Supporting Information

A Straightforward Enantioselective Route to Dialkyl Sulfoxides Based upon Two Carbon for Carbon Substitution Reactions on the Sulfinyl Group

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Further spectral data

(*R*)-Benzyl *p*-bromophenyl sulfoxide (1)

$^1\text{H-NMR}$: (500 MHz, CDCl_3) 7.64-7.59 (m, 2 H), 7.38-7.30 (m, 3 H), 7.27-7.24 (m, 2 H), 7.04-7.02 (m, 2 H), 4.15 (d, $J = 12.5$ Hz, 1 H), 4.04 ppm (d, $J = 12.5$ Hz, 1 H).

$^{13}\text{C NMR}$ (125 MHz, CDCl_3) 141.77, 131.93, 130.29, 128.53, 128.49, 128.37, 125.97, 125.54, 63.32 ppm.

(*S*)-*p*-Bromophenyl ethyl sulfoxide (2)

$^1\text{H NMR}$ (500 MHz, CDCl_3) 7.64-7.61 (m, 2 H), 7.45-7.43 (m, 2 H), 2.86 (dq, $J = 13.4$, $J = 7.4$ Hz, 1 H), 2.69 (dq, $J = 13.4$, $J = 7.4$ Hz, 1 H), 1.16 ppm (t, $J = 7.4$ Hz, 3 H).

$^{13}\text{C NMR}$ (125 MHz, CDCl_3) 142.47, 132.34, 125.78, 125.34, 50.24, 5.77 ppm.

MS (70 eV) 234 (M^{+2} , 13), 232 (M^+ , 13), 204 (54), 158 (46), 156 (50), 125 (50), 50 (100).

(*S*)-*p*-Bromophenyl *n*-pentyl sulfoxide (3)

$^1\text{H NMR}$ (500 MHz, CDCl_3) 7.67-7.64 (m, 2 H), 7.50-7.47 (m, 2 H), 2.76 (t, $J = 7.8$ Hz, 2 H), 1.78-1.70 (m, 1 H), 1.64-1.55 (m, 1 H), 1.44-1.25 (m, 4 H), 0.88 ppm (t, $J = 7.1$, 3 H).

$^{13}\text{C NMR}$ (125 MHz, CDCl_3) 143.29, 132.40, 125.65, 125.30, 57.32, 30.75, 22.23, 21.71, 13.77 ppm.

(*S*)-*p*-Bromophenyl cyclohexyl sulfoxide (5)

$^1\text{H NMR}$ (500 MHz, CDCl_3) 7.64-7.62 (m, 2 H), 7.45-7.42 (m, 2 H), 2.55-2.49 (m, 1 H), 1.85-1.62 (m, 5 H), 1.43-1.31 (m, 2 H), 1.28-1.14 ppm (m, 3 H).

$^{13}\text{C NMR}$ (125 MHz, CDCl_3) 141.01, 132.12, 126.57, 125.36, 63.25, 26.20, 25.58, 25.37, 25.28, 23.85 ppm.