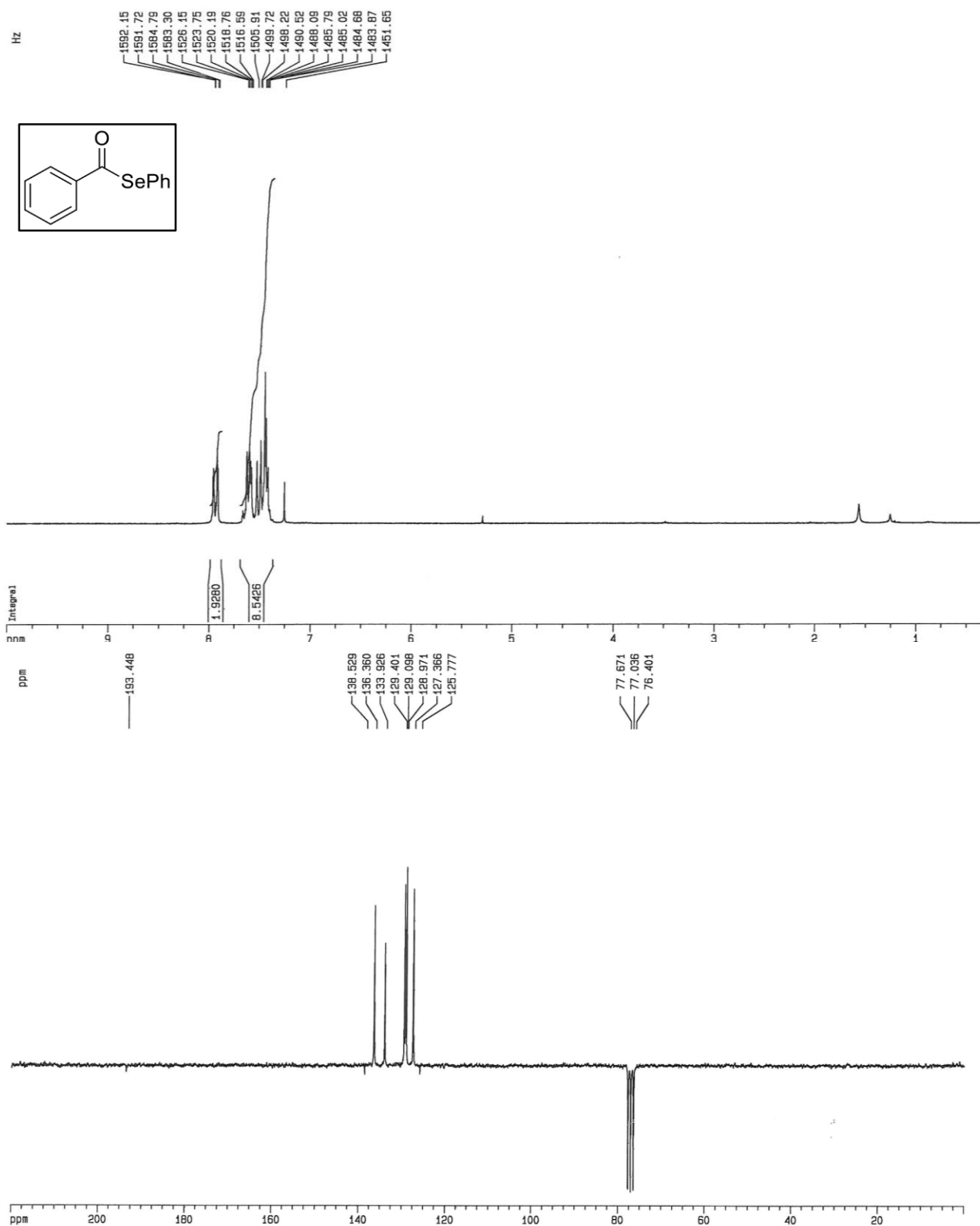


Supplementary material

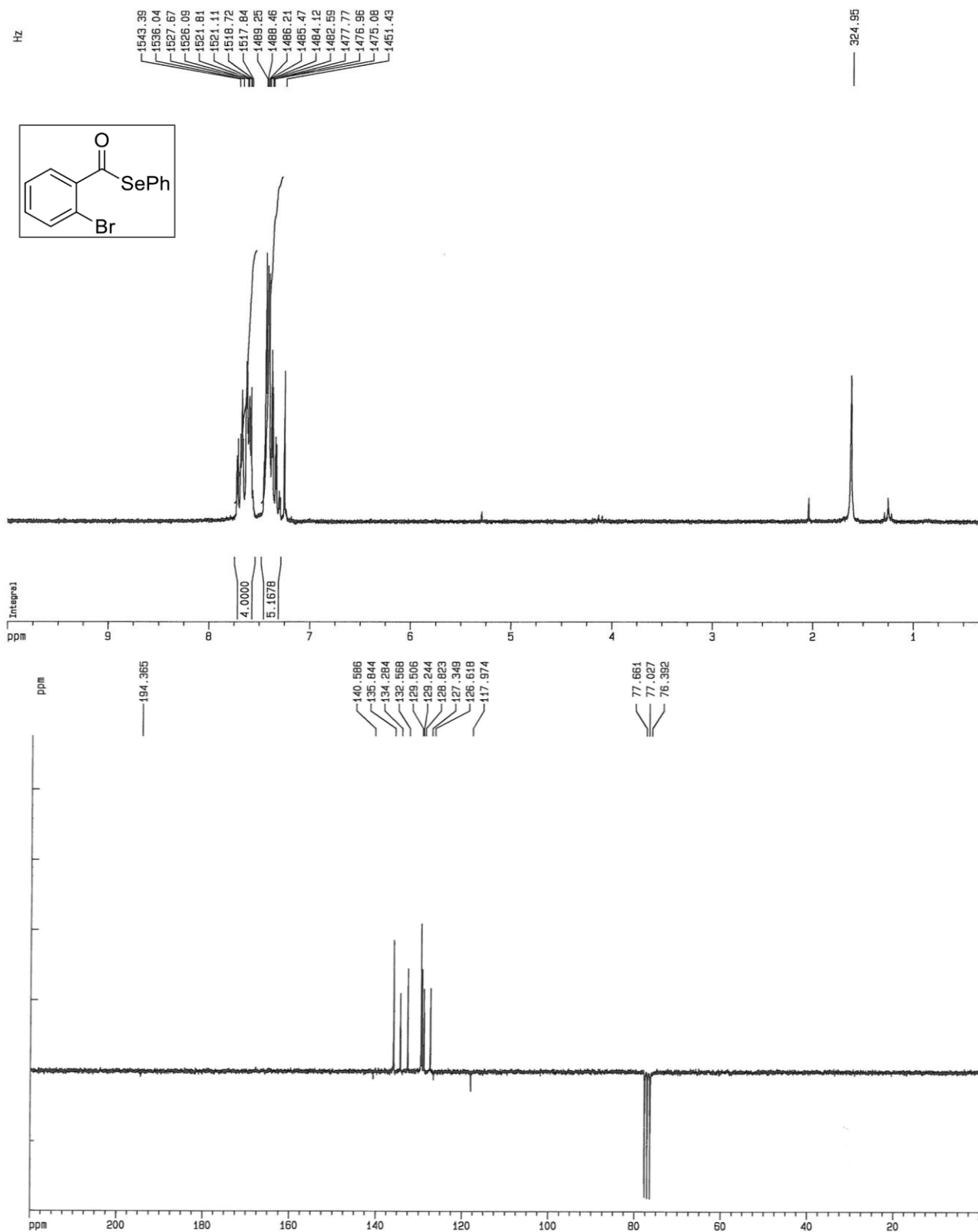
Atom Efficient preparation of Zinc Selenates for the Synthesis of Selenoesters under “*On Water*” Conditions

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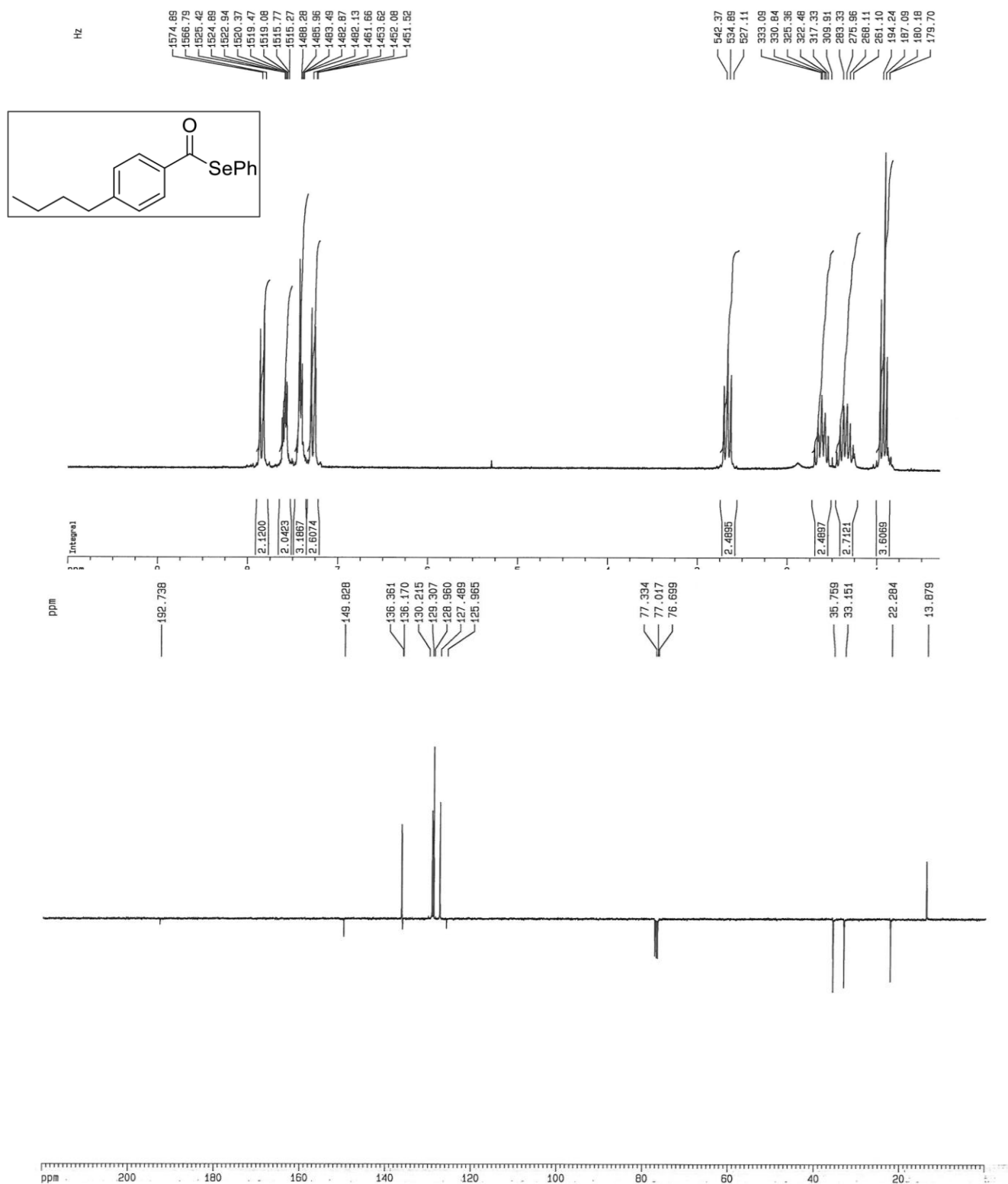
Se-Phenyl benzoselenoate (5a) [1] purified eluting with 20 % DCM in petroleum ether. Yellow solid. M.p.: 39°-40°C (Lit.: [38] 37°-38°C). ¹H-NMR (CDCl₃, 200 MHz, ppm) δ: 7.96-7.92 (m, 2H, H-Ar), 7.63-7.42 (m, 8H, H-Ar) ppm. ¹³C-NMR (CDCl₃, 50 MHz, ppm) δ: 193.5, 138.5, 136.4, 133.9, 129.4, 129.1, 128.9, 127.4, 125.8 ppm. CG-MS: *m/z* (%) = 262 (1) [M⁺], 157 (5), 105 (100), 77 (50), 51 (14).



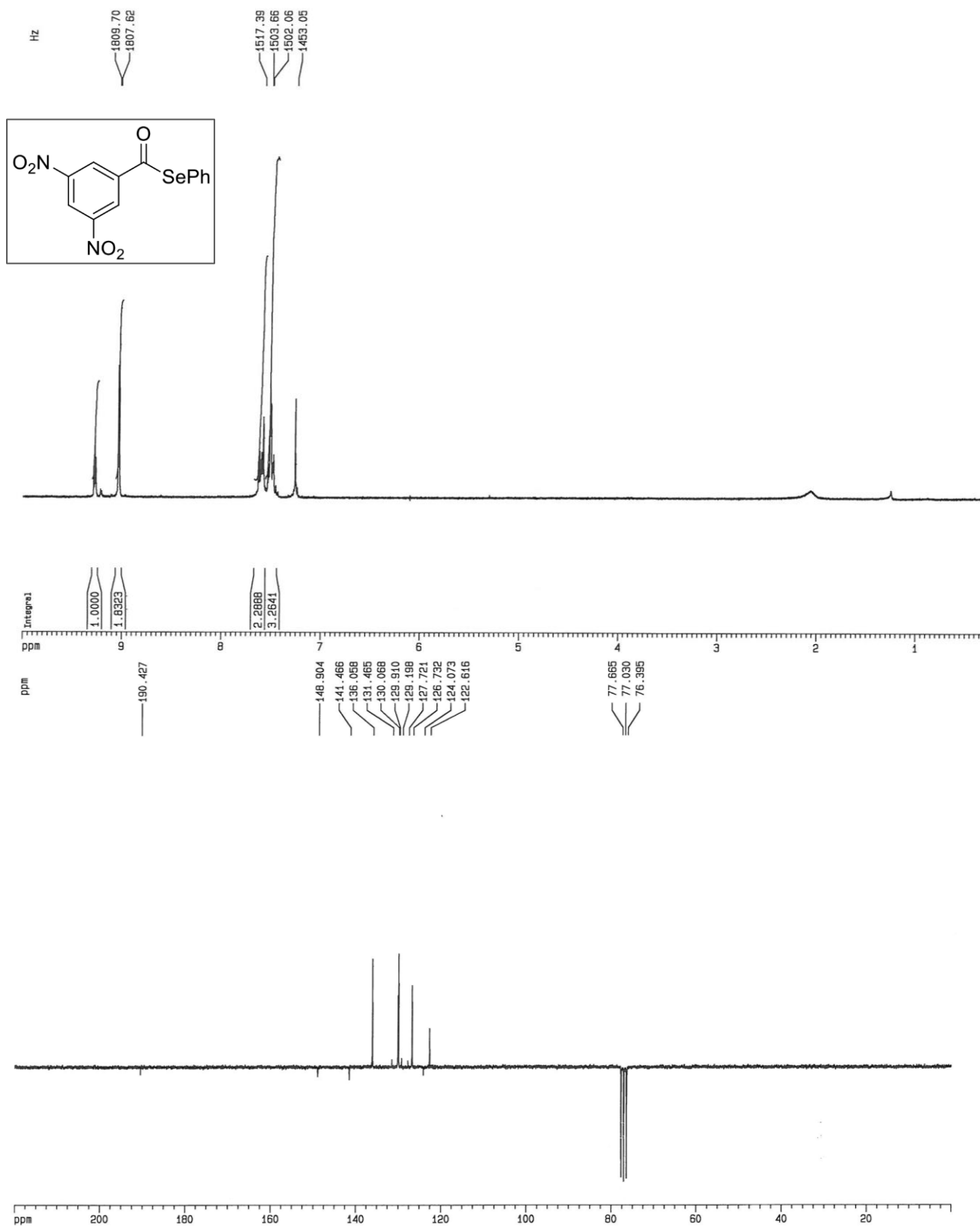
Se-Phenyl 2-bromobenzoselenoate (**5b**) [2] purified eluting with 5 % EtOAc in petroleum ether. Yellow oil. $^1\text{H-NMR}$ (CDCl_3 , 200 MHz, ppm) δ : 7.72-7.6 (m, 4H, H-Ar), 7.45-7.34 (m, 5H, H-Ar) ppm. $^{13}\text{C-NMR}$ (CDCl_3 , 50 MHz, ppm) δ : 194.4, 140.6, 135.8, 134.3, 132.6, 129.5, 129.2, 128.8, 127.3, 126.6, 118.0 ppm. CG-MS m/z (%) = 340 (1) [M^+], 232 (3), 183 (100), 157 (54), 76 (16), 50 (9).



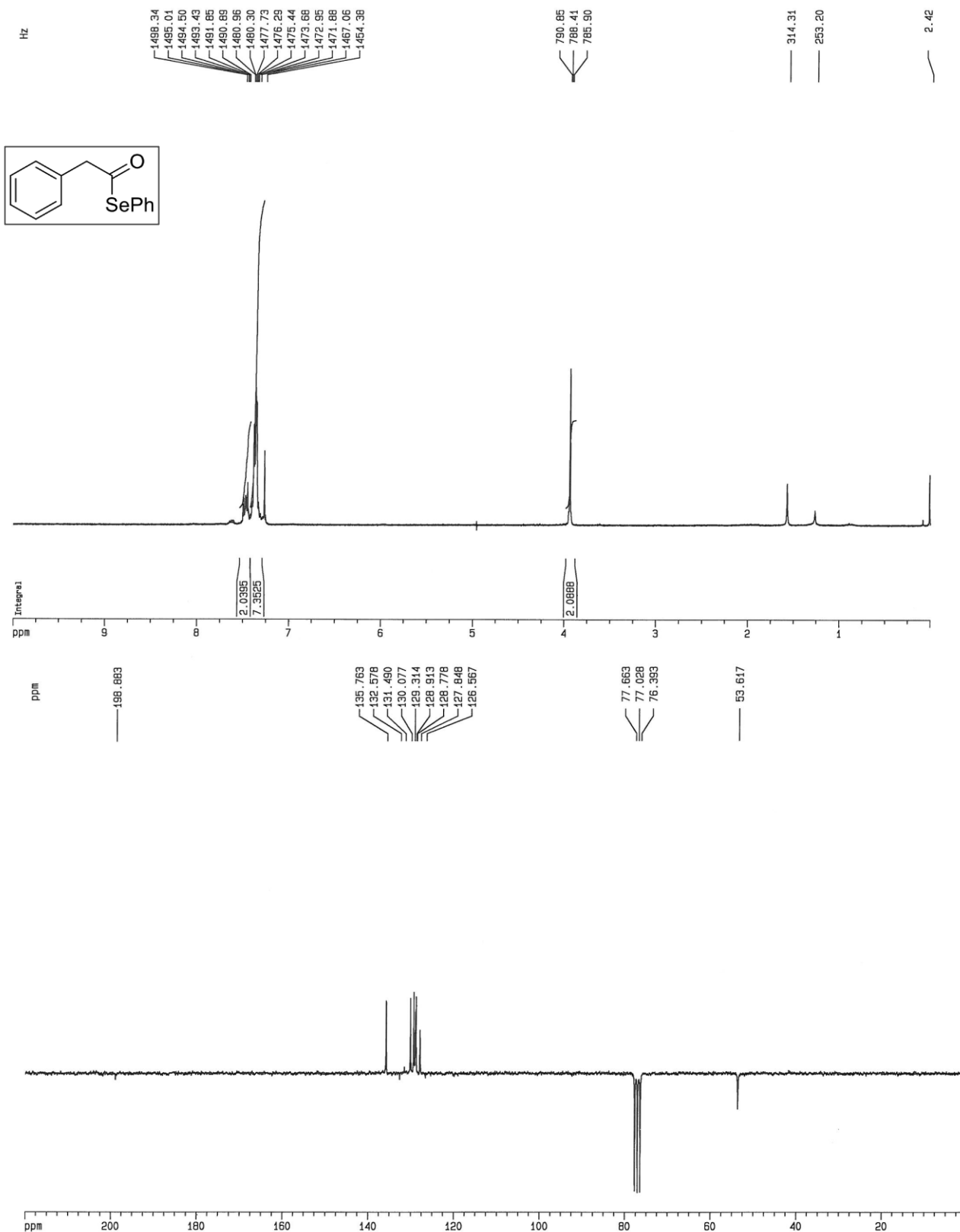
Se-Phenyl 4-butylbenzoselenoate (5c) [3] purified eluting with 20 % DCM in petroleum ether. Yellow oil. $^1\text{H-NMR}$ (CDCl_3 , 200 MHz, ppm) δ : 7.85 (d, $J= 8.1$ Hz, 2H, H-Ar), 7.61-7.57 (m, 2H, H-Ar), 7.44-7.41 (m, 3H, H-Ar), 7.31-7.26 (m, 2H, H-Ar), 2.67 (t, $J= 7,8$ Hz, 2H, CH_2), 1.61 (quin, $J= 8.15$ Hz, 2H, CH_2), 1.36 (sex, $J= 7.6$ Hz, 2H, CH_2), 0.95 (t, $J= 7.2$ Hz, 3H, CH_3) ppm. $^{13}\text{C-NMR}$ (CDCl_3 , 50 MHz, ppm) δ : 192.7, 149.8, 136.4, 136.2, 129.3, 129.0, 127.5, 126.0, 35.8, 33.1, 22.3, 13.9 ppm. CG-MS m/z (%) = 318 [M^+], 161 (100), 91 (30).



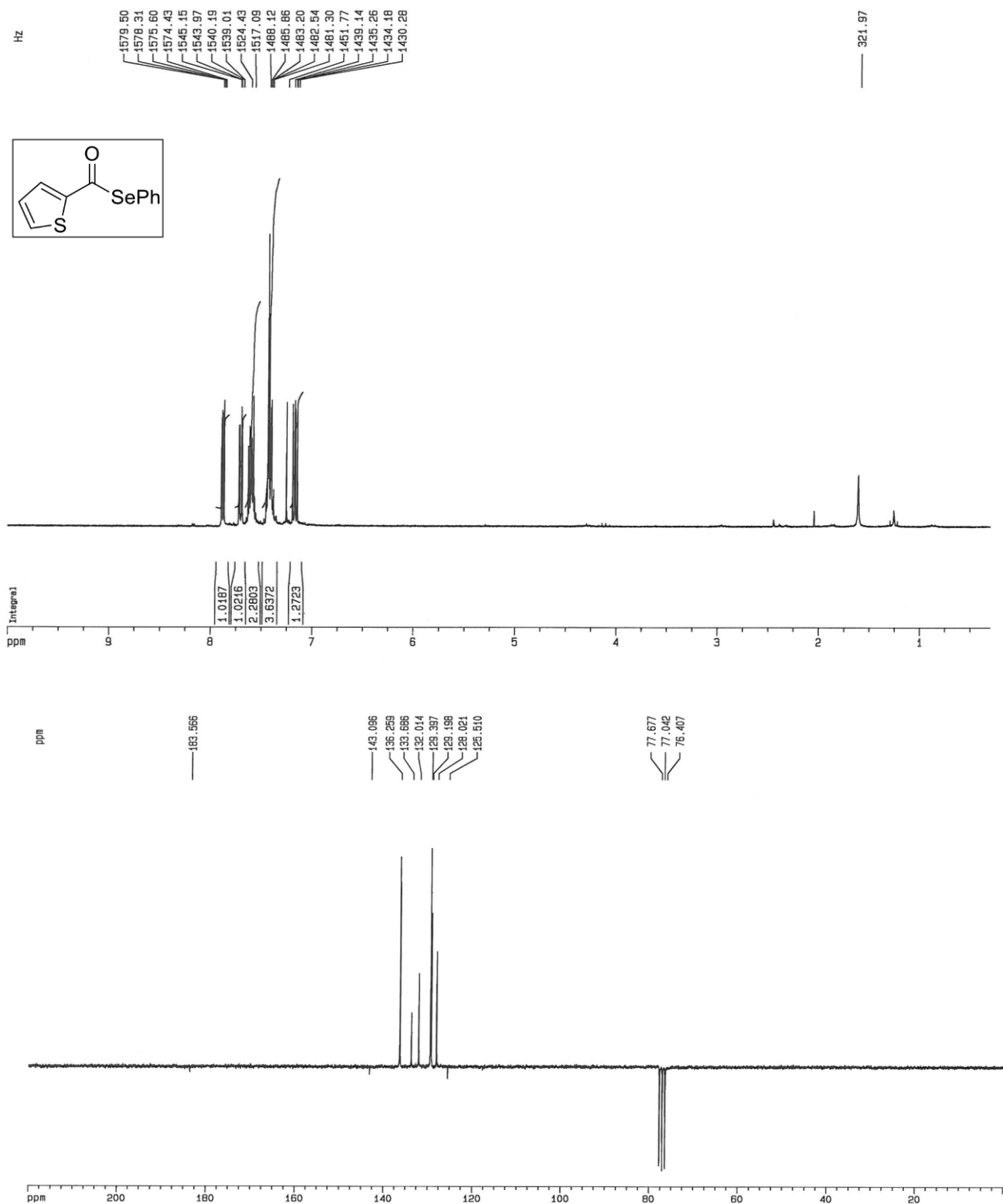
Se-Phenyl-3,5-dinitrobenzoselenoate (**5d**) [3] purified eluting with 5 % EtOAc. Yellow solid. M.p.: 148-150°C ((Lit.: [3] 148°-150°). ¹H-NMR (CDCl₃, 200 MHz, ppm) δ: 9.28 (t, *J* = 2.05 Hz, 1H, H-Ar), 9.04 (d, *J* = 2.06 Hz, 2H, H-Ar), 7.7-7.4 (m, 5H, H-Ar) ppm. ¹³C-NMR (CDCl₃, 50 MHz, ppm) δ: 190.4, 148.9, 141.5, 136.1, 130.07, 129.9, 126,7, 124.1, 122.6 ppm.



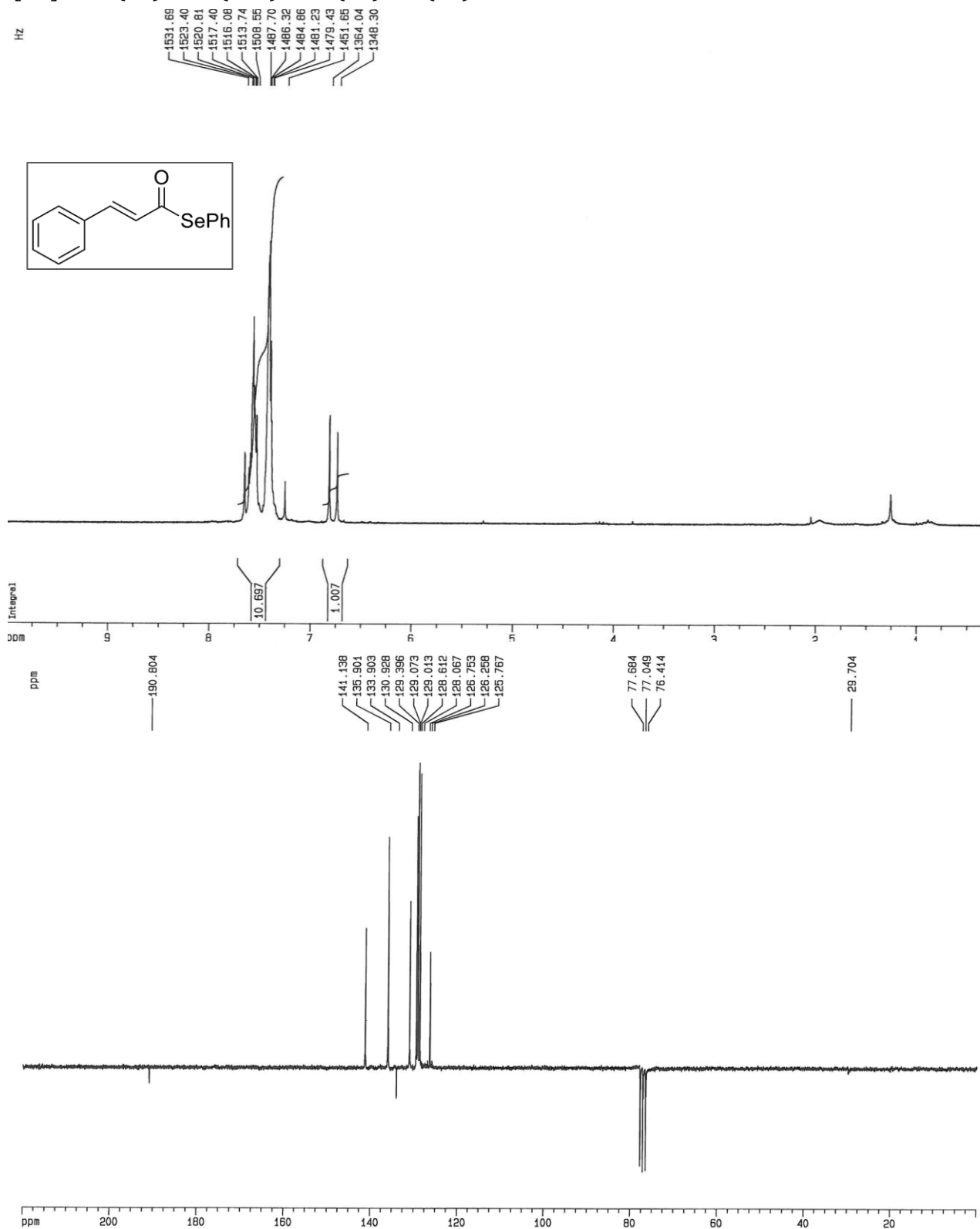
Se-Phenyl 2-phenylethaneselenoate (5e) [4] purified eluting with 20 % DCM in petroleum ether. Yellow solid. M.p.: 41-43°C ((Lit.[4]: 41°-43°C). ¹H-NMR (CDCl₃, 200 MHz, ppm) δ: 7.45-7.35 (m, 2H, H-Ar), 7.34-7.26 (m, 8H, H-Ar), 3.88 (s, 2H, CH₂) ppm. ¹³C-NMR (CDCl₃, 50 MHz, ppm) δ: 198.9, 135.8, 132.6, 130.1, 129.3, 128.9, 128.8, 127.8, 126.6, 53.6 ppm. CG-MS *m/z* (%)= 276 [M⁺], 157 (22), 119 (26), 91 (100), 65 (26).



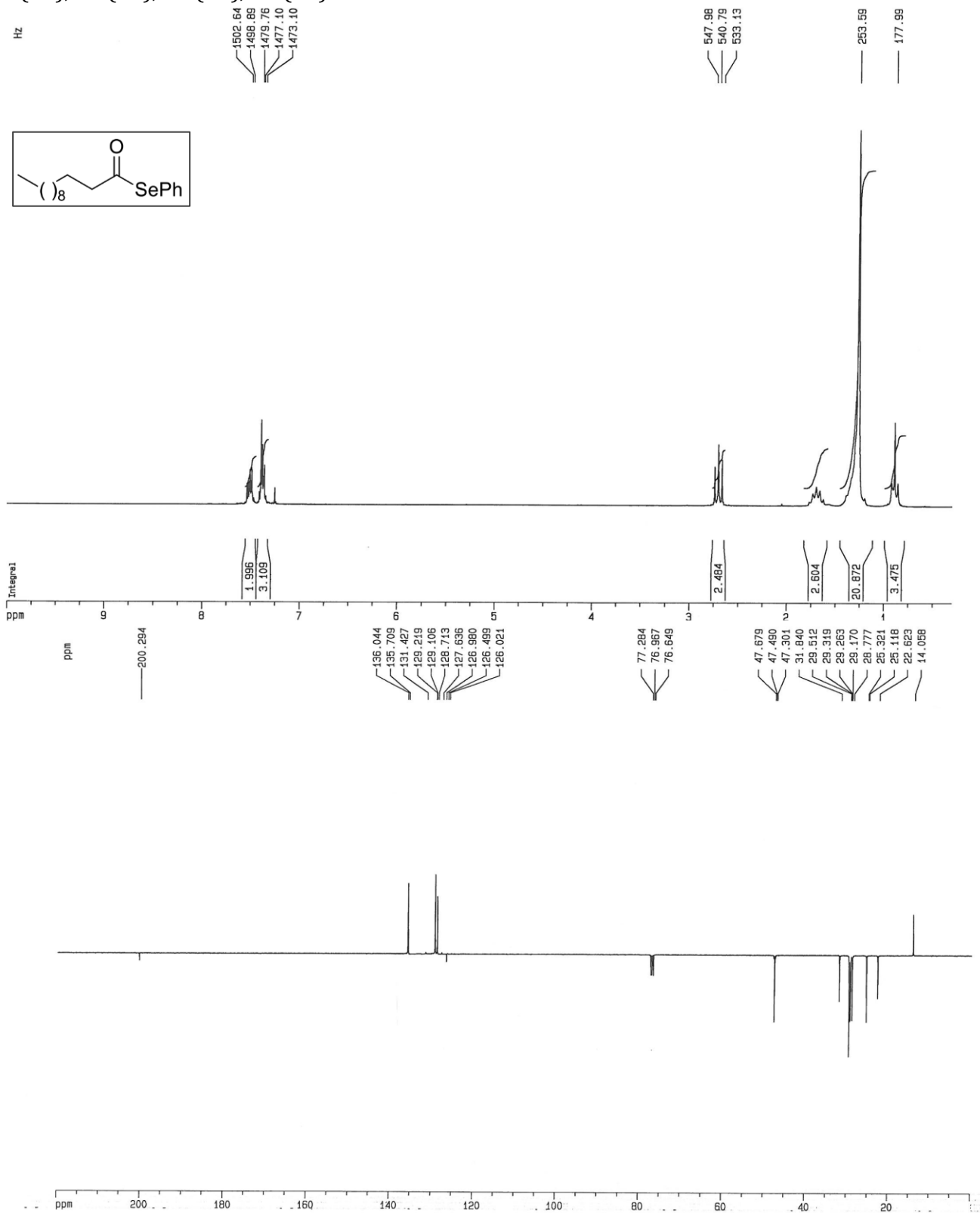
Se-Phenyl thiophene-2-carboselenoate (**5f**) [5] purified eluting with 5 % EtOAc. Yellow oil. $^1\text{H-NMR}$ (CDCl_3 , 200 MHz, ppm) δ : 7.88 (dd, $J= 1.2, 3.9$ Hz, 1H, H-Ar), 7.71 (dd, $J= 1.2, 4.96$ Hz, 1H, H-Ar), 7.63-7.58 (m, 2H, H-Ar), 7.44-7.41 (m, 3H, H-Ar), 7.17 (dd, $J= 3.9, 4.96$ Hz, 1H, H-Ar) ppm. $^{13}\text{C-NMR}$ (CDCl_3 , 50 MHz, ppm) δ : 183.6, 143.1, 136.3, 133.7, 132.0, 129.4, 129.2, 128.0, 125.5 ppm. CG-MS m/z (%)= 268 (1) [M^+], 157 (16), 111 (100), 83 (20).



(E)-Se-Phenyl 3-phenylprop-2-eneselenoate (**5g**) [6] purified eluting with 5 % EtOAc. Yellow solid. P.f.: 79-80°C ((Lit.: [6] 81°-82°C). ¹H-NMR (CDCl₃, 200 MHz, ppm) δ: 7.58-7.54 (m, 5H, H-Ar), 7.43-7.40 (m, 6H, H-Ar), 6.78 (d, *J*= 15.0 Hz, 1H, CH) ppm. ¹³C-NMR (CDCl₃, 50 MHz, ppm) δ: 190.8, 141.1, 135.9, 133.9, 130.9, 129.4, 129.1, 129.0, 128.6, 128.1, 126.3 ppm. CG-MS *m/z* (%)= 288 (1) [M⁺], 157 (14), 131 (100), 103 (55), 77 (36).



Se-Phenyl dodecaneselenoate (**5h**) [7] purified eluting with 20 % DCM in petroleum ether. Yellow oil.
 $^1\text{H-NMR}$ (CDCl_3 , 400 MHz, ppm) δ : 7.55-7.53 (m, 2H, H-Ar), 7.42-7.39 (m, 3H, H-Ar), 2.73 (t, J = 7.5 Hz, 2H, $\text{CH}_2\text{C(O)}$), 1.73 (quin, J = 7.4 Hz; 2H, CH_2), 1.4-1.3 (m, 16H, CH_2), 0.94-0.90 (t, J = 6.5 Hz, 3H, CH_3) ppm. $^{13}\text{C-NMR}$ (CDCl_3 , 100 MHz, ppm) δ : 200.3, 135.7, 129.2, 128.7, 126.5, 47.5, 31.8, 29.5, 29.3, 29.26, 29.17, 28.8, 25.3, 22.6, 14.0 ppm. CG-MS m/z (%) = 340 (2) [M^+], 183 (100), 157 (34), 109 (20), 85 (27), 71 (30), 57 (43).



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