Supporting Information for

The Pt-Catalyzed Carboselenation of Alkynes by Selenoesters

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General Comments: ^1H , ^{13}C and ^{77}Se NMR spectra in CDCl_3 solution were recorded with a JEOL JNM-Alice-400 (400 MHz, 100 MHz and 76 MHz respectively) spectrometer. Chemical shifts of ^1H , ^{13}C NMR spectra are given in parts per million (δ) downfield from internal tetramethylsilane. Chemical shifts of ^{77}Se NMR spectra are given with diphenyl diselenide as an external reference (463.0 ppm). Melting points were determined on a Yanaco MICRO melting point apparatus. Infrared spectra were obtained with a Perkin-Elmer FT-IR (Model 1600). GC Mass (EI) analyses were run using a SATURN GCMS-2000. Elemental and GC Mass (CI) analyses were performed in the Instrumental Analysis Center of the Faculty of Engineering, Osaka University. Preparative TLC was carried out using Wakogel B-5F silica gel using hexane and Et_2O as eluents.

General Procedure for Pt-Catalyzed Carboselenation of Alkyne (1) with Selenoester (2) (run 1, Table 1): Into a 3 ml flask equipped with a reflux condenser were added PhSeC(O)Ph (**2a**) (261 mg, 1.0 mmol), $\text{Pt(PPh}_3)_4$ (62 mg, 0.05 mmol), toluene (0.5 ml), and 1-octyne (**1a**) (132 mg, 1.2 mmol). Then the reaction mixture was refluxed for 20 h under a nitrogen atmosphere and separated by PTLC (hexane/ Et_2O) to give (Z)-2-phenylseleno-1-phenyl-1-octene **3a** (306 mg, 89%). All reactions shown in Table 1 and in Table 2 were performed similarly. Reaction times were as follows: runs 1-7 and 9 in Table 1 for 20 h; run 8 in Table 1 for 40 h; runs 10 and 11 in Table 1 for 7 days; runs 1-4 in Table 2 for 30 h; runs 5-6 in Table 2 for 20 h.

(Z)-3a (run 1, Table 1): light yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 7.50-7.48 (m, 2H), 7.41 (d, $J = 7.6$ Hz, 2H), 7.32 (t, $J = 7.6$ Hz, 2H), 7.24-7.20 (m, 4H), 6.88 (s, $^3J_{\text{Se-H}} = 15.2$ Hz, 1H), 2.28 (t, $J = 7.4$ Hz, 2H),

1.54-1.47 (m, 2H), 1.27-1.18 (m, 6H), 0.84 (t, $J = 6.8$ Hz, 3H); NOE experiment: Irradiation of the vinyl singlet at δ 6.89 resulted in a 3.0% enhancement of the signal at δ 2.28 (C-3 methylene triplet); ^{13}C NMR (100 MHz, CDCl_3) δ 137.2, 135.7 ($^1J_{\text{Se-C}} = 107.8$ Hz, q), 133.8, 130.8 ($^2J_{\text{Se-C}} = 12.4$ Hz), 128.8 ($^1J_{\text{Se-C}} = 103.2$ Hz, q), 128.59, 128.55, 127.6, 127.0, 126.6, 39.4, 31.5, 29.2, 28.3, 22.5, 14.0; ^{77}Se NMR (76 MHz, CDCl_3) δ 368; IR (neat) 3055, 2954, 2926, 2854, 1578, 1475, 1438, 1068, 1022, 1000, 739, 692 cm^{-1} ; mass spectrum (EI) m/e 344 (M^+ , 100); Anal. Calcd for $\text{C}_{20}\text{H}_{24}\text{Se}$: C, 69.96; H, 7.05. Found: C, 69.95; H, 7.10.

(Z)-3b (run 3, Table 1): light yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 7.53-7.22 (m, 9H), 7.01 (s, $^3J_{\text{Se-H}} = 14.2$ Hz, 1H), 2.37 (t, $J = 7.6$ Hz, 2H), 1.58-1.53 (m, 2H), 1.29-1.20 (m, 6H), 0.86 (t, $J = 6.8$ Hz, 3H); NOE experiment: Irradiation of the vinyl singlet at δ 7.01 resulted in a 4.3% enhancement of the signal at δ 2.37 (C-3 methylene triplet); ^{13}C NMR (100 MHz, CDCl_3) δ 137.1, 135.2, 134.0 ($^1J_{\text{Se-C}} = 104.6$ Hz, q), 134.0, 132.4 ($^2J_{\text{Se-C}} = 11.4$ Hz), 128.9 (q, $^2J_{\text{C-F}} = 32.4$ Hz), 128.8, 127.8, 127.3 ($^1J_{\text{Se-C}} = 101.4$ Hz, q), 125.5 (q, $^3J_{\text{C-F}} = 3.7$ Hz), 124.0 (q, $^1J_{\text{C-F}} = 271.1$ Hz), 40.3, 31.7, 29.4, 28.6, 22.7, 14.2; IR (neat) 3023, 2928, 2856, 1601, 1397, 1325, 1166, 1127, 1077, 1014, 829, 747, 695 cm^{-1} ; mass spectrum (EI) m/e 412 (M^+ , 100); Anal. Calcd for $\text{C}_{21}\text{H}_{23}\text{F}_3\text{Se}$: C, 61.31; H, 5.64. Found: C, 61.37; H, 5.74.

(Z)-3c (run 4, Table 1): yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 7.33-7.30 (m, 4H), 7.24 (t, $J = 7.1$ Hz, 2H), 7.16-7.12 (m, 1H), 6.97 (d, $J = 7.8$ Hz, 2H), 6.75 (s, 1H), 2.23 (s, 3H), 2.17 (t, $J = 7.5$ Hz, 2H), 1.44-1.39 (m, 2H), 1.18-1.10 (m, 6H), 0.76 (t, $J = 7.1$ Hz, 3H); NOE experiment: Irradiation of the vinyl singlet at δ 6.75 resulted in a 2.6% enhancement of the signal at δ 2.17 (C-3 methylene triplet); ^{13}C NMR (100 MHz, CDCl_3) δ 137.6, 137.7, 136.5 ($^1J_{\text{Se-C}} = 109.7$ Hz, q), 134.6, 130.0, 129.6, 128.8, 127.8, 126.7, 125.0 ($^1J_{\text{Se-C}} = 102.2$ Hz, q), 39.3, 31.7, 29.5, 28.6, 22.7, 21.3, 14.2; IR (neat) 3020, 2954, 2926, 2855, 1598, 1489, 1444, 1016, 804, 746, 695 cm^{-1} ; mass spectrum (EI) m/e 358 (M^+ , 100); Anal. Calcd for $\text{C}_{21}\text{H}_{26}\text{Se}$: C, 70.57; H, 7.33. Found: C, 70.51; H, 7.50.

(Z)-3d (run 5, Table 1): light yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 7.56 (d, $J = 8.3$ Hz, 2H), 7.50-7.47 (m, 4H), 7.29-7.22 (m, 3H), 6.86 (s, $^3J_{\text{Se-H}} = 13.2$ Hz, 1H), 2.30 (t, $J = 7.6$ Hz, 2H), 1.55-1.48 (m, 2H), 1.27-

1.18 (m, 6H), 0.85 (t, $J = 6.7$ Hz, 3H); NOE experiment: Irradiation of the vinyl singlet at δ 6.86 resulted in a 3.6% enhancement of the signal at δ 2.30 (C-3 methylene triplet); ^{13}C NMR (100 MHz, CDCl_3) δ 141.1, 139.0 ($^1J_{\text{Se-C}} = 110.6$ Hz, q), 134.3, 129.3, 129.0, 128.9, 128.8, 128.6 ($^1J_{\text{Se-C}} = 104.2$ Hz, q), 127.6, 124.7 (q, $^3J_{\text{C-F}} = 3.7$ Hz), 124.2 (q, $^1J_{\text{C-F}} = 271.1$ Hz), 39.8, 31.7, 29.5, 28.6, 22.7, 14.2; IR (neat) 3059, 2929, 2856, 1615, 1578, 1476, 1438, 1410, 1324, 1165, 1122, 1069, 1016, 867, 823, 739, 692 cm^{-1} ; mass spectrum (EI) m/e 412 (M^+ , 100); Anal. Calcd for $\text{C}_{21}\text{H}_{23}\text{F}_3\text{Se}$: C, 61.31; H, 5.64. Found: C, 61.44; H, 5.74.

(Z)-3e (run 6, Table 1): light yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 7.45-7.49 (m, 3H), 7.32-7.34 (m, 1H), 7.20-7.25 (m, 4H), 6.71 (s, $^3J_{\text{Se-H}} = 13.6$ Hz, 1H), 2.27 (t, $J = 7.6$ Hz, 2H), 1.50 (quint, $J = 7.6$ Hz, 2H), 1.16-1.26 (m, 6H), 0.84 (t, $J = 7.2$ Hz, 3H); NOE experiment: Irradiation of the vinyl singlet at δ 6.71 resulted in a 7.6% enhancement of the signal at δ 2.27 (C-3 methylene triplet); ^{13}C NMR (100 MHz, CDCl_3) δ 138.8 ($^1J_{\text{Se-C}} = 110.1$ Hz, q), 137.4, 134.2 ($^2J_{\text{Se-C}} = 11.0$ Hz), 131.7, 130.5 ($^2J_{\text{Se-C}} = 7.4$ Hz), 130.4, 129.8, 129.0, 128.3 ($^1J_{\text{Se-C}} = 100.0$ Hz, q), 128.1 (two peaks overlapped), 127.6, 39.7, 31.6, 29.4, 28.5, 22.6, 14.2; IR (neat) 3058, 2929, 2855, 1579, 1548, 1471, 1438, 1379, 1302, 1272, 1211, 1134, 1066, 1029, 1000, 885, 813, 739, 692, 671 cm^{-1} ; mass spectrum (EI) m/e 412 (M^+ , 79), 159 (100); Anal. Calcd for $\text{C}_{20}\text{H}_{22}\text{Cl}_2\text{Se}_1$: C, 58.27; H, 5.38. Found: C, 58.05; H, 5.28.

(Z)-3f (run 7, Table 1): light yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 7.49-7.46 (m, 2H), 7.23-7.22 (m, 3H), 7.38 (d, $J = 8.8$ Hz, 2H), 6.86 (d, $J = 8.8$ Hz, 2H), 6.83 (s, $^3J_{\text{Se-H}} = 12.8$ Hz, 1H), 3.80 (s, 3H), 2.28 (t, $J = 7.2$ Hz, 2H), 1.54-1.50 (m, 2H), 1.25-1.19 (m, 6H), 0.84 (t, $J = 7.2$ Hz, 3H); NOE experiment: Irradiation at the methylene triplet at δ 2.28 resulted in a 9% enhancement at δ 6.83 (vinyl singlet); ^{13}C NMR (100 MHz, CDCl_3) δ 158.4, 133.7 ($^1J_{\text{C-Se}} = 105.9$ Hz), 133.6 ($^2J_{\text{C-Se}} = 10.6$ Hz), 131.0 ($^2J_{\text{C-Se}} = 12.4$ Hz), 130.11, 130.07, 129.3 ($^1J_{\text{C-Se}} = 105.1$ Hz), 128.7, 127.0, 113.2, 55.2, 39.8, 31.68, 29.5, 28.6, 22.7, 14.2; IR (neat) 3057, 2998, 2954, 2928, 2854, 1606, 1577, 1508, 1464, 1438, 1302, 1251, 1177, 1036, 1022, 822, 738, 692 cm^{-1} ; mass spectrum (EI) m/e 374 (M^+ , 100); Anal. Calcd for $\text{C}_{21}\text{H}_{26}\text{OSe}$: C, 67.55; H, 7.02. Found: C, 67.69; H, 7.13.

(Z)-5a (run 7, Table 1): orange oil; ^1H NMR (400 MHz, CDCl_3) δ 8.00 (d, $J = 8.8$ Hz, 2H), 7.69 (d, $J = 6.8$

Hz, 2H), 7.42-7.33 (m, 4H), 6.94 (d, $J = 8.8$ Hz, 2H), 3.85 (s, 3H), 2.34 (t, $J = 7.8$ Hz, 2H), 1.43-1.36 (m, 2H), 1.19-1.12 (m, 2H), 1.06-1.03 (m, 4H), 0.80 (t, $J = 7.2$ Hz, 3H); NOE experiment: Irradiation at the methylene triplet at δ 2.30 resulted in a 9% enhancement at δ 7.38 (vinyl singlet); ^{13}C NMR (100 MHz, CDCl_3) δ 187.2, 167.1 ($^1J_{\text{C-Se}} = 150.9$ Hz, q), 162.6, 137.0, 131.1, 128.7 (two peaks overlapped), 120.0, 117.5, 113.6 (two peaks overlapped), 55.4, 38.4, 31.3, 30.5, 28.6, 22.4, 14.0. The regiochemistry was unambiguously determined ^{13}C - ^{13}C COSY-NMR spectrum.; IR (neat) 2915, 2858, 1598, 1569, 1535, 1512, 1454, 1235, 1171, 1021, 825, 744, 692 cm^{-1} ; mass spectrum (EI) m/e 402 (M^+ , 19), 245 (100), 135 (92); Anal. Calcd for $\text{C}_{22}\text{H}_{26}\text{O}_2\text{Se}_1$: C, 65.83; H, 6.53. Found: C, 65.66; H, 6.66.

(Z)-3g (run 8, Table 1): light yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 7.45 (d, $J = 8.8$ Hz, 2H), 7.35 (d, $J = 8.8$ Hz, 2H), 6.88 (d, $J = 8.4$ Hz, 2H), 6.79 (d, $J = 8.8$ Hz, 2H), 6.73 (s, $^3J_{\text{Se-H}} = 16.0$ Hz, 1H), 3.80 (s, 3H), 3.78 (s, 3H), 2.19 (t, $J = 7.6$ Hz, 2H), 1.49 (quint, $J = 6.8$ Hz, 2H), 1.26-1.18 (m, 6H), 0.85 (t, $J = 7.0$ Hz, 3H); NOE experiment: Irradiation of the vinyl singlet at δ 6.73 resulted in a 5.1% enhancement of the signal at δ 2.19 (C-3 methylene triplet); ^{13}C NMR (100 MHz, CDCl_3) δ 159.3, 158.2, 136.6 ($^2J_{\text{Se-C}} = 11.0$ Hz), 135.2 ($^1J_{\text{Se-C}} = 108.7$ Hz, q), 130.3, 130.1 ($^2J_{\text{Se-C}} = 8.2$ Hz), 128.7, 118.7 ($^1J_{\text{Se-C}} = 102.3$ Hz, q), 114.5, 113.2, 55.3 (two peaks overlapped), 39.0, 31.7, 29.5, 28.6, 22.7, 14.2; IR (neat) 2999, 2928, 2854, 2536, 2038, 1885, 1606, 1591, 1572, 1507, 1489, 1463, 1440, 1402, 1286, 1246, 1173, 1102, 1076, 1033, 1006, 934, 859, 825, 793, 767, 724 cm^{-1} ; mass spectrum (EI) m/e 404 (M^+ , 17), 44 (100); Anal. Calcd for $\text{C}_{22}\text{H}_{28}\text{O}_2\text{Se}_1$: C, 65.50; H, 7.00. Found: C, 65.39; H, 7.02.

(Z)-5b (run 8, Table 1): yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 8.00 (d, $J = 8.8$ Hz, 2H), 7.59 (d, $J = 8.2$ Hz, 2H), 7.38 (s, $^3J_{\text{Se-H}} = 10.8$ Hz, 1H), 6.95 (d, $J = 8.8$ Hz, 2H), 6.89 (d, $J = 8.2$, 2H), 3.88 (s, 3H), 3.84 (s, 3H), 2.33 (t, $J = 7.8$ Hz, 2H), 1.44-1.37 (m, 2H), 1.20-1.16 (m, 2H), 1.09-1.06 (m, 4H), 0.82 (t, $J = 7.2$ Hz, 3H); NOE experiment: Irradiation of the vinyl singlet at δ 7.38 resulted in a 6.5% enhancement of the signal at δ 2.33 (C-3 methylene triplet); ^{13}C NMR (100 MHz, CDCl_3) δ 187.4, 168.4, 162.6, 160.1, 138.5, 131.3, 130.1, 119.4, 117.5, 114.5, 113.6, 55.5, 55.3, 38.4, 31.5, 30.6, 28.8, 22.6, 14.2; IR (neat) 2928, 2855, 1625, 1599, 1573, 1533, 1510, 1491, 1462, 1352, 1286, 1238, 1170, 1083, 1029, 825 cm^{-1} ; mass spectrum (EI)

m/e 432 (M^+ , 29), 135 (100); Anal. Calcd for $C_{23}H_{28}O_3Se_1$: C, 64.03; H, 6.54. Found: C, 63.75; H, 6.53.

3h (run 9, Table 1): light yellow oil; 1H NMR (400 MHz, $CDCl_3$) δ 7.47-7.17 (m, 11H), 6.63-6.57 (m, 2H), 2.32 (t, $J = 7.4$ Hz, 2H), 1.53-1.47 (m, 2H), 1.28-1.21 (m, 6H), 0.85 (t, $J = 7.0$ Hz, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 137.2, 136.9 ($^1J_{Se-C} = 105.0$ Hz, q), 133.9, 133.1, 132.3 ($^2J_{Se-C} = 11.0$ Hz), 130.1 ($^1J_{Se-C} = 104.1$ Hz, q), 128.9, 128.4, 127.7 ($^2J_{Se-C} = 11.9$ Hz), 127.4, 126.7, 126.3, 39.9, 31.7, 29.2, 28.6, 22.7, 14.2; IR (neat) 3057, 3028, 2954, 2928, 2855, 1944, 1872, 1798, 1618, 1578, 1495, 1476, 1466, 1447, 1438, 1377, 1342, 1326, 1301, 1256, 1178, 1150, 1114, 1071, 1022, 1000, 964, 909, 839, 737, 690, 668, 614 cm^{-1} ; mass spectrum (EI) m/e 370 (M^+ , 100); exact mass (M^+) calcd for $C_{22}H_{26}Se_1$ 370.1200, found 370.1194.

(Z)-3i (run 10, Table 1): light yellow oil; 1H NMR (400 MHz, $CDCl_3$) δ 7.45-7.41 (m, 2H), 7.26-7.21 (m, 3H), 6.61 (d, $J = 10.4$ Hz 1H), 6.33 (d, $J = 10.4$ Hz 1H), 2.27 (t, $J = 7.4$ Hz, 2H), 1.84-0.79 (m, 17H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 137.0, 132.4, 132.1, 130.2, 128.9, 128.8, 126.4, 123.8, 40.0, 31.7, 29.4, 28.7, 26.4, 22.7, 19.1, 14.2; IR (neat) 2955, 2927, 2856, 1642, 1579, 1476, 1438, 1376, 1065, 1022, 1000, 854, 735, 691, 671 cm^{-1} ; mass spectrum (EI) m/e 322 (M^+ , 100); exact mass (M^+) calcd for $C_{20}H_{26}Se_1$ 322.1200, found 322.1198.

(Z)-3k (run 1, Table 2): colorless solid, mp: 84-86 $^{\circ}C$; 1H NMR (400 MHz, $CDCl_3$) δ 7.43-7.06 (m, 15H), 6.86 (s, $^3J_{Se-H} = 14.0$ Hz, 1H), 3.62 (s, 2H); NOE experiment: Irradiation of the vinyl singlet at δ 6.86 resulted in a 5.7% enhancement of the signal at δ 3.62 (C-3 methylene singlet); ^{13}C NMR (100 MHz, $CDCl_3$) δ 138.8, 137.1, 134.4 ($^2J_{Se-C} = 11.0$ Hz), 134.1 ($^1J_{Se-C} = 110.5$ Hz), 132.7 ($^2J_{Se-C} = 11.4$ Hz), 128.82, 128.78 (two peaks overlapped), 128.5, 128.0, 127.8, 127.5, 127.1, 126.2, 45.6; IR (KBr) 3053, 3026, 2897, 1600, 1578, 1492, 1474, 1452, 1444, 1436, 1426, 1350, 1066, 1028, 1021, 1000, 966, 942, 915, 859, 838, 793, 753, 742, 736, 695, 606, 549, 518, 474 cm^{-1} ; mass spectrum (EI) m/e 350 (M^+ , 45), 115 (100); Anal. Calcd for $C_{21}H_{18}Se_1$: C, 72.20; H, 5.19. Found: C, 72.18; H, 5.20.

(Z)-3l (run 2, Table 2): light yellow oil (obtained as a mixture of stereoisomers ($E/Z = 5/95$)); (Z)-isomer: 1H NMR (400 MHz, $CDCl_3$) δ 7.51-7.20 (m, 10H), 6.93 (s, $^3J_{Se-H} = 14.4$ Hz, 1H), 3.54 (t, $J = 6.4$ Hz, 2H), 2.39 (td, $J = 7.2$ Hz, $J = 0.4$ Hz, 2H), 1.81-1.74 (m, 2H), 1.48 (br s, 1H) (E)-isomer: δ 7.58-7.51 (m, 2H),

6.86 (s, 1H), 2.57 (t, $J = 7.6$ Hz, 2H), 1.89-1.81 (m, 2H) (Other peaks were overlapped with those of Z-isomer.); NOE experiment: Irradiation of the vinyl singlet at δ 6.93 resulted in a 7.6% enhancement of the signal at δ 2.39 (C-3 methylene); ^{13}C NMR (100 MHz, CDCl_3) δ 137.2, 134.8 ($^1J_{\text{Se-C}} = 108.8$ Hz, q), 134.0 ($^2J_{\text{Se-C}} = 11.0$ Hz), 131.7 ($^2J_{\text{Se-C}} = 12.4$ Hz), 128.9, 128.8 ($^2J_{\text{Se-C}} = 7.3$ Hz), 128.7 ($^1J_{\text{Se-C}} = 103.7$ Hz, q), 127.8, 127.4, 127.0, 61.8, 35.8, 32.3; IR (neat) 3329, 3055, 2940, 2361, 1578, 1490, 1475, 1438, 1022, 915, 739, 693, 668 cm^{-1} ; mass spectrum (EI) m/e 318 (M^+ , 30), 207 (100); Anal. Calcd for $\text{C}_{17}\text{H}_{18}\text{O}_1\text{Se}_1$: C, 64.35; H, 5.72. Found: C, 63.96; H, 5.69.

(Z)-3m (run 3, Table 2): light yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 7.43-7.37 (m, 3H), 7.26-7.03 (m, 8H), 2.22 (s, 1H), 1.90-1.58 (m, 9H), 1.27-1.17 (m, 1H); ^{13}C NMR (100 MHz, CDCl_3) δ 142.5 ($^1J_{\text{Se-C}} = 108.2$ Hz, q), 136.8, 134.3, 131.9 ($^1J_{\text{Se-C}} = 100.4$ Hz, q), 129.8 ($^2J_{\text{Se-C}} = 12.4$ Hz), 128.9, 128.6, 127.5, 127.2, 125.7, 75.7, 36.8, 25.6, 22.2; IR (neat) 3443, 3056, 3021, 2933, 2856, 2662, 1944, 1871, 1794, 1736, 1578, 1492, 1476, 1438, 1376, 1347, 1311, 1255, 1154, 1132, 1069, 1034, 1022, 999, 960, 910, 875, 852, 837, 734, 690, 667 cm^{-1} ; mass spectrum (EI) m/e 358 (M^+ , 100); Anal. Calcd for $\text{C}_{20}\text{H}_{22}\text{O}_1\text{Se}_1$: C, 67.22; H, 6.21. Found: C, 67.03; H, 6.12.

(Z)-3n (run 4, Table 2): light yellow oil (obtained as a mixture of stereoisomers ($E/Z = 1/99$)); (Z)-isomer: ^1H NMR (400 MHz, CDCl_3) δ 7.46-7.16 (m, 10H), 6.92 (s, 1H), 2.38 (t, $J = 7.2$ Hz, 2H), 2.17 (t, $J = 7.2$ Hz, 2H), 1.77 (m, 2H) (E)-isomer: δ 6.55 (s, 1H), 2.60 (t, $J = 7.2$ Hz, 2H), 1.62-1.58 (m, 2H) (Other peaks were overlapped with those of Z-isomer.); NOE experiment: Irradiation of the vinyl singlet at δ 6.95 resulted in a 7.5% enhancement of the signal at δ 2.38 (C-3 methylene triplet); ^{13}C NMR (100 MHz, CDCl_3) δ 136.6, 134.0 ($^2J_{\text{Se-C}} = 10.0$ Hz), 133.0 ($^2J_{\text{Se-C}} = 11.9$ Hz), 132.7 ($^1J_{\text{Se-C}} = 110.2$ Hz, q), 129.0, 128.8, 128.1 ($^1J_{\text{Se-C}} = 101.3$ Hz, q), 127.8, 127.7, 127.3, 119.2, 37.8, 24.7, 15.9; IR (neat) 3055, 3021, 2935, 2246, 1598, 1577, 1491, 1476, 1438, 1304, 1067, 1022, 1000, 916, 741, 694 cm^{-1} ; mass spectrum (EI) m/e 327 (M^+ , 47), 129 (100); Anal. Calcd for $\text{C}_{18}\text{H}_{17}\text{N}_1\text{Se}_1$: C, 66.26; H, 5.25; N, 4.29. Found: C, 66.44; H, 5.26; N, 4.46.

(Z)-3o (run 5, Table 2): light yellow oil (obtained as mixture of stereoisomers ($E/Z = 10/90$)); ^1H NMR (400 MHz, CDCl_3) δ 7.59-7.57 (m, 2H), 7.53-7.51 (m, 2H), 7.36-7.00 (m, 12H) (E)-isomer: 7.66-7.63 (m,

2H) (Other peaks were overlapped with those of *Z*-isomer.); ^{13}C NMR (100 MHz, CDCl_3) δ 141.9, 137.4, 134.8, 134.5 ($^1J_{\text{Se-C}} = 111.0$ Hz, q), 132.2, 130.3 ($^1J_{\text{Se-C}} = 103.2$ Hz, q), 129.1, 128.51, 128.52, 127.9, 127.8, 127.44, 127.43, 126.4; IR (neat) 3056, 3021, 2362, 1946, 1598, 1578, 1494, 1476, 1444, 1300, 1179, 1157, 1073, 1022, 1000, 930, 761, 735, 690 cm^{-1} ; Mass spectrum (EI) m/e 336 (M^+ , 19), 179 (100); Anal. Calcd for $\text{C}_{20}\text{H}_{16}\text{Se}_1$: C, 71.64; H, 4.81. Found: C, 71.53; H, 4.78.

(*Z*)-5c (run 5, Table 2): yellow solid, mp: 132-133.5 $^{\circ}\text{C}$; ^1H NMR (400 MHz, CDCl_3) δ 8.07-8.05 (m, 2H), 7.56-7.47 (m, 4H), 7.27-7.25 (m, 2H), 7.08-6.99 (m, 8H); ^{13}C NMR (100 MHz, CDCl_3) δ 188.5, 165.6, 139.6, 138.0, 136.0 ($^2J_{\text{Se-C}} = 9.6$ Hz), 132.3, 130.0, 128.6, 128.5, 128.2, 128.0, 127.9, 127.7, 127.3, 120.6; IR (KBr) 3057, 1627, 1595, 1576, 1531, 1484, 1438, 1342, 1241, 1211, 1182, 1042, 1022, 1000, 944, 834, 781, 763, 740, 700, 690, 674, 636, 574 cm^{-1} ; Mass spectrum (EI) m/e 364 (M^+ , 5), 44 (100); Anal. Calcd for $\text{C}_{21}\text{H}_{16}\text{O}_1\text{Se}_1$: C, 69.42; H, 4.47. Found: C, 69.41; H, 4.47.

(*Z*)-3p (run 6, Table 2): light yellow oil (obtained as a mixture of stereoisomers ($E/Z = 12/88$)); (*Z*)-isomer: ^1H NMR (400 MHz, CDCl_3) δ 7.59-7.48 (m, 4H), 7.37-7.24 (m, 5H), 7.16-7.04 (m, 4H), 6.76-6.73 (m, 2H), 3.75 (s, 3H) (*E*)-isomer: δ 6.95-6.93 (m, 2H), 3.77 (s, 3H) (Other peaks were overlapped with those of *Z*-isomer.); ^{13}C NMR (100 MHz, CDCl_3) δ 159.0, 137.6, 134.4, 133.91, 133.86, 131.9, 130.7, 129.6, 129.1, 128.6, 127.9, 127.3, 126.3, 113.3, 55.3; IR (neat) 3055, 2836, 1732, 1604, 1577, 1505, 1476, 1442, 1292, 1248, 1176, 1110, 1070, 1031, 824, 741, 690 cm^{-1} ; Mass spectrum (EI) m/e 366 (M^+ , 34), 209 (100); exact mass (M^+) calcd for $\text{C}_{21}\text{H}_{18}\text{O}_1\text{Se}_1$ 366.0523, found 366.0531.

(*Z*)-5d (run 6, Table 2): yellow solid, mp: 107-108 $^{\circ}\text{C}$; ^1H NMR (400 MHz, CDCl_3) δ 8.07-8.05 (m, 2H), 7.55-7.47 (m, 4H), 7.27-7.25 (m, 2H), 7.13-7.02 (m, 5H), 6.62-6.60 (m, 2H), 3.71 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 188.4, 165.2, 159.4, 138.1, 135.8 ($^2J_{\text{Se-C}} = 10.5$ Hz), 132.24, 132.18, 130.4, 130.1, 128.5, 128.2, 128.0, 127.6, 120.5, 112.9, 55.3; IR (KBr) 3050, 3003, 2958, 2832, 1627, 1607, 1593, 1575, 1537, 1503, 1490, 1459, 1439, 1350, 1306, 1292, 1247, 1216, 1176, 1110, 1044, 1036, 1022, 999, 942, 923, 846, 828, 741, 703, 694, 604 cm^{-1} ; Mass spectrum (EI) m/e 394 (M^+ , 2), 44 (100); Anal. Calcd for $\text{C}_{22}\text{H}_{18}\text{O}_2\text{Se}_1$: C, 67.18; H, 4.61. Found: C, 67.02; H, 4.59.

(Z)-3q (Scheme 2): light yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 7.57 (d, $J = 8.4$ Hz, 2H), 7.49 (d, $J = 8.8$ Hz, 2H), 7.26-7.24 (m, 2H), 7.07-7.04 (m, 3H), 6.88 (d, $J = 8.4$ Hz, 2H), 6.74 (d, $J = 8.8$ Hz, 2H), 3.78 (s, 3H), 3.73 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 158.7, 136.2, 134.72, 134.0, 131.4, 131.2, 130.5, 129.5, 129.1, 128.8, 128.6, 126.1, 113.9, 113.2, 55.3, 55.2; ^{77}Se NMR (76 MHz, CDCl_3) δ -90; IR (neat) 4052, 3056, 2999, 2955, 2932, 2906, 2835, 2545, 2045, 1888, 1760, 1688, 1660, 1605, 1575, 1505, 1476, 1462, 1439, 1417, 1303, 1248, 1208, 1175, 1112, 1067, 1033, 1000, 940, 910, 880, 832, 785, 737, 690, 668, 648, 612 cm^{-1} ; Mass spectrum (EI) m/e 396 (M^+ , 2), 44 (100); Anal. Calcd for $\text{C}_{22}\text{H}_{20}\text{O}_2\text{Se}_1$: C, 66.84; H, 5.10. Found: C, 66.54; H, 5.02.

(Z)-5e (Scheme 2): yellow oil; ^1H NMR (400 MHz, CDCl_3) δ 8.04 (d, $J = 8.8$ Hz, 2H), 7.50 (s, 1H), 7.25 (d, $J = 6.8$ Hz, 2H), 7.09-6.94 (m, 7H), 6.60 (d, $J = 8.8$ Hz, 2H), 3.86 (s, 3H), 3.69 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 187.4, 163.7, 162.7, 159.2, 135.7 ($^2J_{\text{Se-C}} = 10.1$ Hz), 132.2, 131.0, 130.4, 130.2, 130.0, 128.1, 127.5, 120.4, 113.7, 112.8, 55.4, 55.2; ^{77}Se NMR (76 MHz, CDCl_3) δ 109; IR (neat) 2999, 2967, 2838, 1619, 1599, 1567, 1529, 1496, 1478, 1460, 1438, 1418, 1318, 1294, 1250, 1238, 1213, 1178, 1167, 1114, 1046, 1024, 948, 934, 823, 743, 694, 602, 553, 515, 422 cm^{-1} ; Mass spectrum (CI) m/e 425 ($\text{M}^+ + 1$, 100); Anal. Calcd for $\text{C}_{23}\text{H}_{20}\text{O}_3\text{Se}_1$: C, 65.25; H, 4.76. Found: C, 65.02; H, 4.69.