Supporting Information

for

PALLADIUM-CATALYZED N-VINYLTATION OF SULFOXIMINES

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Contents:

- Analytical data for compounds **7-13**, **16**, and **17**
 - ¹H NMR and ¹³CNMR spectra for compounds **6-13**, and **16-18**
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S-Methyl-N-(1-phenylvinyl)-S-p-tolylsulfoximine (7). ¹H-NMR (CDCl₃): 2.24 (s, 3H), 3.06 (s, 3H), 4.51 (s, 1H), 4.75 (s, 1H), 7.10–7.25 (m, 5H), 7.60–7.65 (m, 2H), 7.70–7.75 (m, 2H). ¹³C-NMR (CDCl₃): 21.6 (CH₃), 45.5 (CH₃), 96.4 (CH₂), 125.9 (CH), 127.9 (CH), 128.1 (CH), 128.5 (CH), 130.2 (CH), 135.6 (CH), 140.3 (C), 144.2 (C), 147.8 (C). IR (neat): ν 3017, 1683, 1596, 1317, 1222, 757. MS (EI): *m/z* 271 (M⁺, <1%), 196 (28%), 170 (74%), 107 (100%). HRMS for C₁₆H₁₇NOS: calcd 271.1031, found 271.1032

S-(2-Methoxyphenyl)-S-methyl-N-(1-phenylvinyl)sulfoximine (8). ¹H-NMR (CDCl₃): 2.78 (s, 3H), 3.00 (s, 3H), 4.71 (s, 1H), 4.75 (s, 1H), 6.20 (d, *J* = 8.2 Hz, 1H), 6.55 (t, *J* = 7.7 Hz, 1H), 6.80–7.00 (m, 4H), 7.60–7.65 (m, 2H), 8.00 (dd, *J* = 1.7, 8.0 Hz, 1H). ¹³C-NMR (CDCl₃): 43.0 (CH₃), 55.4 (CH₃), 95.1 (CH₂), 112.4 (CH), 120.0 (CH), 125.8 (C), 126.2 (CH), 127.4 (CH), 127.7 (CH), 132.5 (CH), 134.6 (CH), 140.8 (C), 148.4 (C), 156.7 (C). IR (neat): ν 3326, 3013, 1683,

1591, 1478, 1277, 756. MS (EI): m/z 287 (M^+ , 1%), 212 (14%), 186 (35%), 123 (100%). HRMS for $C_{16}H_{17}NO_2S$: calcd 287.0980, found 287.0980

***S*-(3-Methoxynaphth-2-yl)-*S*-methyl-*N*-(1-phenylvinyl)sulfoximine (9).** 1H -NMR (C_6D_6): 2.88 (s, 3H), 3.06 (s, 3H), 4.70 (s, 1H), 4.85 (s, 1H), 6.53 (s, 1H), 6.80–7.05 (m, 5H), 7.20–7.35 (m, 2H), 7.65–7.70 (m, 2H), 8.62 (s, 1H). ^{13}C -NMR (C_6D_6): 43.7 (CH_3), 56.0 (CH_3), 96.7 (CH_2), 107.7 (CH), 125.2 (CH), 126.2 (CH), 126.6 (CH), 127.3 (C), 127.7 (CH), 127.9 (C_r), 129.3 (CH), 129.4 (CH), 134.9 (CH), 136.9 (C), 140.4 (C), 148.0 (C), 153.3 (C). IR (neat): ν 3015, 1626, 1593, 1218, 753. MS (EI): m/z 337 (M^+ , 2%), 306 (6%), 274 (100%) HRMS for $C_{20}H_{19}NO_2S$: calcd 337.1136, found 337.1137

***S*-Oxo-*S*-[(1-phenylvinyl)imino]tetrahydrothiophene (10).** 1H -NMR (C_6D_6): 1.00–1.15 (m, 4H), 2.20–2.35 (m, 2H), 2.65–2.68 (m, 2H), 4.73 (s, 1H), 4.81 (s, 1H), 6.8–7.0 (m, 3H), 7.55–7.60 (m, 2H). ^{13}C -NMR (C_6D_6): 23.2 (CH_2), 51.3 (CH_2), 93.3 (CH_2), 126.0 (CH), 127.8 (CH), 127.9 (CH), 140.7 (C), 149.7 (C). IR (neat): ν 3055, 1592, 1314, 1210, 755. MS (EI): m/z 221 (M^+ , 1%), 204 (10%), 120 (32%), 105 (100%). HRMS for $C_{12}H_{15}NOS$: calcd 221.0874, found 221.0874

***S,S*-Dimethyl-*N*-(1-phenylvinyl)sulfoximine (11).** 1H -NMR ($CDCl_3$): 2.97 (s, 6H), 4.72 (s, 1H), 4.91 (s, 1H), 7.1–7.2 (m, 3H), 7.5–7.6 (m, 2H). ^{13}C -NMR ($CDCl_3$): 41.2 ($2\times CH_3$), 96.3 (CH_2), 125.9 (CH), 128.0 (CH), 128.1 (CH), 140.0 (C), 148.1 (C). IR (neat): ν 3055, 1592, 1314, 1210, 755. MS (EI): m/z 195 (M^+ , 74%), 180 (6%), 120 (92%), 91 (100%). HRMS for $C_{10}H_{13}NOS$: calcd 195.0718, found 195.0718.

***S*-Methyl-*N*-(propen-2-yl)-*S*-phenylsulfoximine (12).** 1H -NMR ($CDCl_3$): 1.73 (d, $J = 1.0$ Hz, 3H), 3.03 (s, 3H, CH_3), 4.02 (m, $J = <1$ Hz, 1H), 4.12 (s, 1H), 7.4–7.55 (m, 3H), 7.80–7.85 (m, 2H). ^{13}C -NMR ($CDCl_3$): 25.4 (CH_3), 45.6 (CH_3), 97.3 (CH_2), 128.2 (CH), 129.4 (CH), 133.1 (CH), 139.2 (C), 146.4 (C). IR (neat): ν 2921, 1607, 1283, 1217, 746. MS (EI): m/z 195 (M^+ , 20%), 180 (5%), 132 (73%), 125 (77%), 91 (100%). HRMS for $C_{10}H_{13}NOS$: calcd 195.0718, found 195.0718

***S*-Methyl-*N*-(3-methylbut-2-en-2-yl)-*S*-phenylsulfoximine (13).** 1H -NMR ($CDCl_3$): 1.52 (m, $J = <1.0$ Hz, 3H), 1.67 (m, $J = <1.0$ Hz, 3H), 1.72 (m, $J = <1.0$ Hz, 3H), 2.98 (s, 3H, CH_3), 7.4–7.5 (m, 3H), 7.80–7.85 (m, 2H). ^{13}C -NMR ($CDCl_3$): 19.7 (CH_3), 19.8 (CH_3), 19.9 (CH_3), 45.7 (CH_3), 117.3 (C), 127.9 (CH), 128.9 (CH), 129.2 (CH), 132.7 (CH), 141.4 (C). IR (neat): ν 2916, 1657,

1445, 1278, 1247, 742. MS (EI): m/z 223 (M^+ , 20%), 140 (80%), 92 (100%). HRMS for $C_{12}H_{17}NOS$: calcd 223.1031, found 223.1031

***N*-(3,4-Dihydro)naphth-1-yl]-*S*-methyl-*S*-phenylsulfoximine (16).** 1H -NMR ($CDCl_3$): 1.97–2.22 (m, 2H), 2.47–2.71 (m, 2H), 3.16 (s, 3H), 5.39 (t, $J = 2.0$ Hz, 1H), 6.95–7.22 (m, 3H), 7.41–7.56 (m, 3H), 7.86–7.91 (m, 3H). ^{13}C -NMR ($CDCl_3$): 21.8 (CH_2), 27.0 (CH_2), 44.1 (CH_3), 110.4 (CH), 121.9 (CH), 125.2 (CH), 125.9 (CH), 127.3 (2 CH), 128.3 (CH), 132.0 (CH), 134.0 (C), 135.9 (C), 137.7 (C), 138.1 (C). IR (neat): ν 3016, 2929, 1613, 1444, 1271, 1216, 1150, 1110, 744. MS (EI): m/z 283 (M^+ , 20%), 268 (24%), 221 (17%), 220 (100%). HRMS for $C_{17}H_{17}NOS$: calcd 283.1031, found 283.1032

***N*-(3,4-Dihydro)naphth-1-yl]-*S*-methyl-*S*-*p*-tolylsulfoximine (17).** 1H -NMR ($CDCl_3$): 2.05 (m, 2H), 2.30 (s, 3H), 2.60 (m, 2H), 3.16 (s, 3H), 5.39 (t, $J = 2.0$ Hz, 1H), 7.02–7.20 (m, 4H), 7.68–7.74 (m, 4H). ^{13}C -NMR ($CDCl_3$): 20.5 (CH_3), 21.8 (CH_2), 27.1 (CH_2), 44.3 (CH_3), 110.2 (CH), 121.9 (CH), 125.1 (CH), 125.9 (CH), 127.3 (2 CH), 129.0 (CH), 134.1 (C), 135.1 (C), 135.9 (C), 137.8 (C), 142.8 (C). IR (neat): ν 3057, 2929, 1681, 1612, 1272, 1219, 1109, 757. MS (EI): m/z 297 (M^+ , 13%), 282 (6%), 234 (100%), 219 (34%). HRMS for $C_{18}H_{19}NOS$: calcd 297.1187, found 297.1187

S-Methyl-*S*-phenyl-*N*-(1-phenylvinyl)sulfoximine (**6**)

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S-Methyl-*N*-(1-phenylvinyl)-*S*-*p*-tolylsulfoximine (7)

S-Methyl-*N*-(1-phenylvinyl)-*S*-*p*-tolylsulfoximine (7)

S-(2-Methoxyphenyl)-*S*-methyl-*N*-(1-phenylvinyl)sulfoximine (**8**)

S-(2-Methoxyphenyl)-*S*-methyl-*N*-(1-phenylvinyl)sulfoximine (**8**)

S-(3-Methoxynaphth-2-yl)-*S*-methyl-*N*-(1-phenylvinyl)sulfoximine (**9**)

S-(3-Methoxynaphth-2-yl)-*S*-methyl-*N*-(1-phenylvinyl)sulfoximine (**9**)

S-Oxo-*S*-[(1-phenylvinyl)imino]tetrahydrothiophene (**10**)

S-Oxo-*S*-[(1-phenylvinyl)imino]tetrahydrothiophene (**10**)

S,S-Dimethyl-*N*-(1-phenylvinyl)sulfoximine (**11**)

S,S-Dimethyl-*N*-(1-phenylvinyl)sulfoximine (**11**)

S-Methyl-*N*-(propen-2-yl)-*S*-phenylsulfoximine (**12**)

S-Methyl-*N*-(propen-2-yl)-*S*-phenylsulfoximine (**12**)

S-Methyl-*N*-(3-methylbut-2-en-2-yl)-*S*-phenylsulfoximine (**13**)

S-Methyl-*N*-(3-methylbut-2-en-2-yl)-*S*-phenylsulfoximine (**13**)

N-[(3,4-Dihydro)naphth-1-yl]-*S*-methyl-*S*-phenylsulfoximine (**16**)

N-[(3,4-Dihydro)naphth-1-yl]-*S*-methyl-*S*-phenylsulfoximine (**16**)

N-[(3,4-Dihydro)naphth-1-yl]-*S*-methyl-*S*-*p*-tolylsulfoximine (**17**)

N-[(3,4-Dihydro)naphth-1-yl]-*S*-methyl-*S*-*p*-tolylsulfoximine (**17**)

S-Methyl-*S*-phenyl-*N*-(1-phenylethyl)sulfoximine (**18**)

S-Methyl-*S*-phenyl-*N*-(1-phenylethyl)sulfoximine (**18**)