

Supporting Information

Ru-BICP Catalyzed Asymmetric Hydrogenation of Aromatic Ketones

Ping Cao and Xumu Zhang*

Department of Chemistry, 152 Davey Laboratory

The Pennsylvania State University, University Park, PA 16802

Conditions of the Analysis of Chiral Secondary Alcohols

Chiral Capillary GC. Supelco™ β -DEX 120 column 30m x 0.25mm (i.d.). Carrier gas: He (1ml/min). The racemic products were obtained from reduction of ketones by NaBH₄ in ethanol. The absolute configuration of products was obtained by comparing optical rotation data with literature.¹⁻² Enclosed is the retention time for the racemic products at the given temperature.

1-phenylethanol (entry 1)

Retention Time: $t_R = 12.1$ min, $t_S = 12.5$ min (120 °C).

1-(4'-fluorophenyl)ethanol (entry 2)

Retention Time: $t_R = 7.5$ min, $t_S = 7.9$ min (140 °C).

1-(4'-chlorophenyl)ethanol (entry 3)

Retention Time: $t_R = 8.6$ min, $t_S = 8.8$ min (150 °C).

1-phenyl-1-propanol (entry 5)

Retention Time: $t_R = 15.7$ min, $t_S = 16.2$ min (130 °C).

2-methyl-1-phenyl-1-propanol (entry 6)

Retention Time: $t_R = 8.0$ min, $t_S = 9.1$ min (γ -225, 120 °C).

1-(2'-methylphenyl)ethanol (entry 7)

Retention Time: $t_R = 7.0$ min, $t_S = 7.3$ min (150 °C).

1-(2'-chlorophenyl)ethanol (entry 8)

Retention Time: $t_R = 6.4$ min, $t_S = 6.6$ min (160 °C).

α -methyl-2-naphthalenemethanol (entry 9)

Retention Time: $t_R = 46.6$ min, $t_S = 47.8$ min (160 °C).

α -methyl-1-naphthalenemethanol (entry 10)

Retention Time: $t_R = 42.0$ min, $t_S = 45.0$ min (160 °C).

1-(2-thioenyl)ethanol (entry 11)

Retention Time: $t_R = 11.5$ min, $t_S = 11.9$ min (130 °C).

1-(5-methyl-2-thioenyl)ethanol (entry 12)

Retention Time: $t_R = 15.2$ min, $t_S = 16.0$ min (130 °C).

1-(3-methyl-2-thienyl)ethanol (entry 13)

Retention Time: $t_R = 15.7$ min, $t_S = 17.0$ min (130 °C).

1-(2,4-dimethyl-5-thiazoyl)ethanol (entry 14)

Retention Time: $t_R = 26.7$ min, $t_S = 28.2$ min (130 °C).

1-(5-chloro-2-thienyl)ethanol (entry 15)

Retention Time: $t_R = 11.6$ min, $t_S = 12.1$ min (150 °C).

1-(5-bromo-2-thienyl)ethanol (entry 16)

Retention Time: $t_R = 12.8$ min, $t_S = 13.3$ min (160 °C).

1-(3-thienyl)ethanol (entry 17)

Retention Time: $t_R = 11.5$ min, $t_S = 11.9$ min (130 °C).

Reference:

1. Fantin, G.; Fogagnolo M.; Medic, A.; Pedrini, P.; Poli, S. *Tetrahedron: Asymmetry* **1993**, *4*, 1607.
2. Ohkuma T.; Ooka H.; Hashiguchi S.; Ikariya T.; Noyori R. Supporting material for *J. Am. Chem. Soc.* **1995**, *117*, 2675.