

SUPPLEMENTARY DATA

Reprogramming of the antibacterial drug vancomycin results in potent antiviral agents devoid of antibacterial activity

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Compound 3

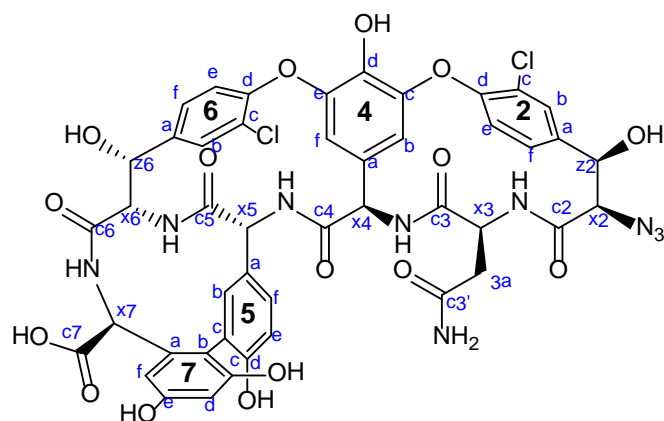
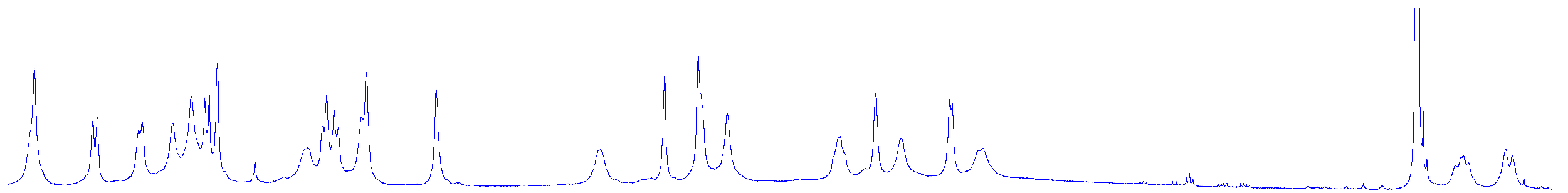


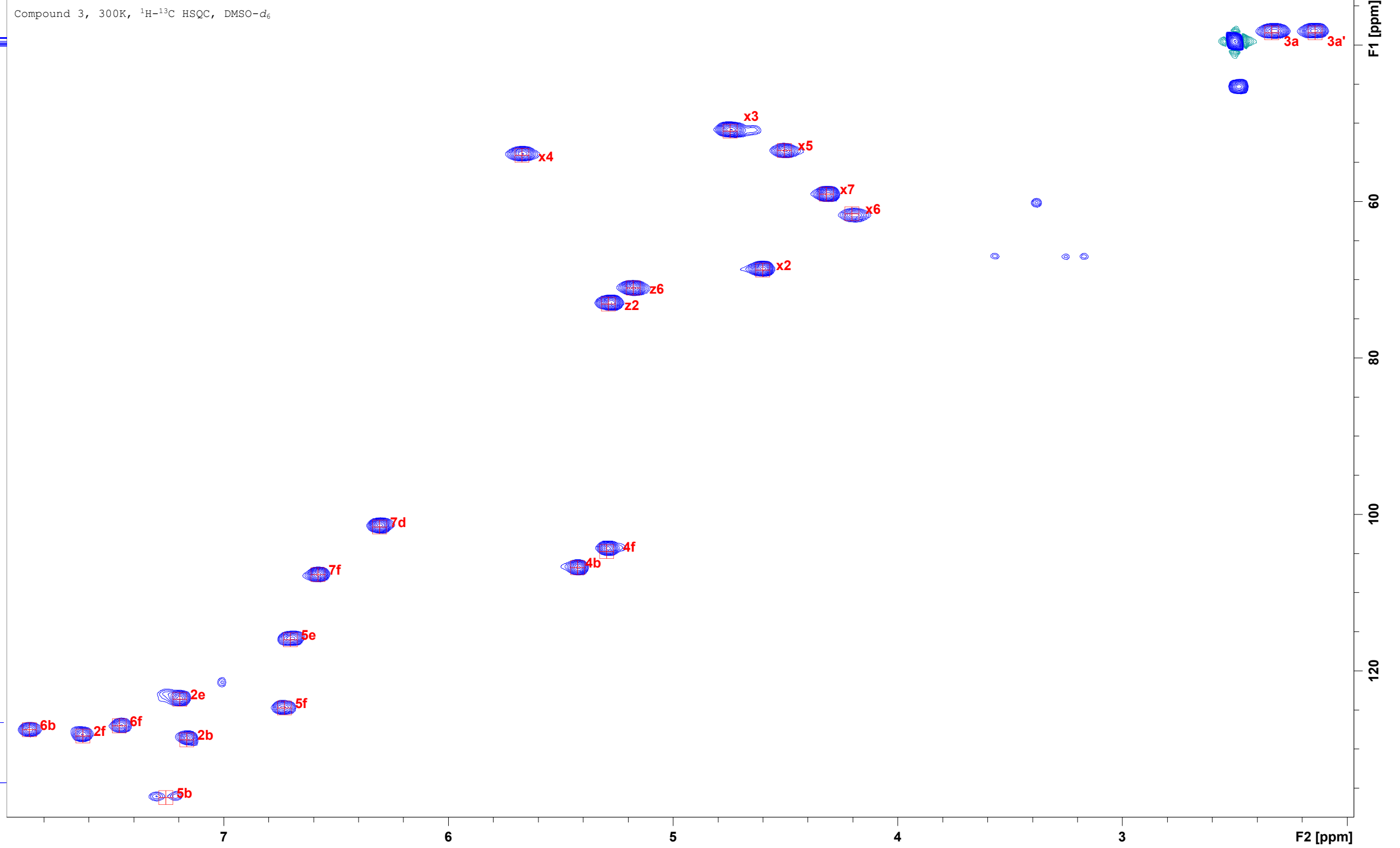
Table S1. NMR data for Compound 3

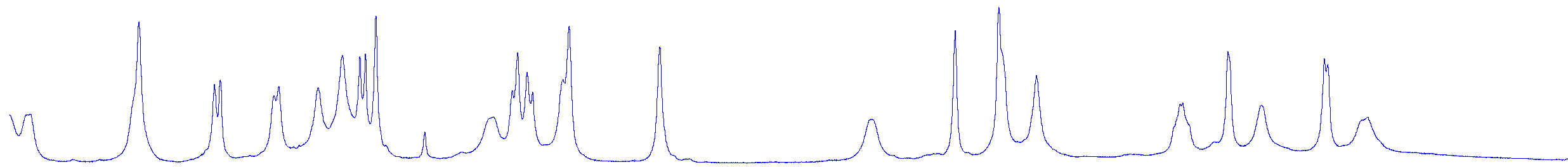
| Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C |
|------------|----------------|-----------------|------------|----------------|-----------------|
| c7 | - | 174.7 | 6c | - | 125.8 |
| c3' | - | 169.9 | 2f | 7.63 | 128.3 |
| c6 | - | 167.2 | 2e | 7.20 | 123.6 |
| c2 | - | 165.0 | 6e | 7.23 | 123.1 |
| 7e | - | 157.5 | 5c | - | 122.9 |
| 7c | - | 156.0 | 7b | - | 117.6 |
| 5d | - | 155.3 | 5e | 6.70 | 116.0 |
| 4e | - | 147.4 | 7f | 6.58 | 107.6 |
| 4c | - | 147.6 | 4b | 5.43 | 106.8 |
| 2d | - | 151.3 | 4f | 5.30 | 104.7 |
| 6d | - | 149.1 | 7d | 6.31 | 101.6 |
| 6a | - | nd. | | | |
| 2a | - | 138.0 | z2 | 5.29 | 73.0 |
| 7a | - | 139.3 | z6 | 5.18 | 71.0 |
| 5b | 7.26 | 136.2 | 3a,a' | 2.34;2.14 | 38.4 |
| 4d | - | 134.3 | | | |
| 4a | - | 129.2 | x6 | 4.20 | 61.5 |
| 2c | - | 126.6 | x2 | 4.60 | 68.7 |
| 2b | 7.16 | 128.8 | x7 | 4.32 | 59.0 |
| 5a | - | 126.2 | x4 | 5.67 | 54.1 |
| 6b | 7.86 | 127.5 | x5 | 4.50 | 53.4 |
| 5f | 6.73 | 124.7 | x3 | 4.75 | 51.0 |
| 6f | 7.46 | 127.0 | | | |

nd. = not detected

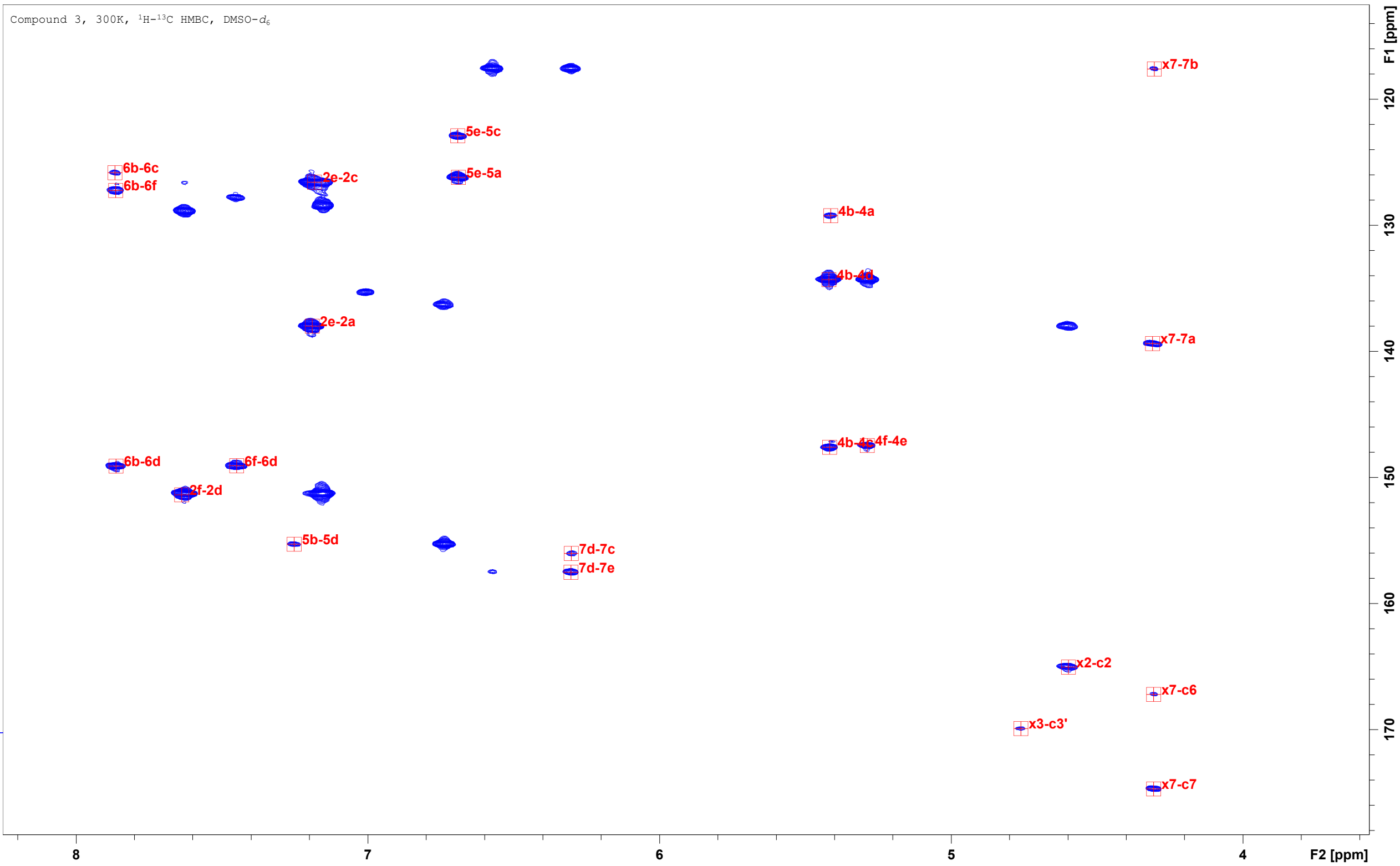
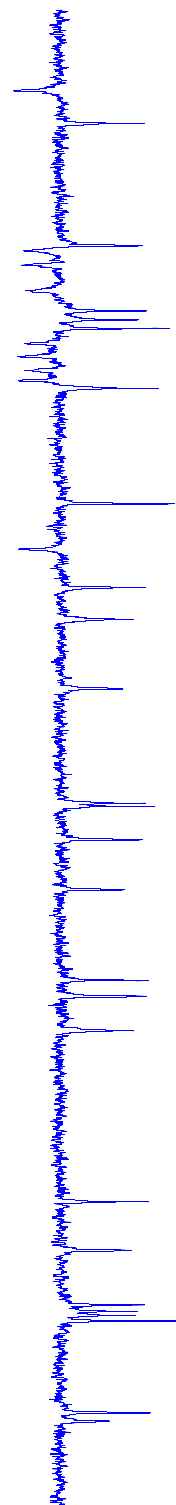


Compound 3, 300K, ¹H-¹³C HSQC, DMSO-d₆





Compound 3, 300K, ¹H-¹³C HMBC, DMSO-d₆



Compound 6

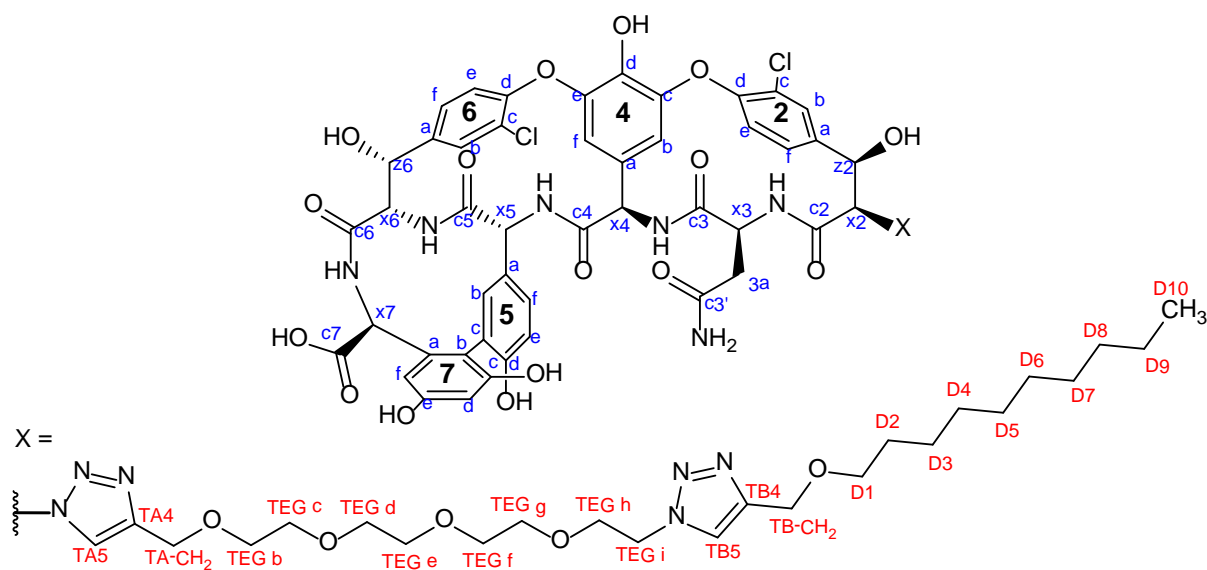
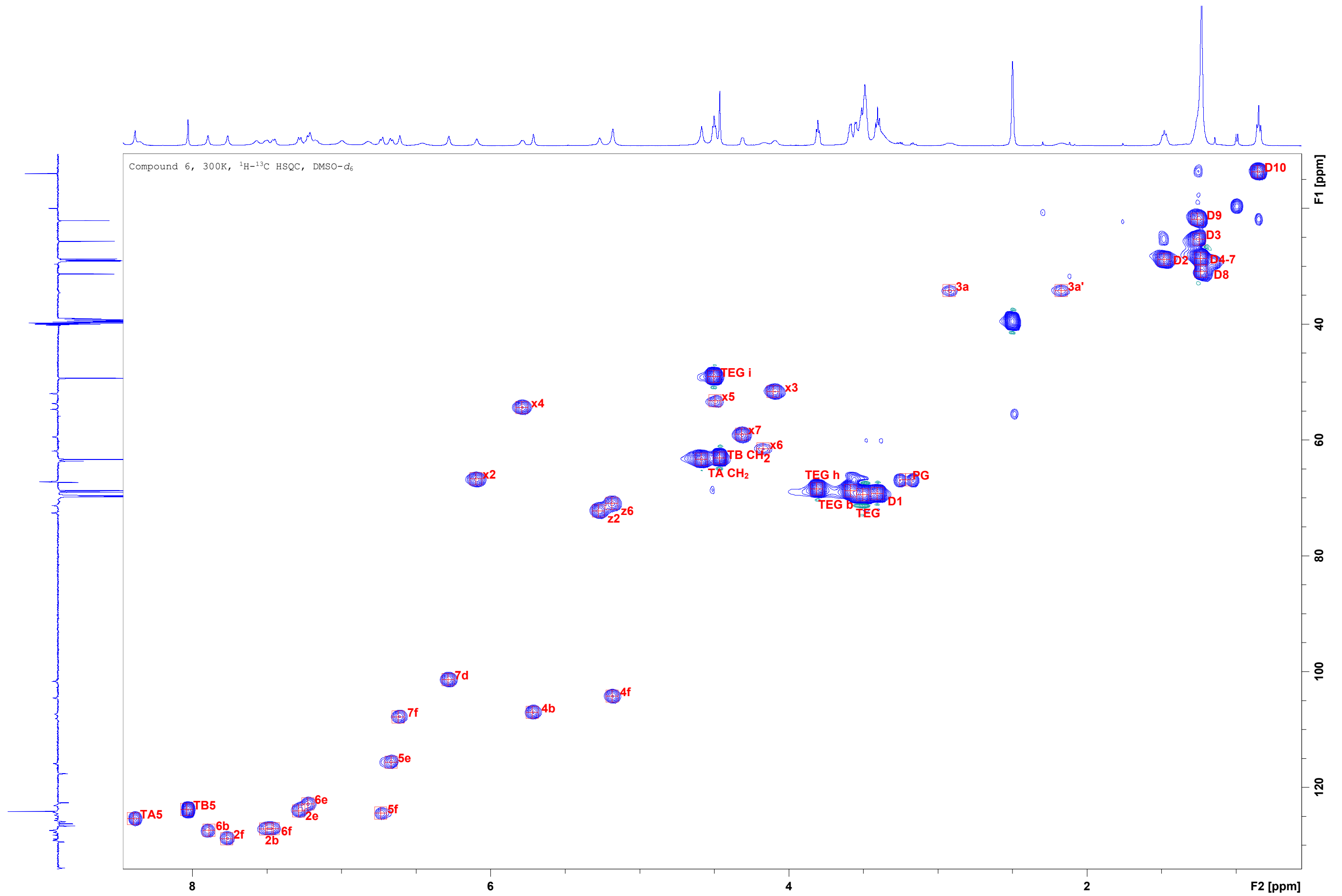
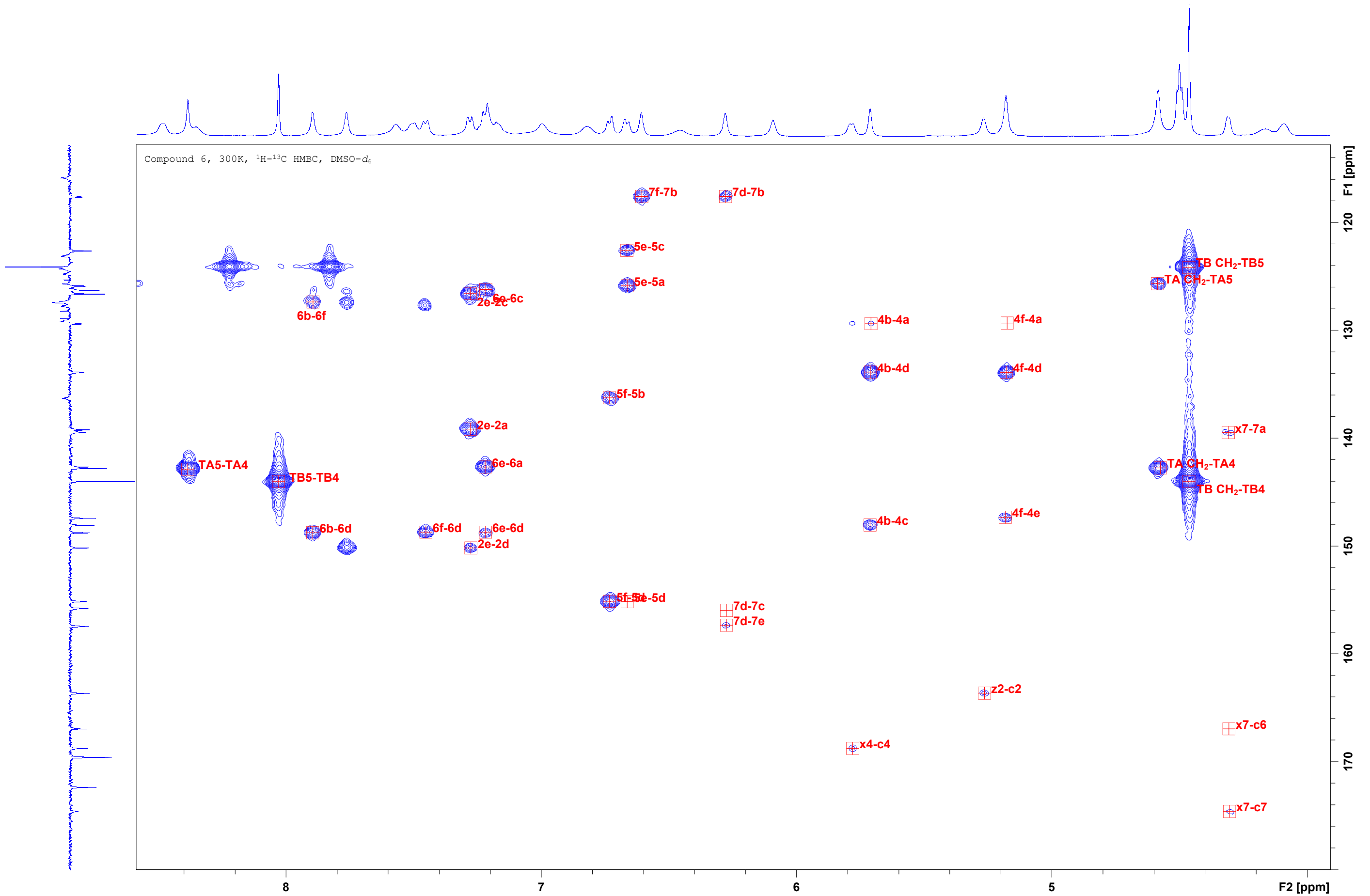


Table S2. NMR data for Compound 6

| Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C |
|------------|----------------|-----------------|------------|----------------|-----------------|---------------------|----------------|-----------------|
| c7 | - | 174.6 | 6f | 7.46 | 127.4 | TA-CH ₂ | 4.59 | 63.4 |
| c4 | - | 168.7 | 6c | - | 126.2 | TA4 | - | 143.1 |
| c2 | - | 163.6 | 2f | 7.77 | 129.2 | TA5 | 8.40 | 125.7 |
| c6 | - | 167.0 | 2e | 7.29 | 124.3 | TB-CH ₂ | 4.47 | 63.3 |
| 7e | - | 157.4 | 6e | 7.23 | 123.1 | TB4 | - | 144.3 |
| 7c | - | 155.9 | 5c | - | 122.6 | TB5 | 8.04 | 124.1 |
| 5d | - | 155.1 | 7b | - | 117.6 | | | |
| 4e | - | 147.3 | 5e | 6.67 | 116.0 | TEG b | 3.59 | 68.9 |
| 4c | - | 148.0 | 7f | 6.62 | 108.1 | TEG CH ₂ | 3.50 | 69.7 |
| 2d | - | 150.2 | 4b | 5.72 | 107.3 | TEG h | 3.81 | 68.6 |
| 6d | - | 148.7 | 4f | 5.19 | 104.5 | TEG i | 4.50 | 49.2 |
| 6a | - | 142.6 | 7d | 6.29 | 101.7 | | | |
| 2a | - | 139.2 | z6 | 5.19 | 71.2 | D1 | 3.41 | 69.5 |
| 7a | - | 139.5 | z2 | 5.28 | 72.5 | D2 | 1.48 | 28.8 |
| 5b | 7.21 | 136.3 | | | | D3 | 1.25 | 25.3 |
| 4d | - | 133.8 | x6 | 4.17 | 61.8 | D4-7 | 1.29- 1.21 | 29.1 |
| 4a | - | 129.3 | x2 | 6.10 | 67.0 | | | 29.0 |
| 2c | - | 126.6 | x7 | 4.32 | 59.3 | | | 28.9 |
| 2b | 7.51 | 127.5 | x4 | 5.79 | 54.7 | | | 28.7 |
| 5a | - | 125.8 | x5 | 4.50 | 53.5 | D8 | 1.24 | 31.0 |
| 6b | 7.89 | 127.7 | x3 | 4.11 | 52.0 | D9 | 1.26 | 22.0 |
| 5f | 6.74 | 124.7 | 3a,a' | 2.93;2.17 | 34.5 | D10 | 0.86 | 13.8 |





Compound 7

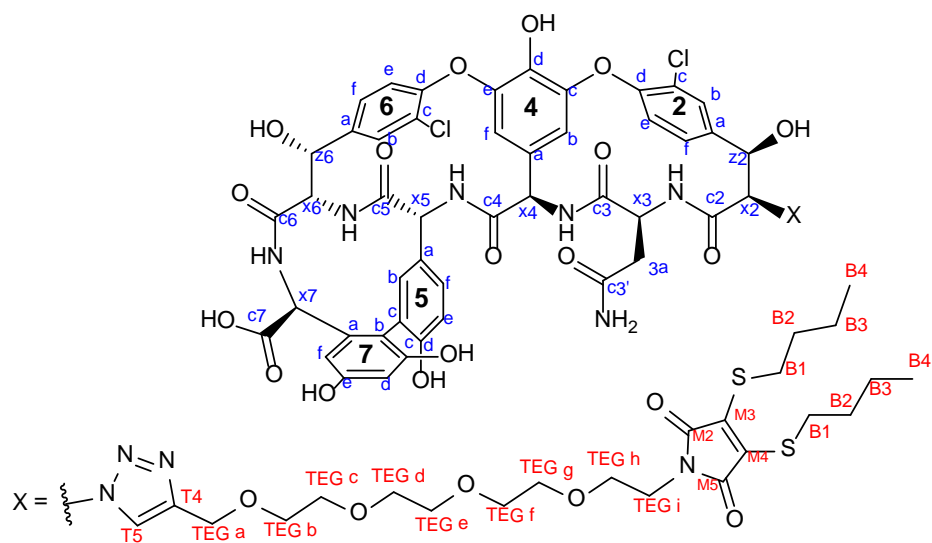
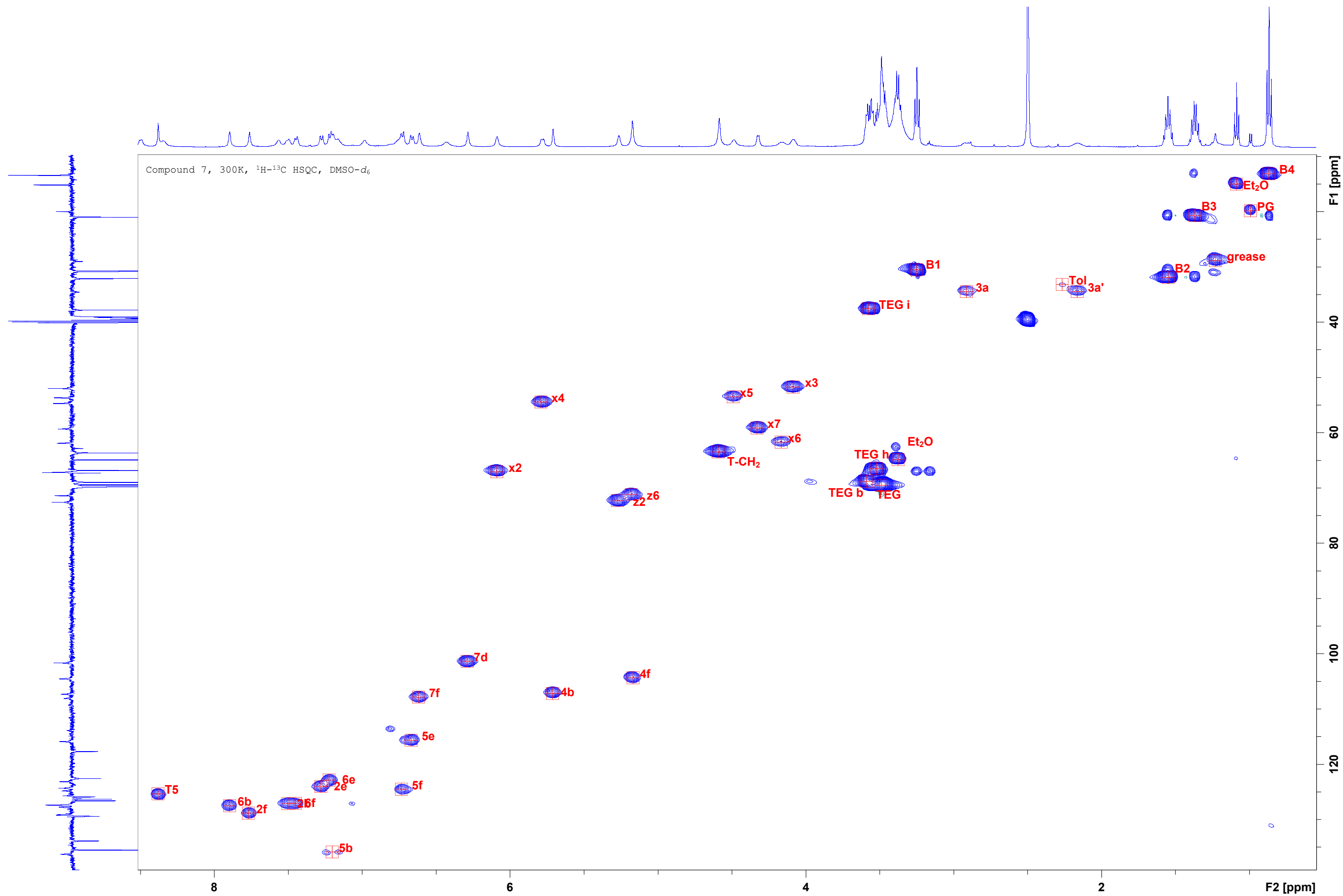
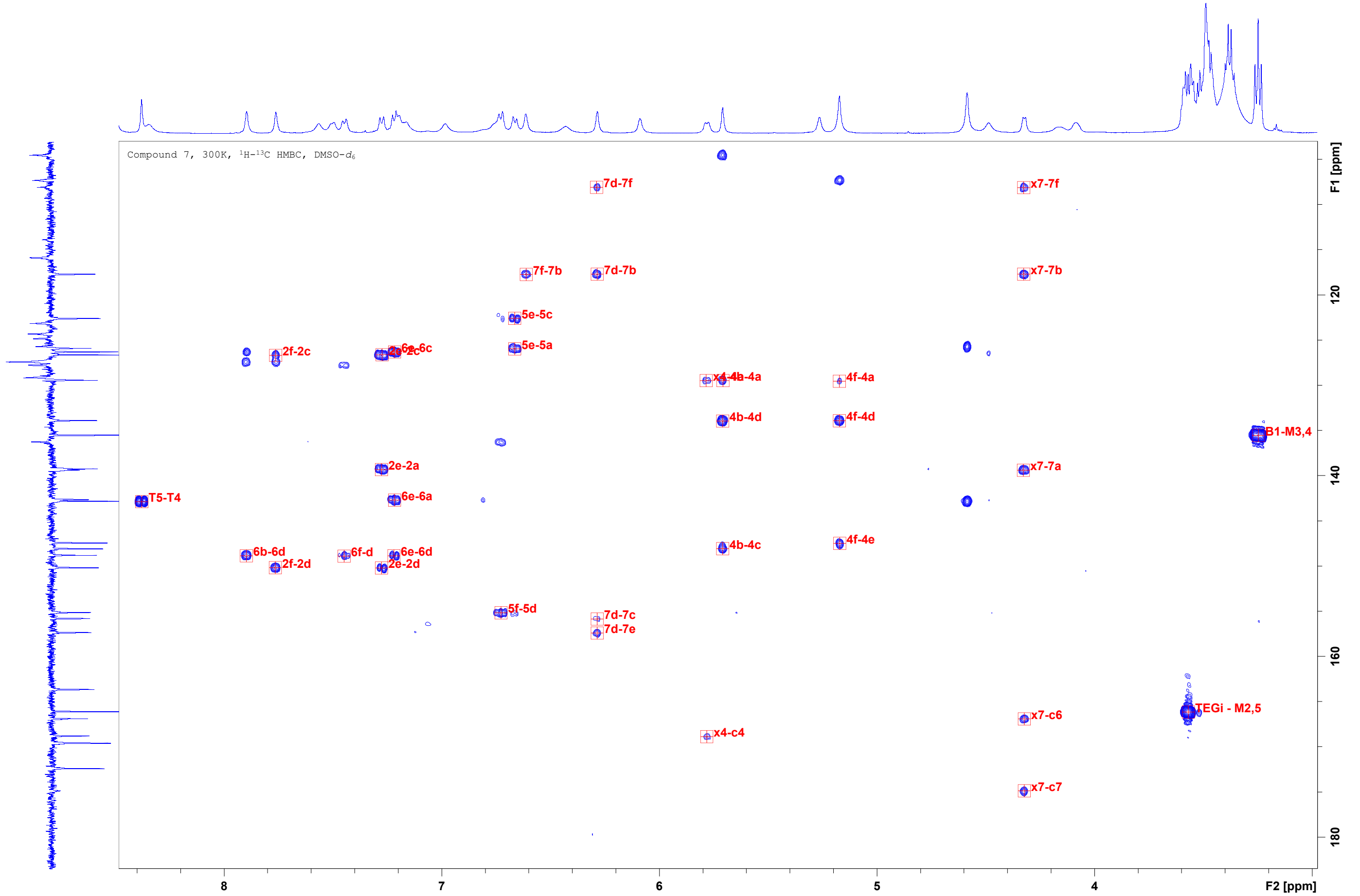


Table S3. NMR data for Compound 7

| Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C |
|------------|----------------|-----------------|------------|----------------|-----------------|---------------------|----------------|-----------------|
| c7 | - | 174.9 | 5f | 6.74 | 124.5 | x5 | 4.49 | 53.5 |
| c4 | - | 168.9 | 6f | 7.45 | 127.1 | x3 | 4.09 | 51.7 |
| c6 | - | 166.9 | 6c | - | 126.3 | | | |
| 7e | - | 157.4 | 2f | 7.77 | 128.8 | 3a,a' | 2.91;2.16 | 34.4 |
| 7c | - | 155.8 | 2e | 7.28 | 124.0 | | | |
| 5d | - | 155.2 | 6e | 7.23 | 122.8 | T5 | 8.38 | 125.4 |
| 4e | - | 147.5 | 5c | - | 122.6 | T4 | - | 142.8 |
| 4c | - | 148.1 | 7b | - | 117.7 | TEG b | 3.59 | 68.8 |
| 2d | - | 150.2 | 5e | 6.67 | 115.6 | TEG CH ₂ | 3.49 | 69.5 |
| 6d | - | 148.8 | 7f | 6.62 | 107.8 | TEG h | 3.52 | 66.4 |
| 6a | - | 142.7 | 4b | 5.71 | 107.2 | TEG i | 3.57 | 37.5 |
| 2a | - | 139.3 | 4f | 5.17 | 104.4 | T-CH ₂ | 4.59 | 63.5 |
| 7a | - | 139.4 | 7d | 6.29 | 101.4 | | | |
| 5b | 7.20 | 135.9 | z6 | 5.18 | 71.2 | M2,5 | - | 166.1 |
| 4d | - | 133.9 | z2 | 5.27 | 72.3 | M3,4 | - | 135.5 |
| 4a | - | 129.4 | | | | | | |
| 2c | - | 126.6 | x6 | 4.17 | 61.7 | B1 | 3.25 | 30.5 |
| 2b | 7.50 | 127.1 | x2 | 6.09 | 67.1 | B2 | 1.55 | 31.9 |
| 5a | - | 125.9 | x7 | 4.33 | 59.1 | B3 | 1.37 | 20.7 |
| 6b | 7.90 | 127.5 | x4 | 5.79 | 54.5 | B4 | 0.87 | 13.2 |



Compound 7, 300K, ^1H - ^{13}C HMBC, DMSO-d_6



Compound 8

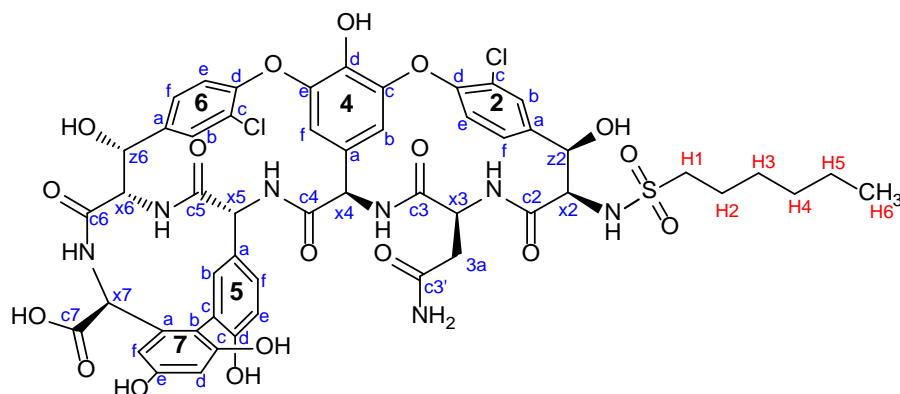
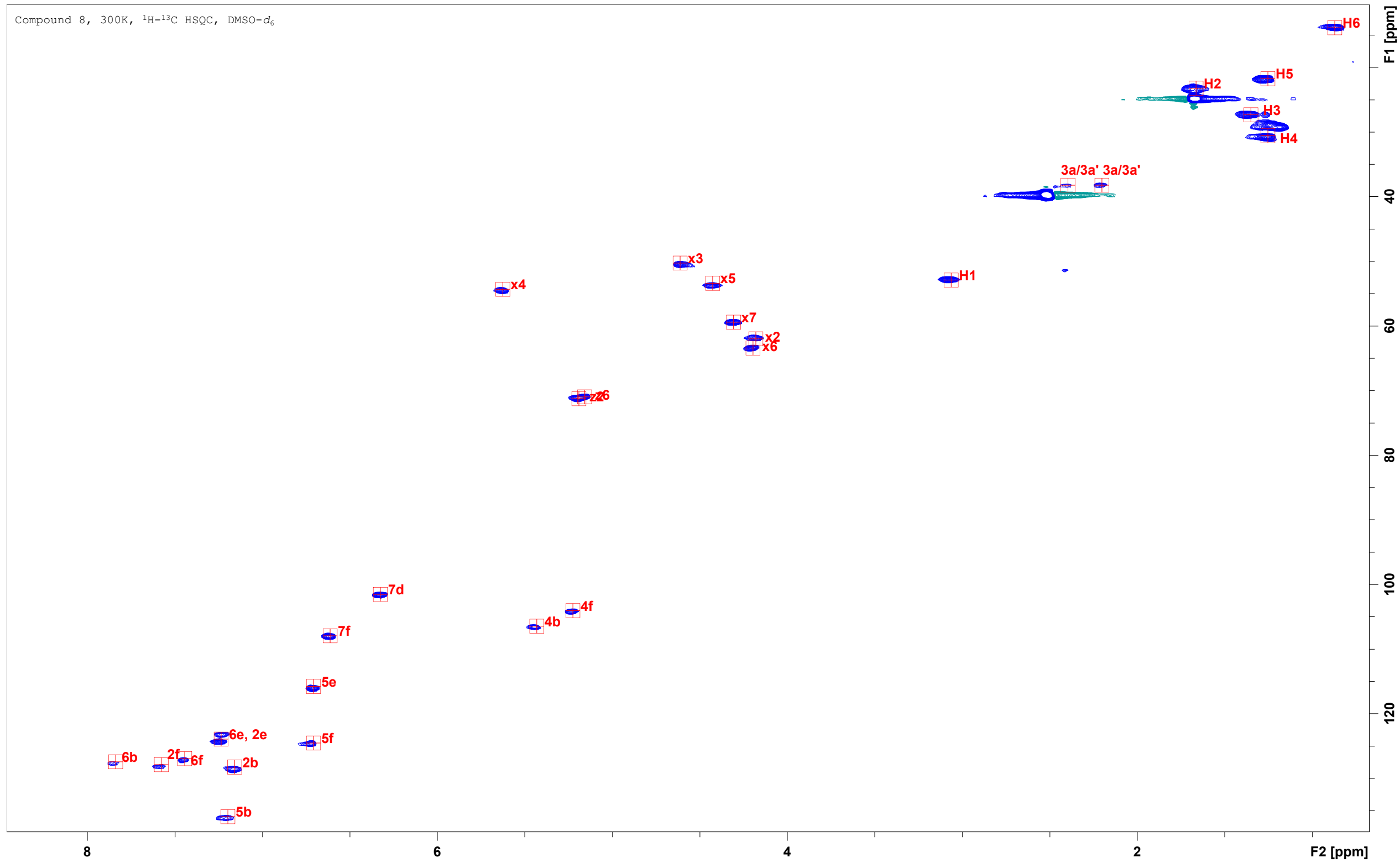
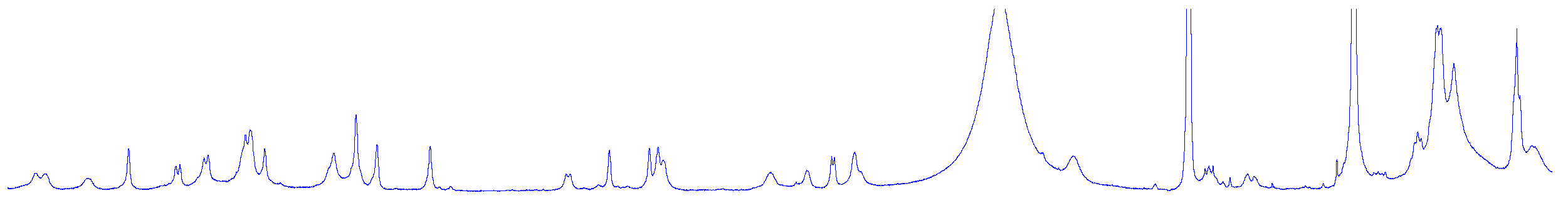


Table S4. NMR data for Compound 8

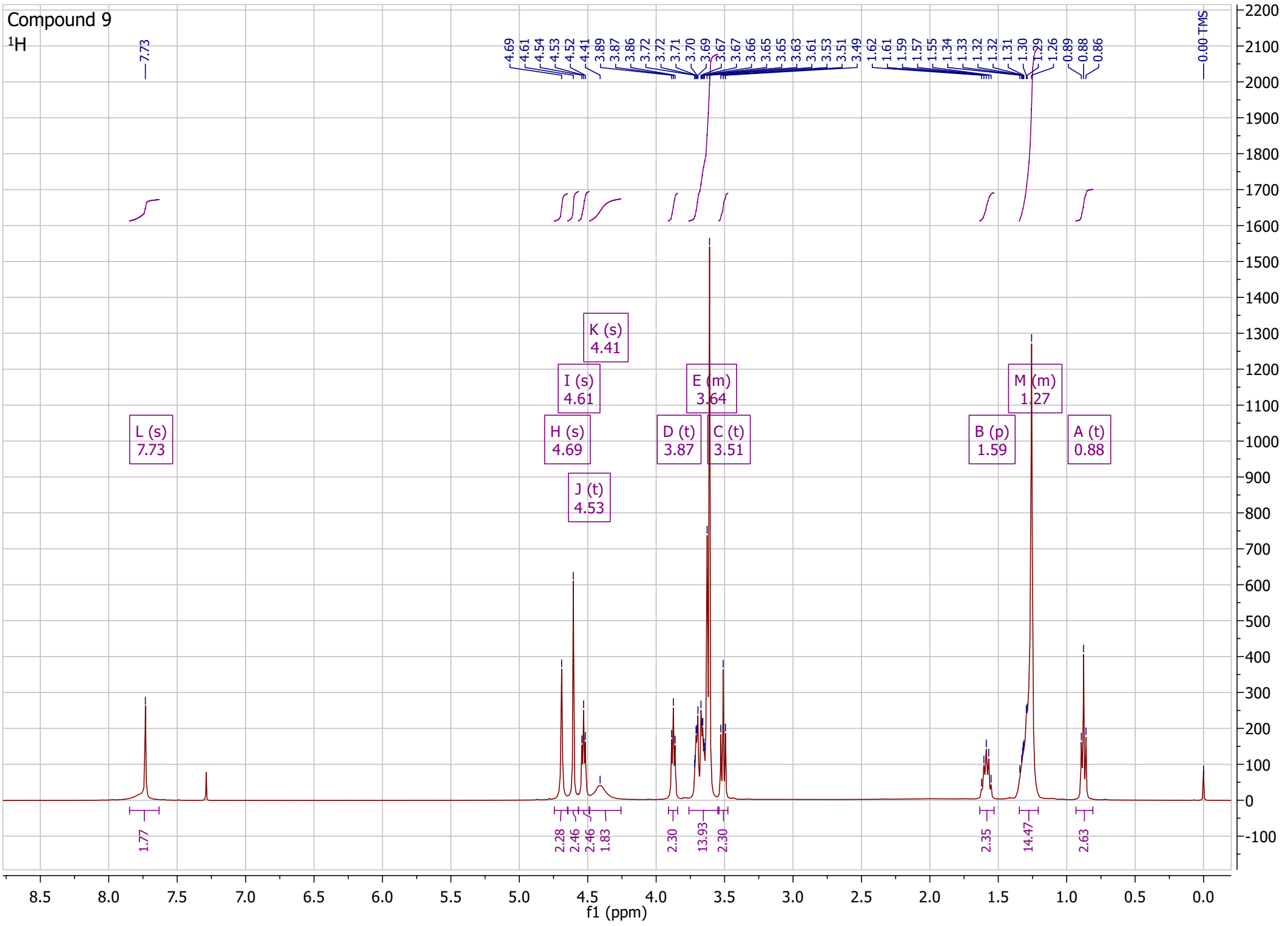
| Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C |
|------------|----------------|-----------------|------------|----------------|-----------------|
| c7 | - | 175.2 | 7f | 6.61 | 107.8 |
| c6 | - | 167.0 | 4b | 5.43 | 106.4 |
| 7e | - | 157.0 | 4f | 5.22 | 104.0 |
| 7c | - | 156.0 | 7d | 6.33 | 101.4 |
| 4e | - | 147.8 | z6 | 5.16 | 70.8 |
| 2d | - | 150.5 | z2 | 5.19 | 70.9 |
| 6d | - | 148.9 | x6 | 4.20 | 63.0 |
| 2a | - | 139.1 | x2 | 4.18 | 61.9 |
| 7a | - | 139.2 | x7 | 4.30 | 59.2 |
| 4d | - | 134.5 | x4 | 5.63 | 54.3 |
| 2b | 7.16 | 128.5 | x5 | 4.43 | 53.5 |
| 5a | - | 125.6 | x3 | 4.61 | 50.5 |
| 6b | 7.85 | 127.8 | | | |
| 5f | 6.71 | 124.1 | H1 | 3.06 | 52.5 |
| 6f | 7.46 | 127.2 | H2 | 1.68 | 23.3 |
| 2f | 7.61 | 128.2 | H3 | 1.36 | 26.9 |
| (2e) | 7.23 | 123.2 | H4 | 1.24 | 29.1 |
| (6e) | 7.25 | 124.4 | H5 | 1.26 | 21.6 |
| 5c | - | 122.8 | H6 | 0.86 | 13.5 |
| 7b | - | 117.7 | | | |
| 5e | 6.71 | 115.9 | | | |

() = ambiguous



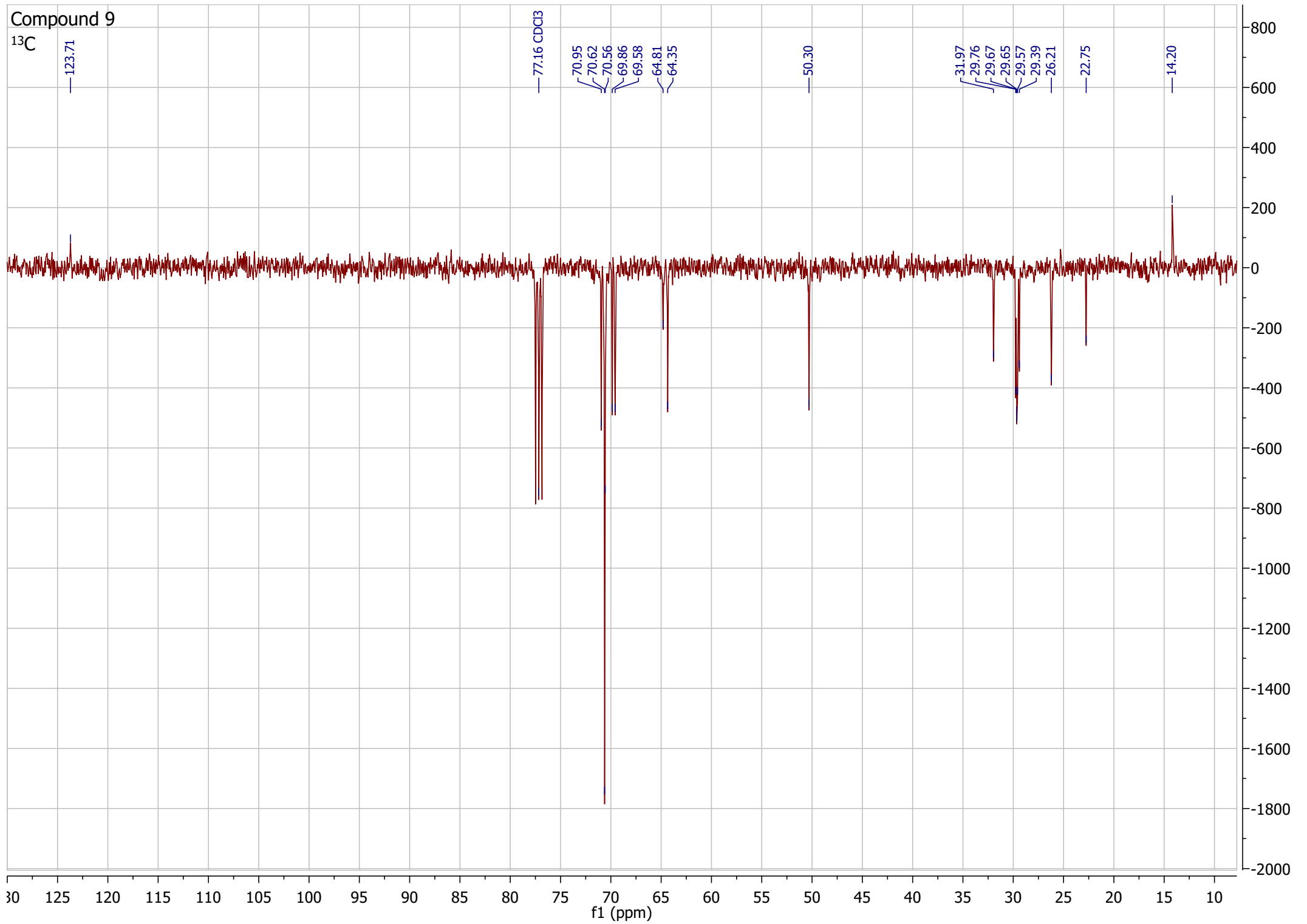
Compound 9

¹H



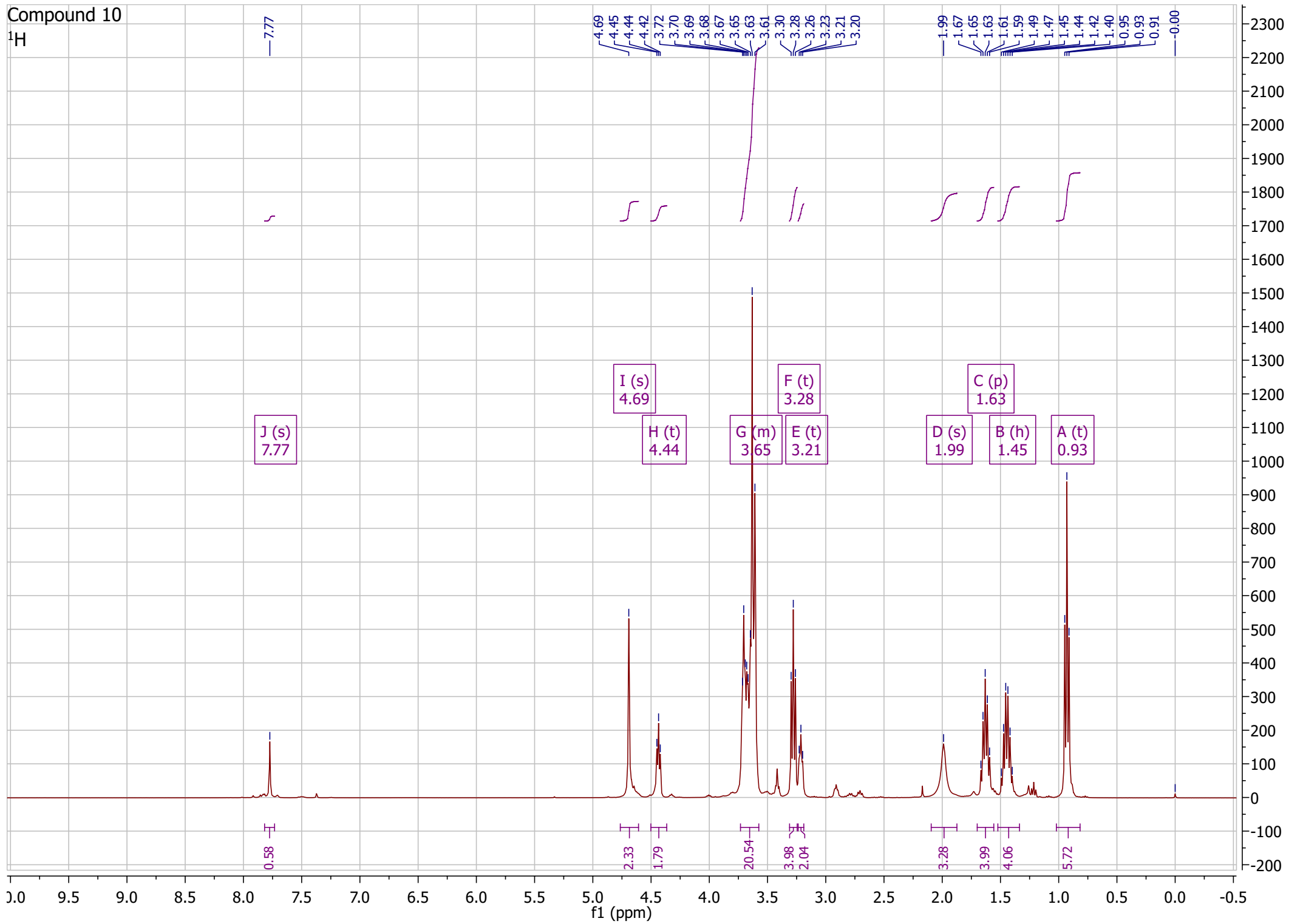
Compound 9

¹³C



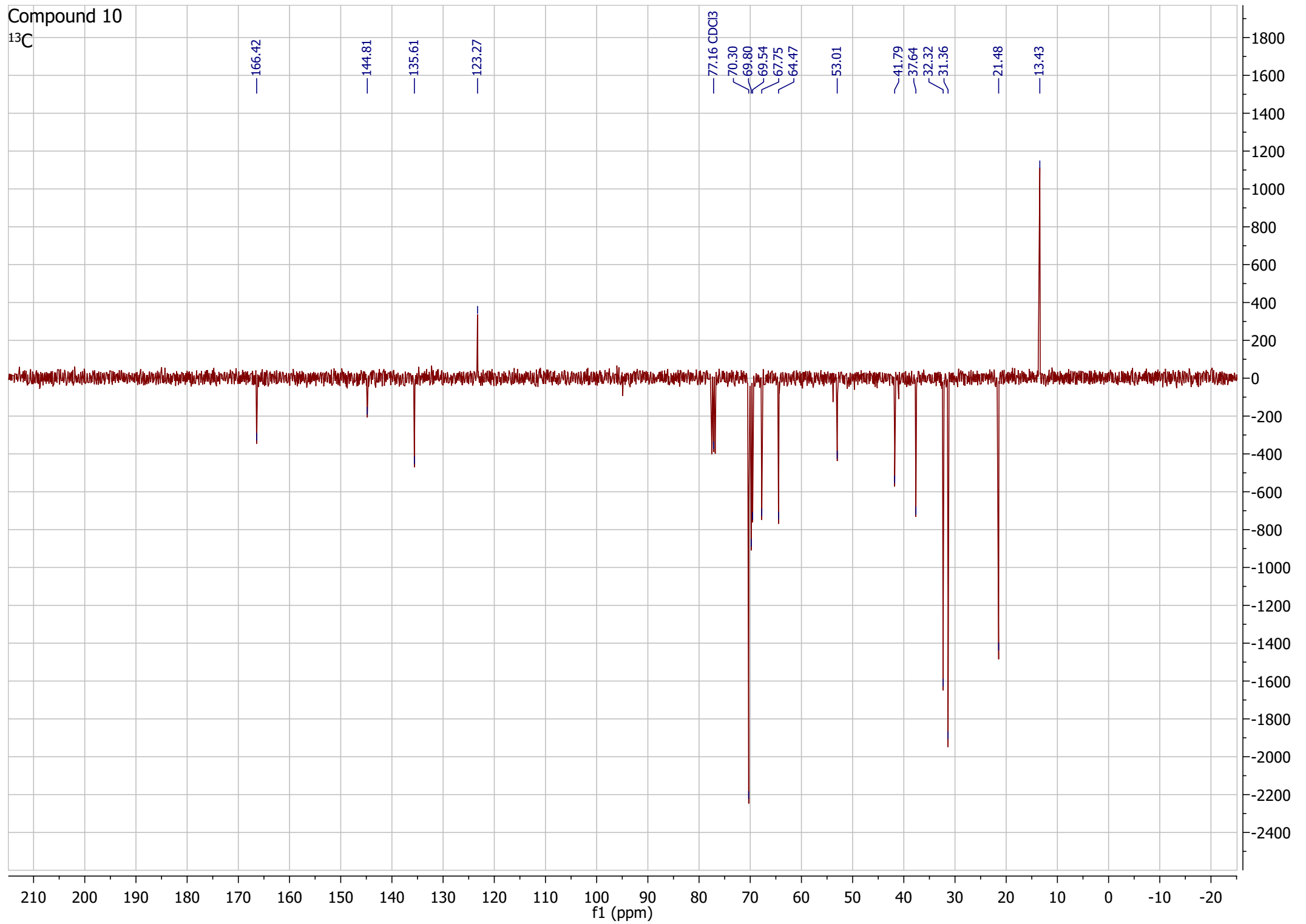
Compound 10

¹H



Compound 10

¹³C



Compound 11

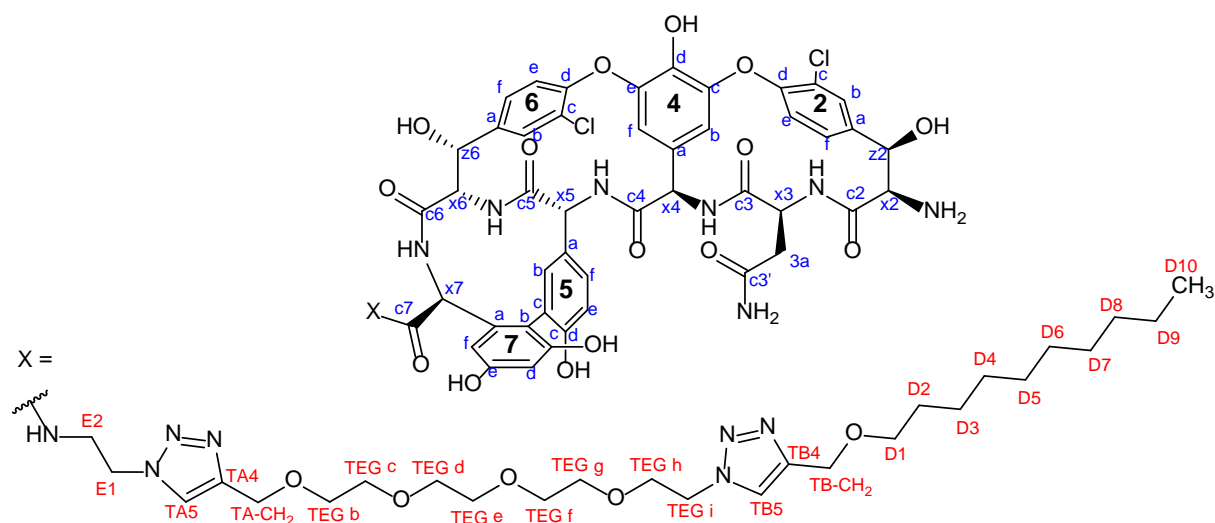
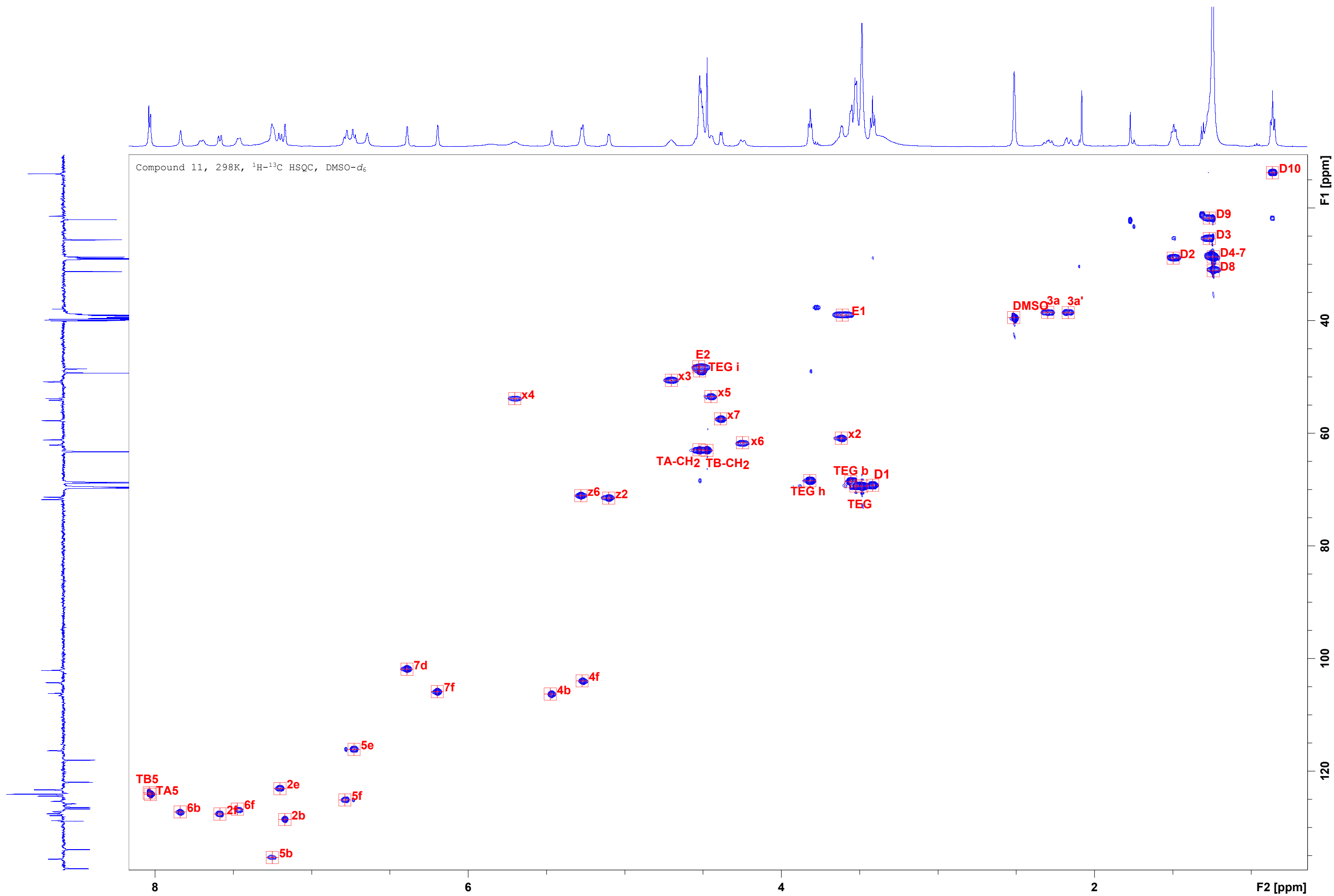
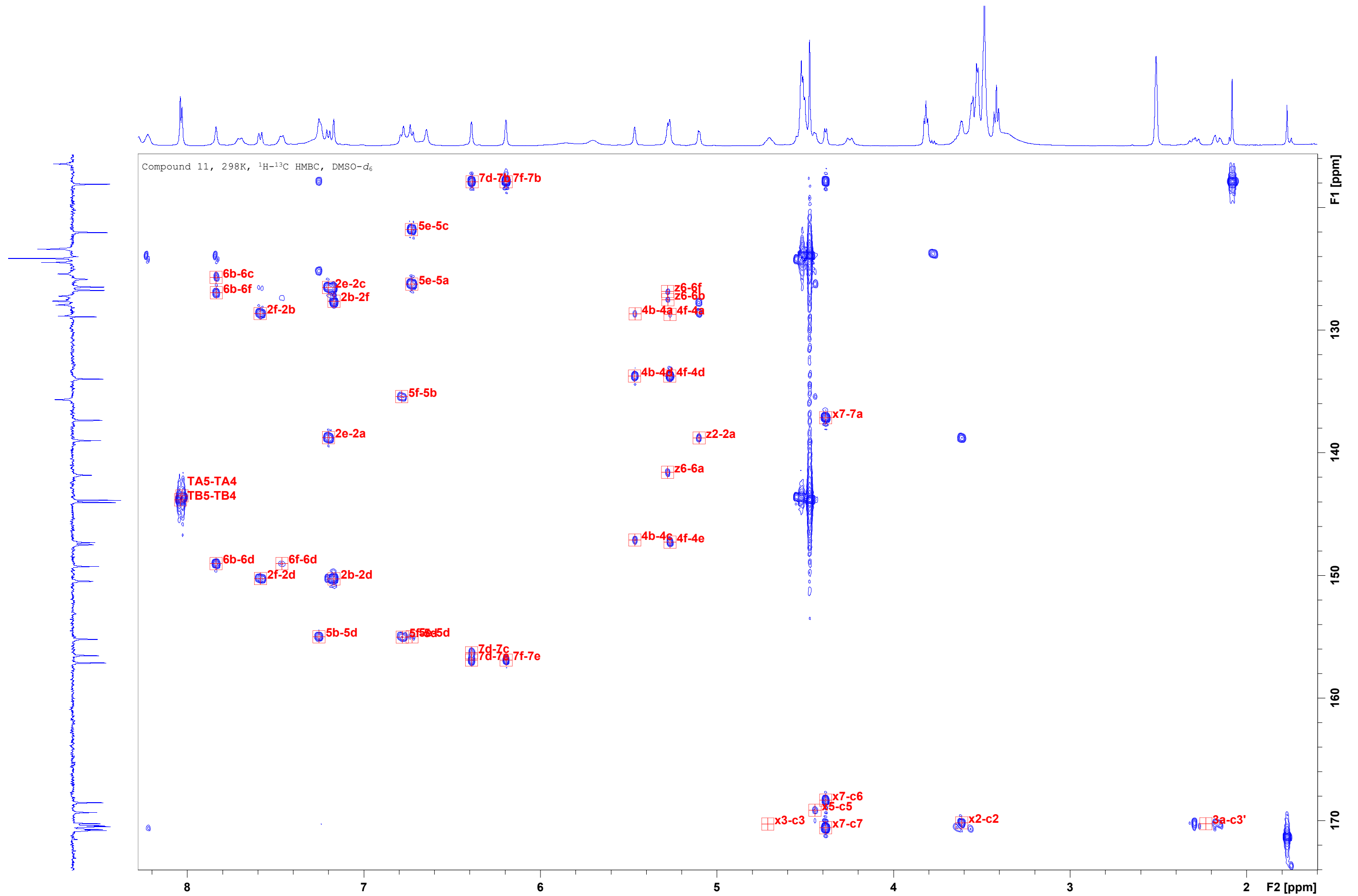


Table S5. NMR data for Compound 11

| Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C |
|------------|----------------|-----------------|------------|----------------|-----------------|---------------------|----------------|-----------------|
| c3'(c3) | - | 170.2 | 6f | 7,47 | 126,7 | TA-CH ₂ | 4.53 | 63.0 |
| c7 | - | 170.5 | 6c | - | 125,7 | TA4 | - | 143.7 |
| c5 | - | 169.1 | 2f | 7,59 | 127,6 | TA5 | 8.03 | 124.1 |
| c6 | - | 168.3 | 2e | 7,20 | 123,1 | TB-CH ₂ | 4.47 | 63.0 |
| c2 | - | 170.1 | 5c | - | 121,8 | TB4 | - | 144.1 |
| 7e | - | 156.9 | 7b | - | 117,9 | TB5 | 8.04 | 123.9 |
| 7c | - | 156.3 | 5e | 6,73 | 116,2 | TEG-CH ₂ | 3.49 | 69.4 |
| 5d | - | 155.0 | 7f | 6,20 | 105,9 | TEG-CH ₂ | 3.52 | 69.4 |
| (4e) | - | 147.3 | 4b | 5,48 | 106,3 | TEG b | 3.56 | 68.6 |
| (4c) | - | 147.1 | 4f | 5,27 | 104,0 | TEG h | 3.82 | 68.4 |
| 2d | - | 150.2 | 7d | 6,39 | 101,9 | TEG i | 4.52 | 48.9 |
| 6d | - | 149.0 | | | | D1 | 3.42 | 69.2 |
| 6a | - | 141.6 | z6 | 5,28 | 71,1 | D2 | 1.50 | 28.9 |
| 2a | - | 138.8 | z2 | 5,10 | 71,5 | D3 | 1.27 | 25.4 |
| 7a | - | 137.1 | x6 | 4,25 | 61,7 | D4 | 1.26- 1.23 | 28.7 |
| 5b | 7.25 | 135.3 | x2 | 3,62 | 60,9 | D5 | | 28.9 |
| 4d | - | 133.7 | x7 | 4,39 | 57,5 | D6 | | 29.0 |
| 4a | - | 128.7 | x4 | 5,70 | 53,9 | D7 | | 29.1 |
| 2c | - | 126.5 | x5 | 4,45 | 53,5 | D8 | 1.24 | 31.1 |
| 2b | 7.17 | 128.6 | x3 | 4,70 | 50,6 | D9 | 1.27 | 21.8 |
| 5a | - | 126.2 | | | | D10 | 0.86 | 13.8 |
| 6b | 7.84 | 127.2 | 3a | 2,30;2,17 | 38,6 | E1 | 3.61 | 39.0 |
| 5f | 6.79 | 125.1 | | | | E2 | 4.53 | 48.2 |

() = ambiguous





Compound 12

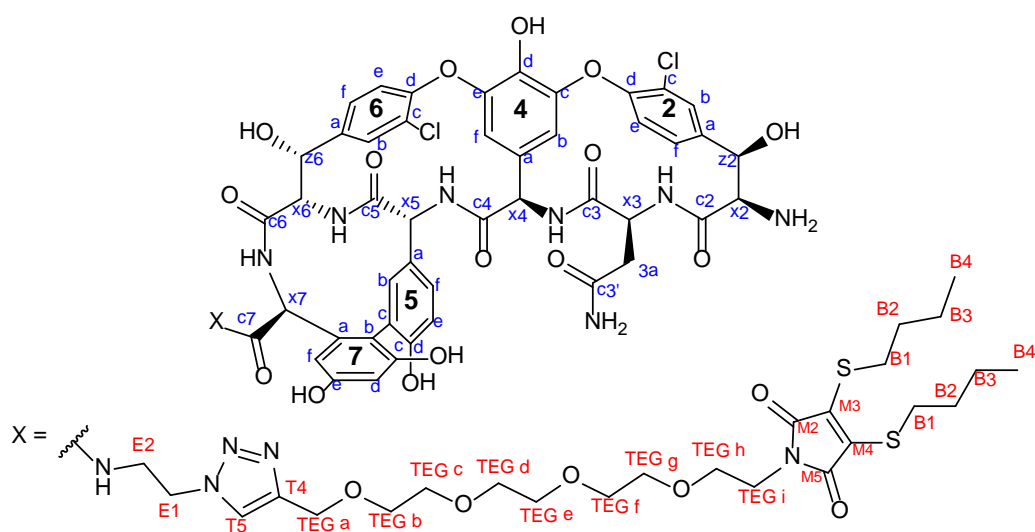
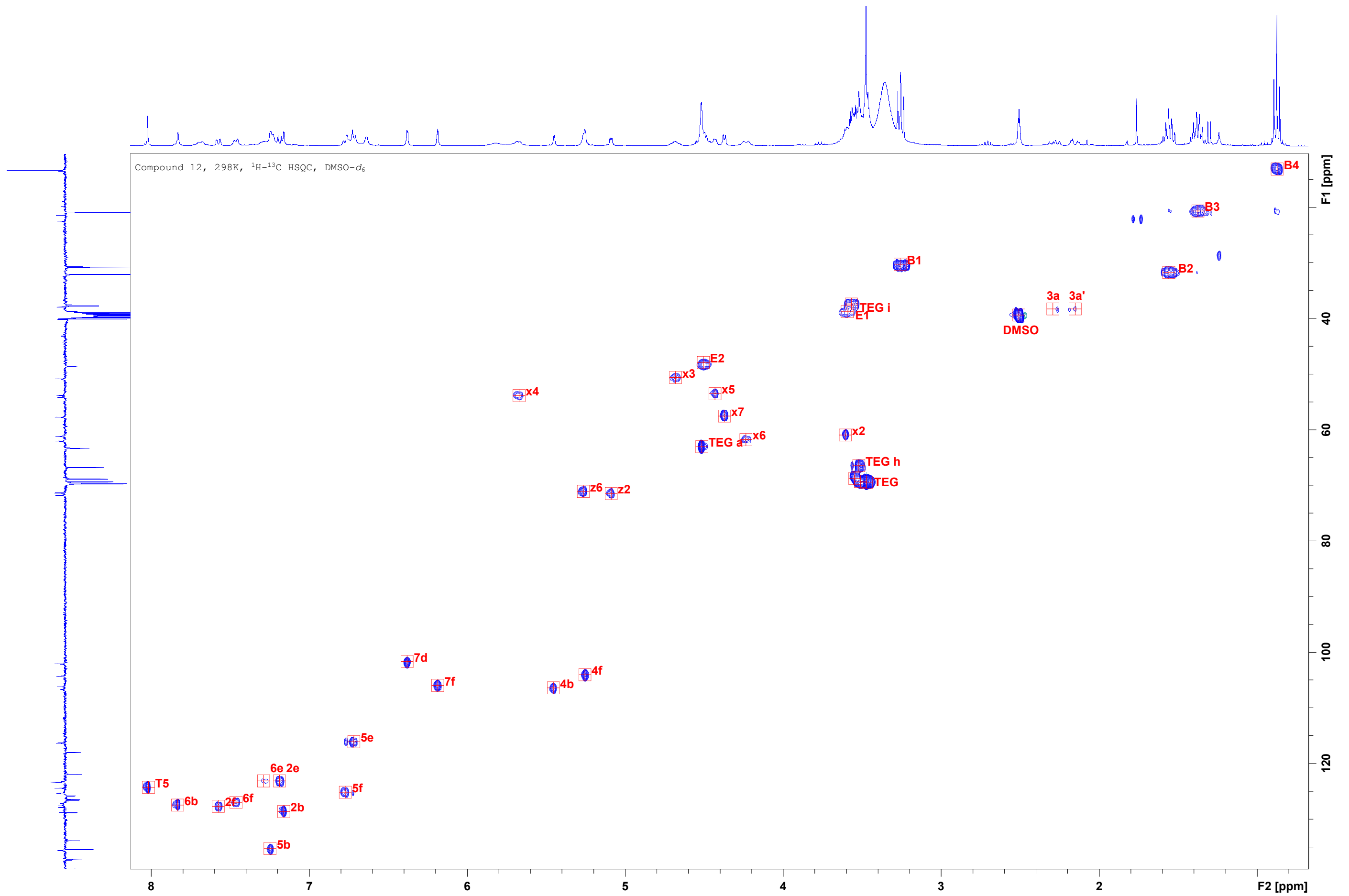
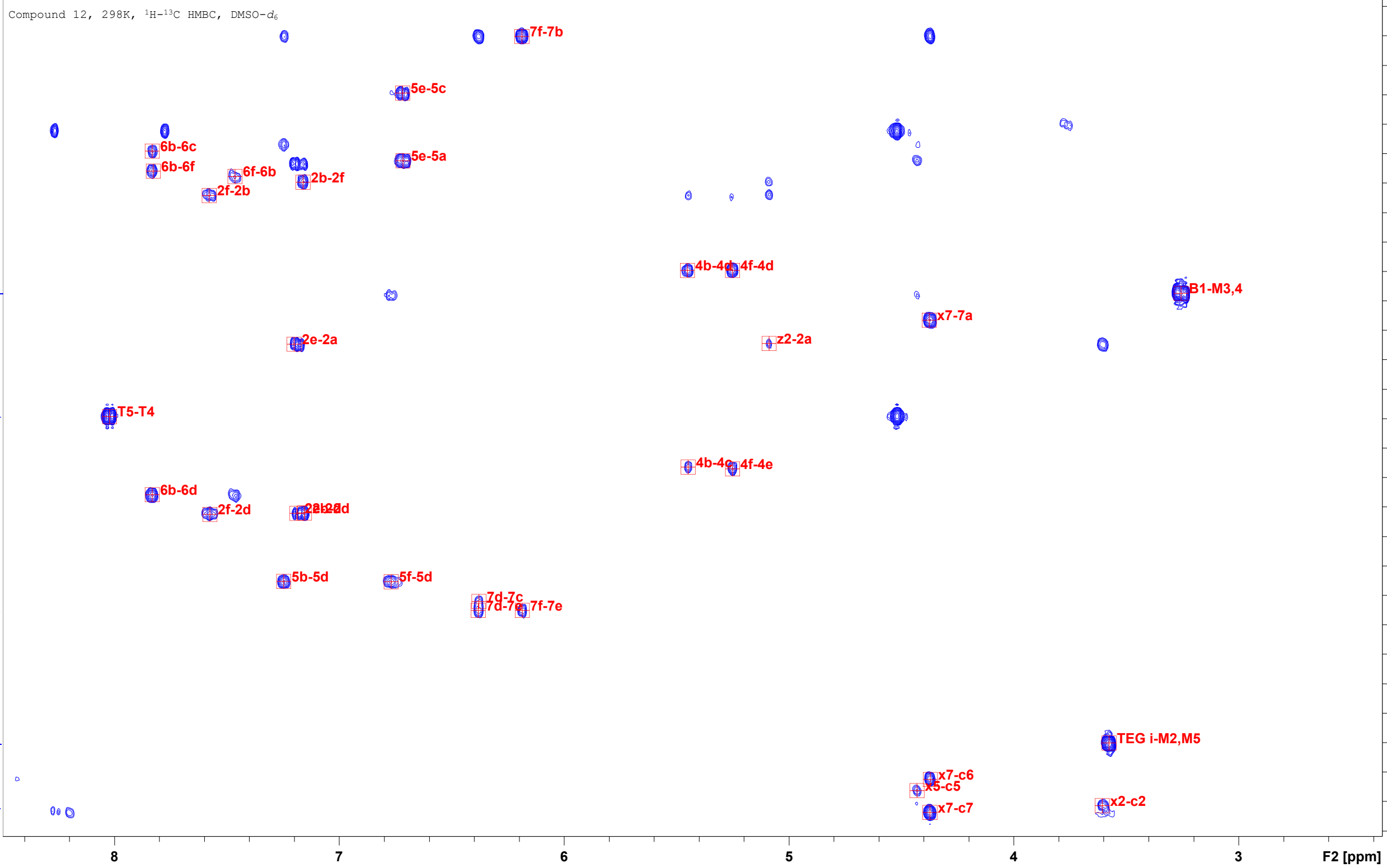
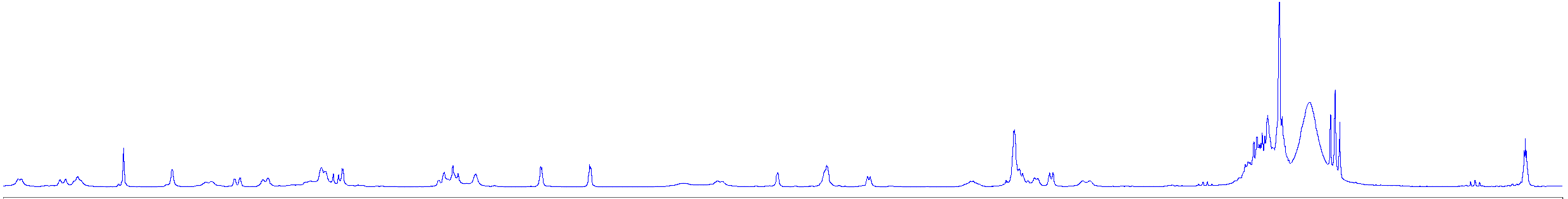


Table S6. NMR data for Compound 12

| Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C |
|------------|----------------|-----------------|---------------------|----------------|-----------------|
| c3 | - | 170.5 | 4f | 5.26 | 104.0 |
| c7 | - | 170.7 | 7d | 6.38 | 101.7 |
| c5 | - | 169.2 | z6 | 5.27 | 71.1 |
| c6 | - | 168.4 | z2 | 5.09 | 71.4 |
| c2 | - | 170.3 | x6 | 4.24 | 61.8 |
| c3' | - | 170.5 | x2 | 3.61 | 60.9 |
| 7e | - | 157.0 | x7 | 4.38 | 57.6 |
| 7c | - | 156.4 | x4 | 5.68 | 53.9 |
| 5d | - | 155.0 | x5 | 4.44 | 53.5 |
| (4e) | - | 147.4 | x3 | 4.69 | 50.6 |
| (4c) | - | 147.3 | 3a,a' | 2.28;2.16 | 38.4 |
| 2d | - | 150.4 | | | |
| 6d | - | 149.2 | T4 | - | 143.8 |
| 2a | - | 138.9 | T5 | 8.02 | 124.3 |
| 7a | - | 137.3 | | | |
| 5b | 7.25 | 135.3 | M2,5 | - | 166.0 |
| 4d | - | 133.9 | M3,4 | - | 135.5 |
| 2b | 7.17 | 128.6 | | | |
| 5a | - | 126.5 | B1 | 3.26 | 30.3 |
| 6b | 7.84 | 127.5 | B2 | 1.56 | 31.7 |
| 5f | 6.78 | 125.2 | B3 | 1.38 | 20.7 |
| 6f | 7.47 | 127.0 | B4 | 0.87 | 13.1 |
| 6c | - | 125.9 | E1 | 3.60 | 38.8 |
| 2f | 7.58 | 127.7 | E2 | 4.51 | 47.9 |
| 2e | 7.19 | 123.1 | TEG-CH ₂ | 3.55 | 68.8 |
| 6e | 7.29 | 123.1 | TEG-CH ₂ | 3.51 | 69.3 |
| 5c | - | 121.9 | TEG-CH ₂ | 3.47 | 69.4 |
| 7b | - | 118.0 | TEG a | 4.52 | 63.1 |
| 5e | 6.72 | 116.1 | TEG h | 3.52 | 66.5 |
| 7f | 6.19 | 106.0 | TEG i | 3.57 | 37.4 |
| 4b | 5.46 | 106.4 | | | |

() = ambiguous





Compound 13

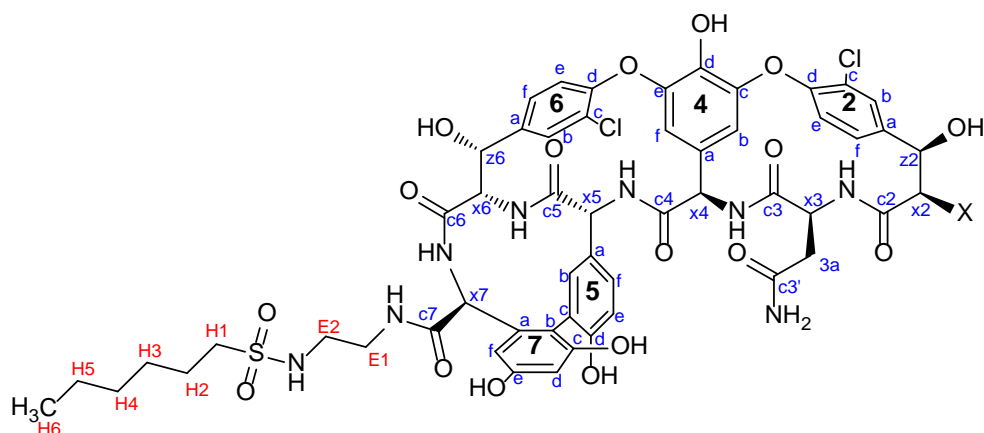
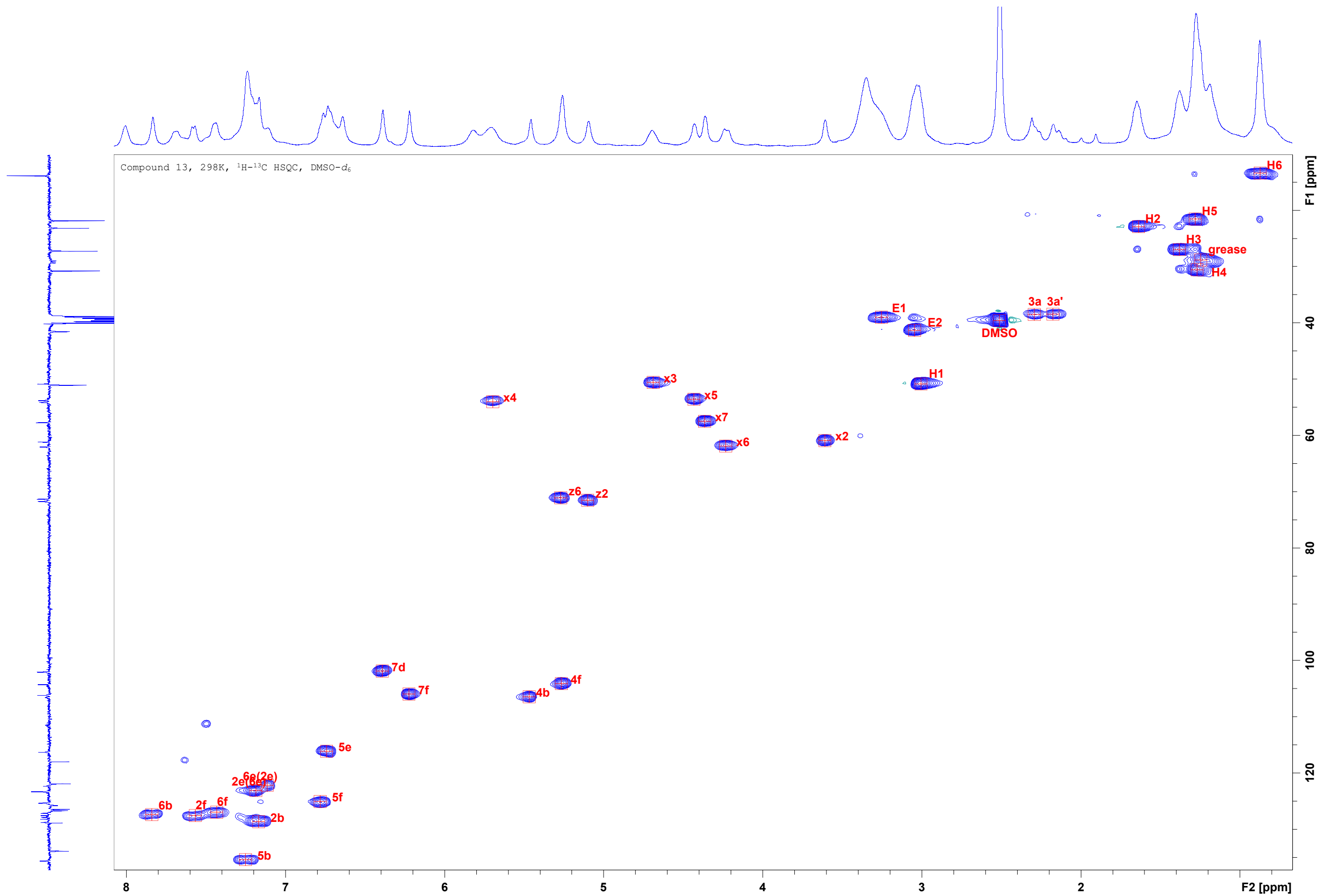


Table S7. NMR data for Compound 13

| Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C | Assignment | ¹ H | ¹³ C |
|------------|----------------|-----------------|------------|----------------|-----------------|------------|----------------|-----------------|
| c3 | - | 170.3 | 6b | 7.84 | 127.4 | x6 | 4.23 | 61.9 |
| c7 | - | 170.4 | 5f | 6.78 | 125.8 | x2 | 3.61 | 61.6 |
| c5 | - | 169.2 | 6f | 7.43 | 127.0 | x7 | 4.37 | 57.5 |
| c2 | - | 170.3 | 6c | - | 125.7 | x4 | 5.70 | 54.0 |
| 7e | - | 157.0 | 2f | 7.57 | 127.6 | x5 | 4.43 | 53.6 |
| 7c | - | 156.3 | (2e) | 7.19 | 123.1 | x3 | 4.69 | 50.6 |
| 5d | - | 155.0 | (6e) | 7.11 | 122.2 | 3a,a' | 2.29;2.18 | 38.5 |
| (4e) | - | 147.4 | 5c | - | 121.8 | | | |
| (4c) | - | 147.2 | 7b | - | 118.0 | E1 | 3.25 | 39.0 |
| 6d | - | 149.1 | 5e | 6.74 | 116.1 | E2 | 3.05 | 41.3 |
| 2a | - | 138.9 | 7f | 6.22 | 106.0 | | | |
| 7a | - | 137.4 | 4b | 5.47 | 106.5 | H1 | 3.01 | 50.9 |
| 5b | 7.25 | 135.4 | 4f | 5.27 | 104.1 | H2 | 1.64 | 22.9 |
| 4d | - | 133.9 | 7d | 6.39 | 101.9 | H3 | 1.38 | 27.0 |
| 4a | - | 128.8 | | | | H4 | 1.27 | 30.6 |
| 2b | 7.17 | 128.6 | z2 | 5.10 | 71.6 | H5 | 1.28 | 21.5 |
| 5a | - | 126.4 | z6 | 5.27 | 71.1 | H6 | 0.87 | 13.4 |

() = ambiguous



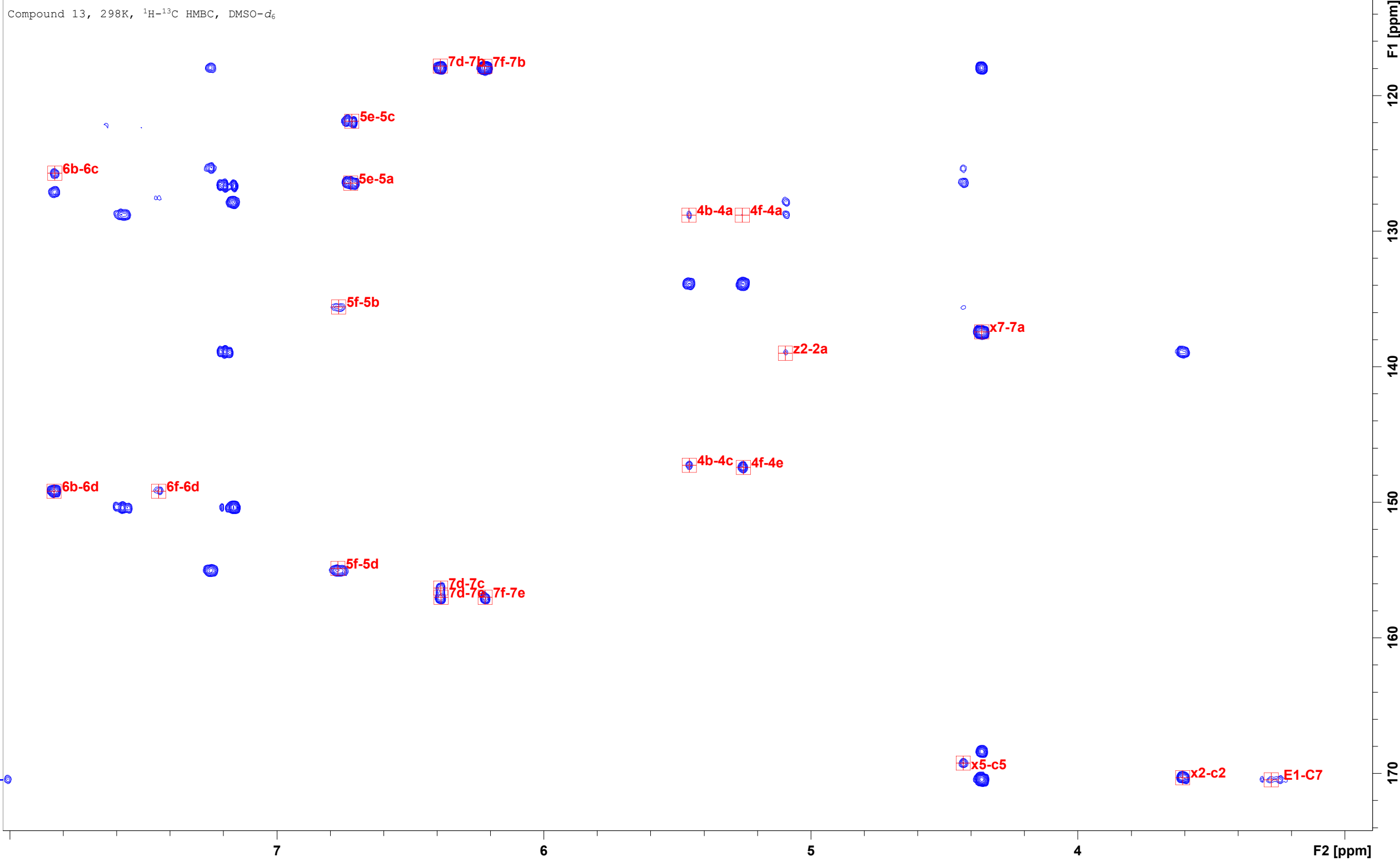
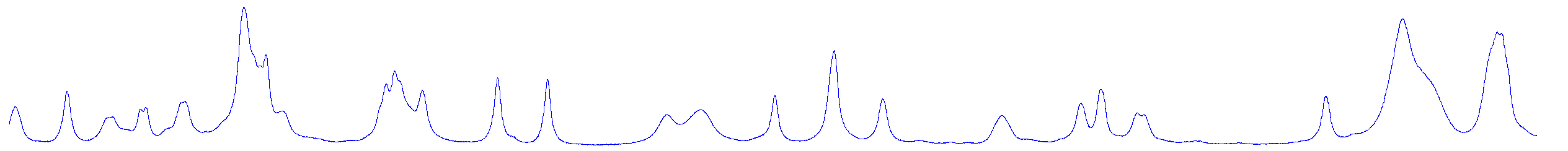


Table S8. Elemental analysis data (C, H, N, S) for vancomycin derivatives **6-8, 11-13**.

| # | Formula | C | | H | | N | | S | |
|-----------|-----------------------------------|--------|-------|--------|-------|--------|-------|--------|-------|
| | | Calcd. | Found | Calcd. | Found | Calcd. | Found | Calcd. | Found |
| 6 | $C_{70}H_{80}Cl_2N_{12}O_{21}$ | 56.19 | 56.03 | 5.39 | 5.60 | 11.23 | 11.10 | - | - |
| 7 | $C_{69}H_{74}Cl_2N_{10}O_{22}S_2$ | 54.15 | 53.98 | 4.87 | 5.05 | 9.15 | 9.05 | 4.19 | 4.01 |
| 8 | $C_{52}H_{51}Cl_2N_7O_{18}S$ | 53.61 | 53.40 | 4.41 | 4.68 | 8.42 | 8.22 | 2.75 | 2.62 |
| 11 | $C_{72}H_{86}Cl_2N_{14}O_{20}$ | 56.21 | 56.04 | 5.63 | 5.78 | 12.75 | 12.66 | - | - |
| 12 | $C_{71}H_{80}Cl_2N_{12}O_{21}S_2$ | 54.23 | 54.03 | 5.13 | 5.34 | 10.69 | 10.54 | 4.08 | 3.97 |
| 13 | $C_{54}H_{57}Cl_2N_9O_{17}S$ | 53.73 | 53.58 | 4.76 | 4.96 | 10.44 | 10.26 | 2.66 | 2.54 |