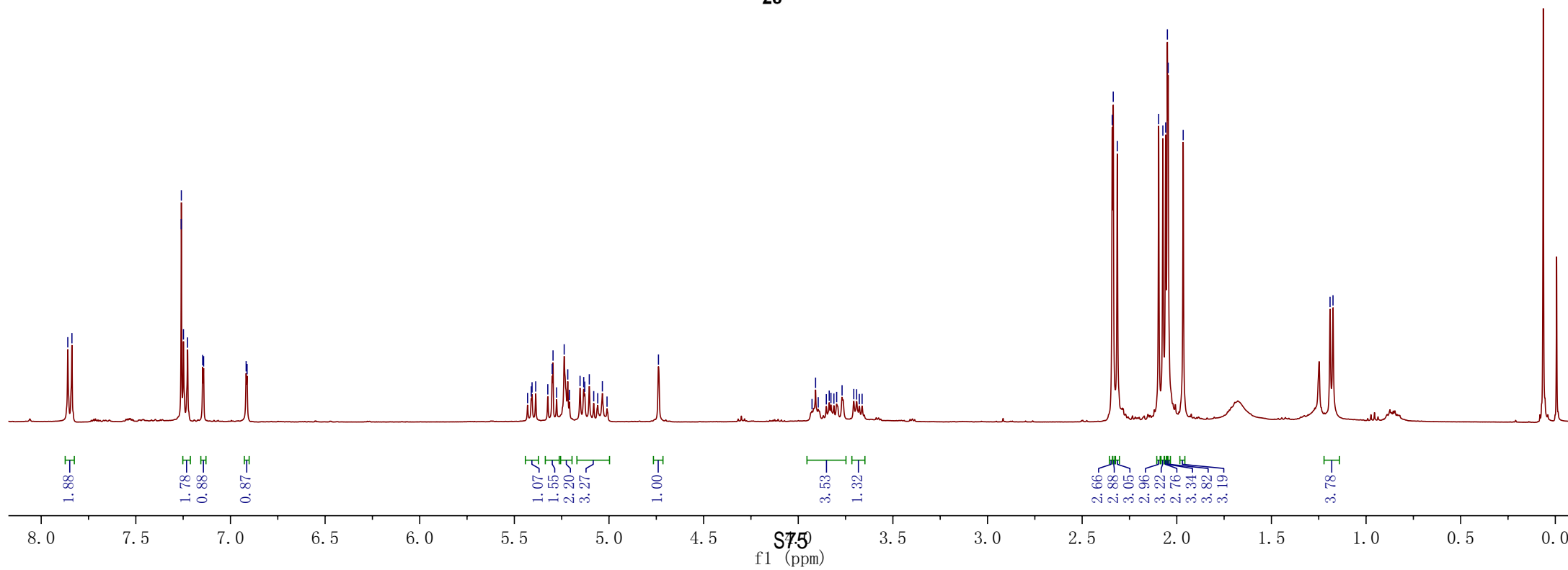
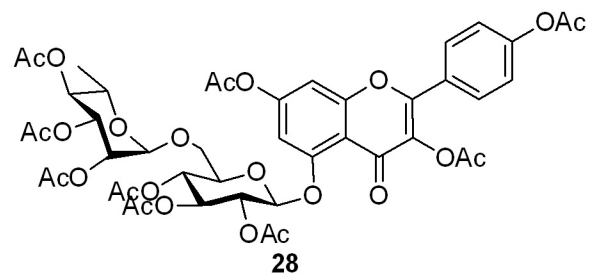
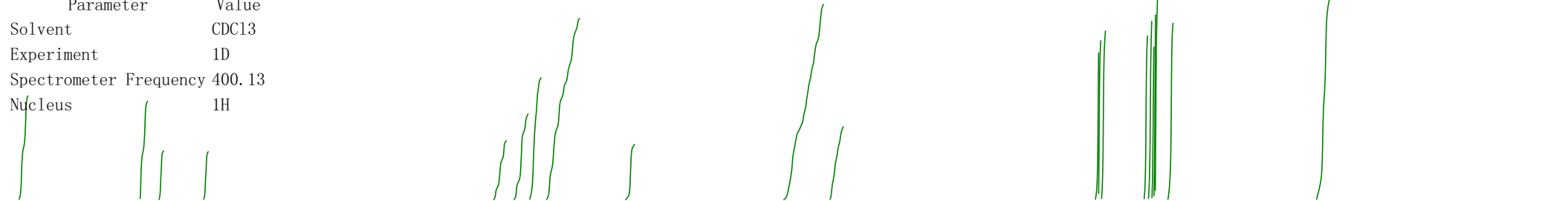
5.4301
5.4106
5.4065
5.3872
5.3233
5.3001
5.2957
5.2768
5.2367
5.2178
5.2091
5.1529
5.1336
5.1281
5.1041
5.0806
5.0595
5.0349
5.0104
4.7385

3.9273
3.9085
3.8945
3.8517
3.8364
3.8274
3.8118
3.7970
3.7685
3.7066
3.6915
3.6775
3.6627

2.3412
2.3358
2.3143
2.0957
2.0736
2.0588
2.0497
2.0455
1.9661

1.1902
1.1746

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	400.13
Nucleus	¹ H



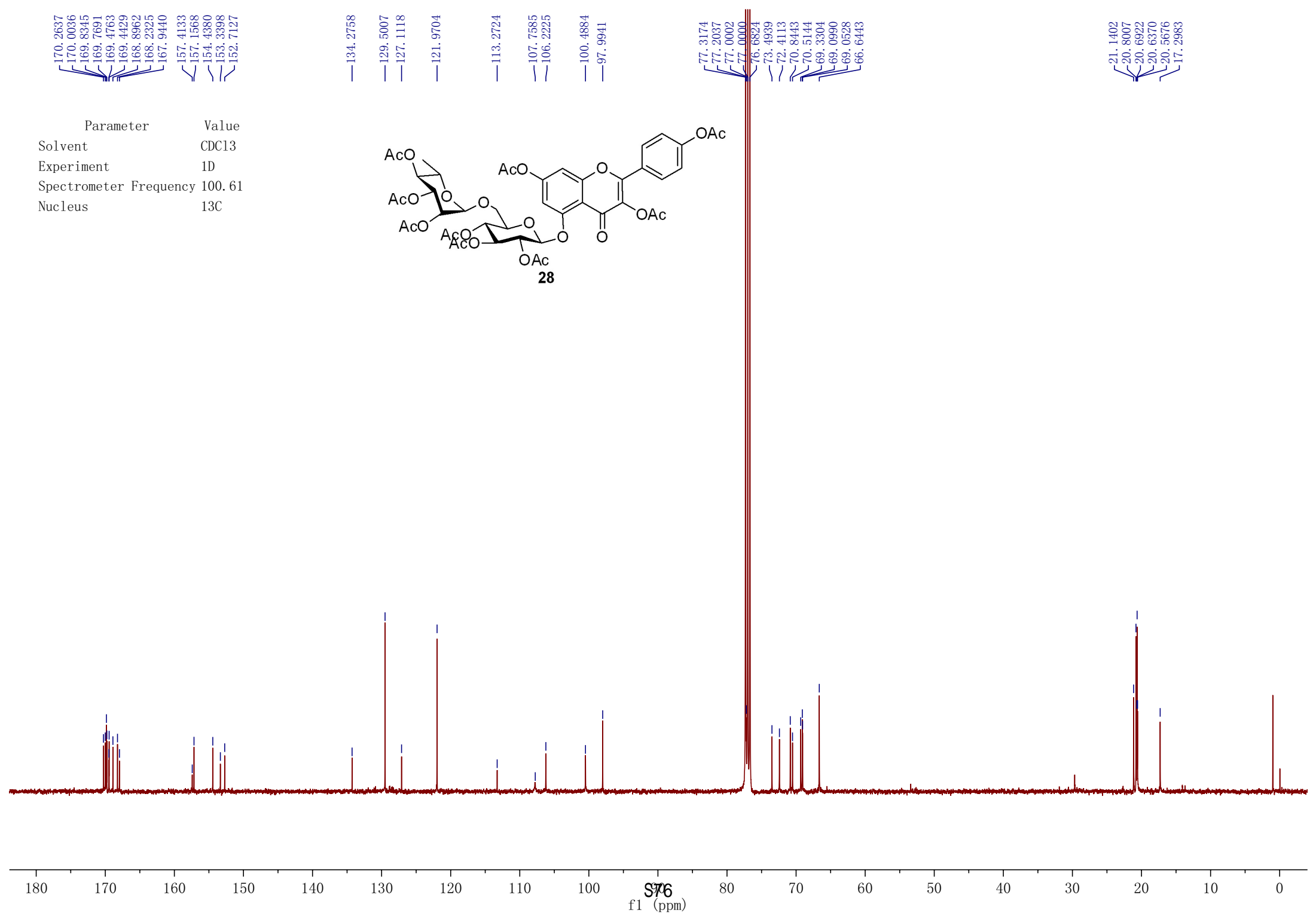
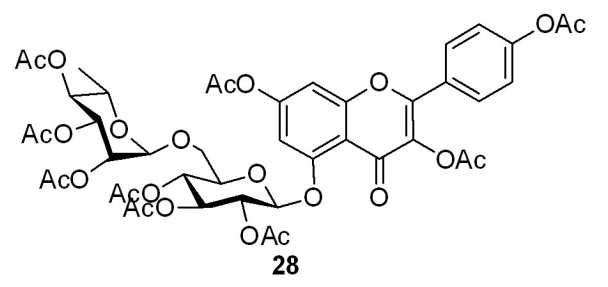
170.2637
170.0036
169.8345
169.7691
169.4763
169.4429
168.8962
168.2325
167.9440
157.4133
157.1568
154.4380
153.3398
152.7127

134.2758
129.5007
127.1118
121.9704
113.2724
107.7585
106.2225
100.4884
97.9941

77.3174
77.2037
77.0002
77.0000
76.6824
73.4939
72.4113
70.8443
70.5144
69.3304
69.0990
69.0528
66.6443

21.1402
20.8007
20.6922
20.6370
20.5676
17.2983

Parameter	Value
Solvent	CDC13
Experiment	1D
Spectrometer Frequency	100.61
Nucleus	13C



976
f1 (ppm)

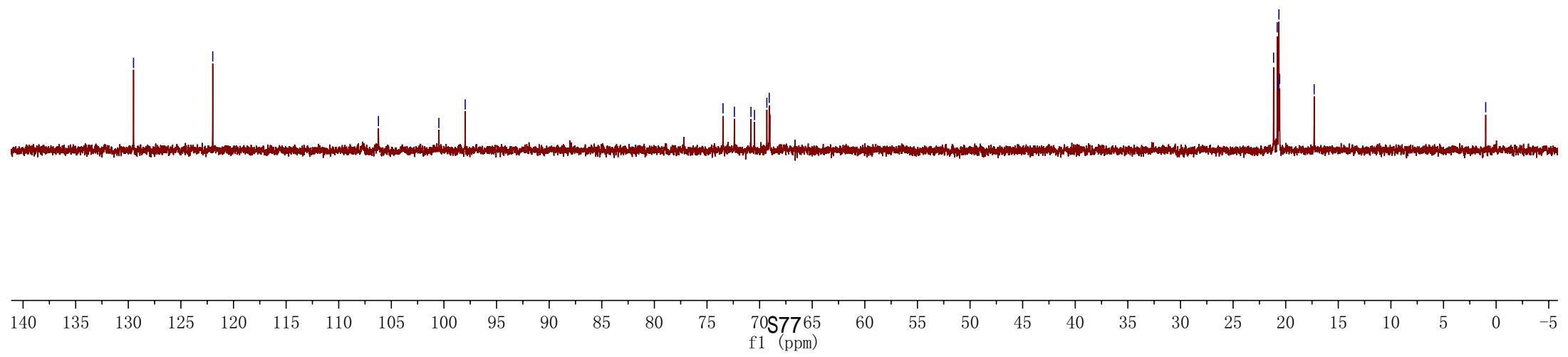
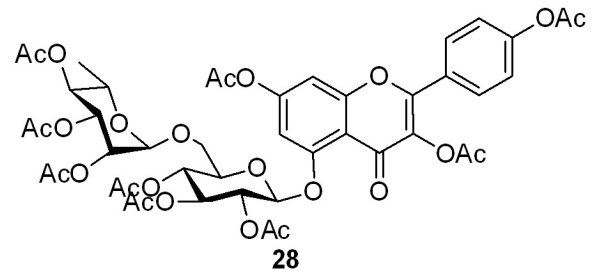
—129.5010
—121.9733
—106.2254
—100.4856
—97.9785

73.4779
72.3964
70.8218
70.4837
69.3104
69.0852

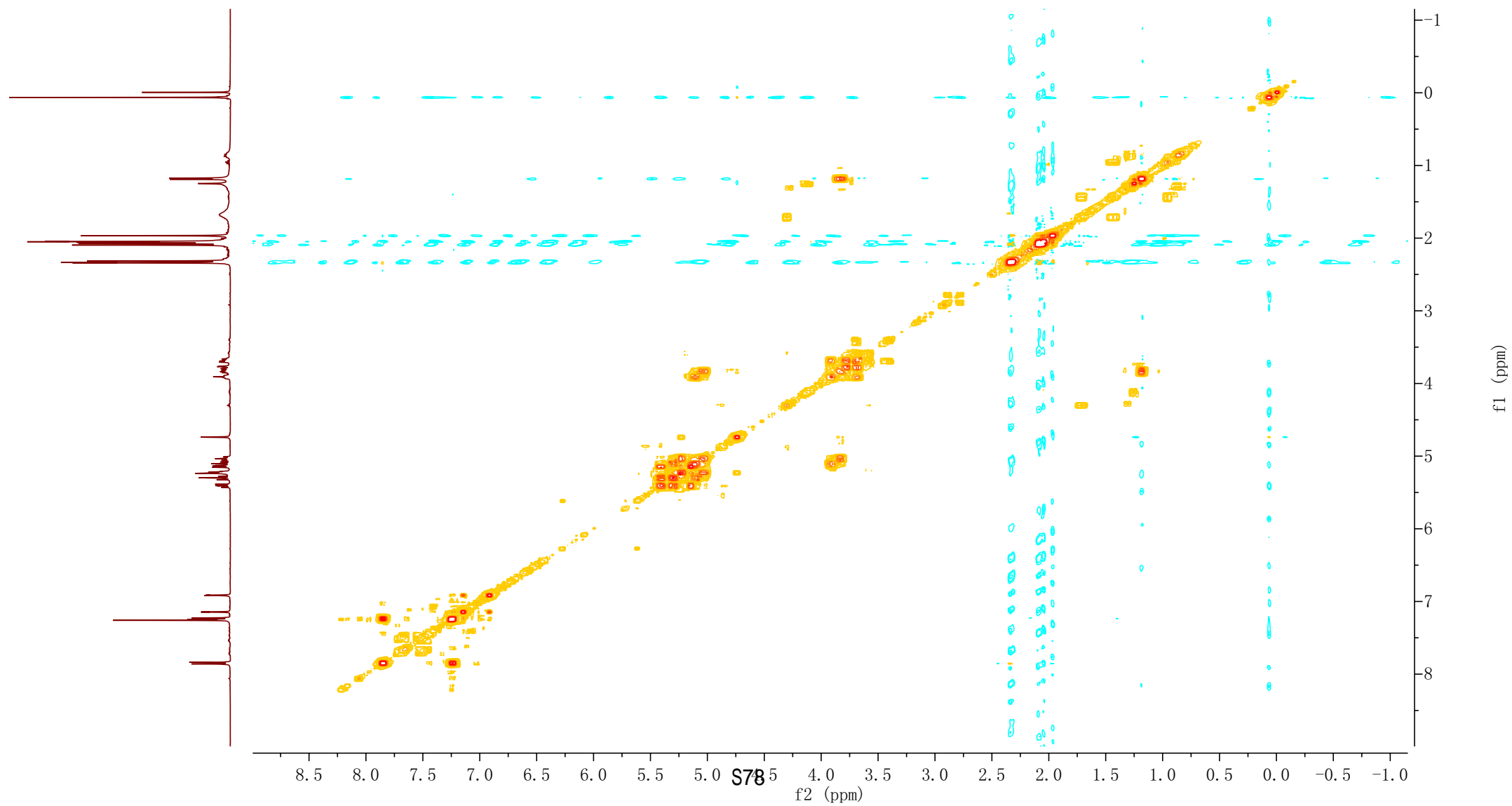
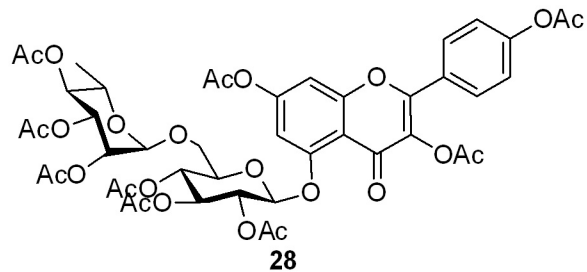
21.1489
20.8077
20.6947
20.6433
20.5736
17.2940

—0.9915

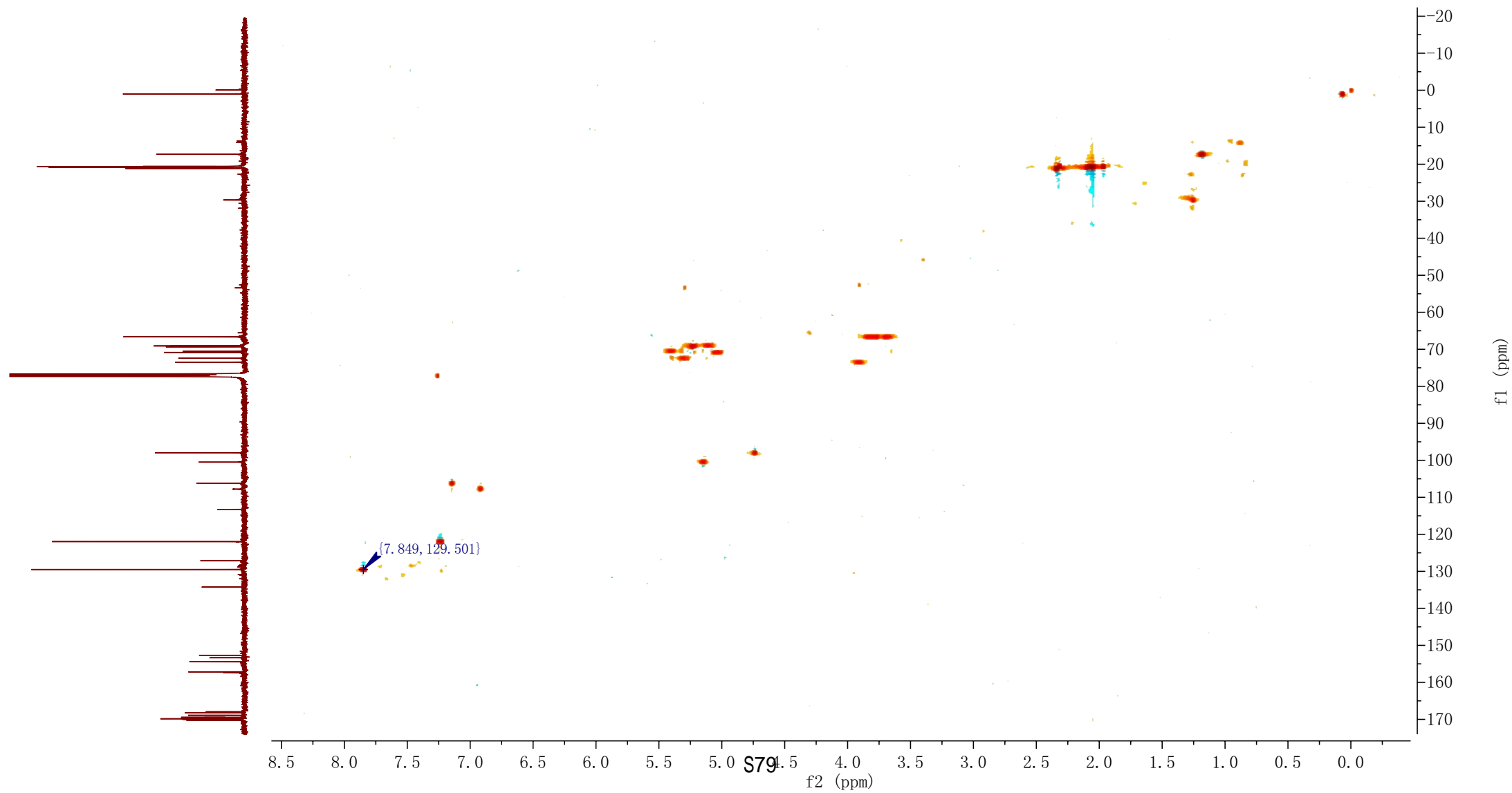
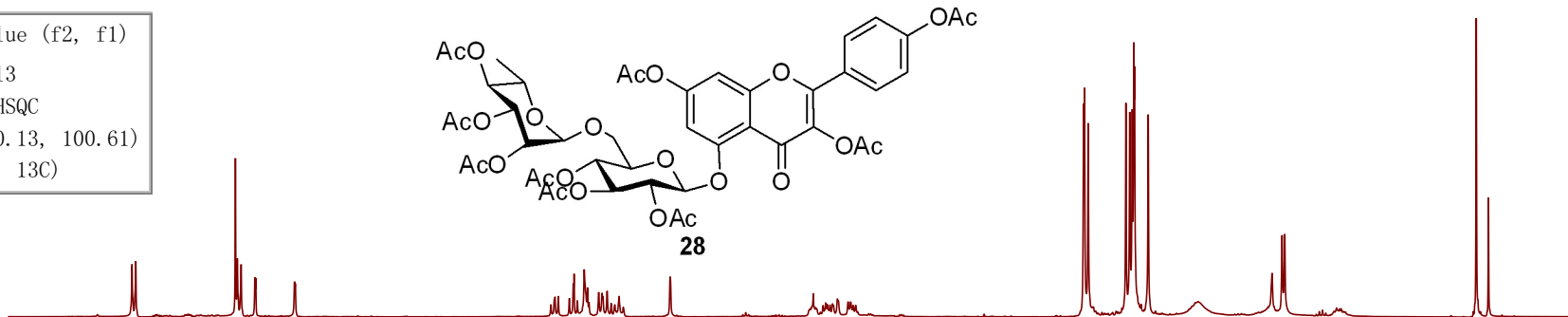
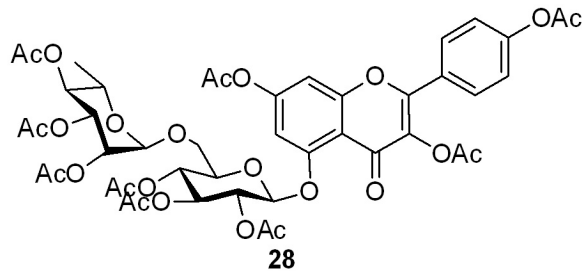
Parameter	Value
Solvent	CDC13
Experiment	1D-DEPT-135
Spectrometer Frequency	100.61
Nucleus	¹³ C



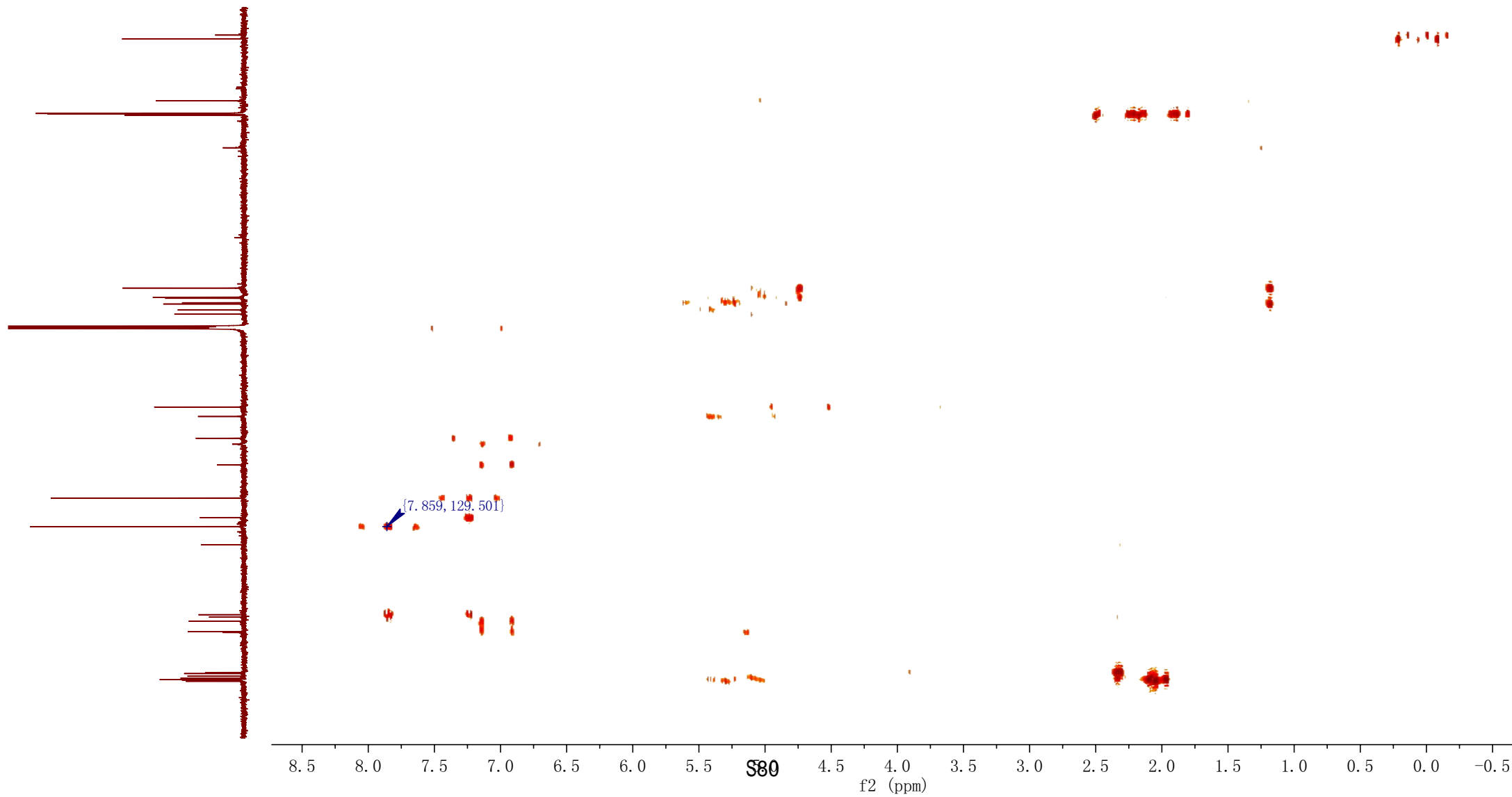
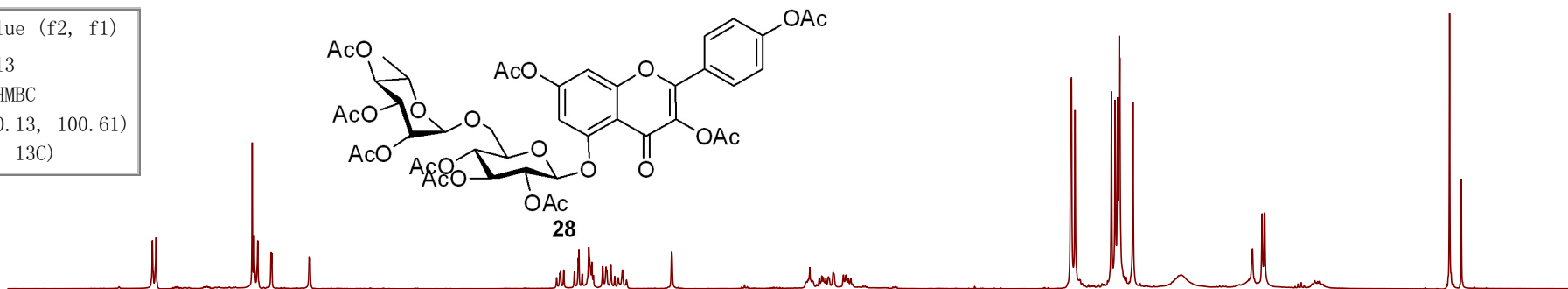
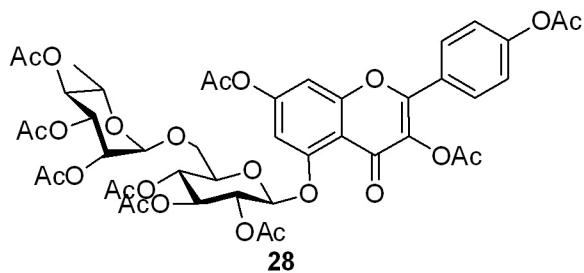
Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-COSY
3 Spectrometer Frequency	(400.13, 400.13)
4 Nucleus	(1H, 1H)



Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-HSQC
3 Spectrometer Frequency	(400.13, 100.61)
4 Nucleus	(1H, 13C)



Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-HMBC
3 Spectrometer Frequency	(400.13, 100.61)
4 Nucleus	(1H, 13C)



Parameter	Value (f2, f1)
1 Solvent	CDC13
2 Experiment	2D-NOESY
3 Spectrometer Frequency	(400.13, 400.13)
4 Nucleus	(1H, 1H)

