

**Osmium tetroxide in poly(ethylene glycol) (PEG): A recyclable reaction medium for rapid asymmetric dihydroxylation under Sharpless conditions**

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**General:** The following chemicals were purchased from Aldrich and used as supplied: Poly (ethylene glycol) (PEG), Styrene,  $\alpha$ -methyl styrene, *trans*-stilbene, Indene, cyclohexene, 4-methyl-1-pentene, tetradecene, OsO<sub>4</sub>, (DHQD)<sub>2</sub>PHAL, 4-methyl morpholine *N*-oxide.

<sup>1</sup>H-NMR spectra were recorded as solution in CDCl<sub>3</sub> at room temperature on a Varian Gemini spectrometer at 200MHz, and mass spectra were recorded on Finnigan MAT 1020B or micro mass VG 70-70H spectrometer operating at 70eV using direct inlet system.

*ee* of the reaction product was determined by chiral GC analysis using Cyclosil-B column.

Physical data of the products are as follows:

**Phenyl-1, 2-ethane diol:** Spectral data are identical to authentic sample and to those previously reported.<sup>1</sup>

**2-Phenyl-1, 2-propane diol:** Spectral data are identical to authentic sample and to those previously reported.<sup>1</sup>

**1,2-Diphenyl-1, 2-ethane diol:** Spectral data are identical to authentic sample and to those previously reported.<sup>2</sup>

**Indane-1, 2-diol:** <sup>1</sup>H NMR (200MHz, CDCl<sub>3</sub>):  $\delta$  7.42-7.32 (m, 1H), 7.26-7.15 (m, 3H), 4.96-4.86 (brs, 1H), 4.48-4.36 (brs, 1H), 3.16-2.12 (m, 2H), 2.72-2.44 (brs, 2H); Mass (EI): (M<sup>+</sup>) 150, 132, 118, 91, 77.

**2,3-Dihydroxy-3-phenyl ethyl propionate:** Spectral data are identical to authentic sample and to those previously reported.<sup>3</sup>

**2,3-Dihydroxy-3- (4-methoxyphenyl) ethyl propionate:** Spectral data are identical to authentic sample and to those previously reported.<sup>4</sup>

**1,2-Cyclohexane diol:** Spectral data are identical to authentic sample and to those previously reported.<sup>5</sup>

**4-Methyl-1, 2-pentane diol:**  $^1\text{H}$  NMR (200MHz,  $\text{CDCl}_3$ ):  $\delta$  3.85-3.70 (m, 1H), 3.62 (d, 1H,  $J = 11.1$  Hz), 3.38 (t, 1H,  $J = 7.4$  Hz), 2.80-2.76 (brs, 2H), 1.90-1.70 (m, 1H), 1.48-1.32 (m, 1H), 1.24-1.10 (m, 1H), 1.02-0.9 (m, 6H); Mass (EI): ( $\text{M}^+$ ) 118, 104, 94, 87, 71.

**Tetradecane-1, 2-diol:**  $^1\text{H}$  NMR (200MHz,  $\text{CDCl}_3$ ): 3.70-3.58 (m, 2H), 3.43-3.34 (m, 1H), 2.48-1.88 (brs, 2H), 1.44-1.24 (m, 22), 0.89 (t,  $J = 6.0$  Hz, 3H). Mass (EI): 200 ( $\text{M}^+ - 30$ ), 141, 125, 55 and 43.

**4-(2-Ethoxycarbonyl-1, 2-dihydroxy-ethyl)-2,2-dimethyl-oxazolidine-3-arboxylicacid tert-butyl ester:**  $^1\text{H}$  NMR (200MHz,  $\text{CDCl}_3$ ):  $^1\text{H}$  NMR  $\delta$  4.75-4.66 (brs), 4.53-4.46 (d,  $J = 3.1$  Hz), 3.10 (d,  $J = 5.9$  Hz), 1.61-1.44 (m), 1.32 (t,  $J = 6.6$  Hz); Mass (EI): ( $\text{M}^+ + 1$ ) 334, 278, 234, 220, 200, 100, 57.

**3-O-benzyl-1, 2-O-isopropylidene- $\alpha$ -D-glucofuranose:**  $^1\text{H}$  NMR (200MHz,  $\text{CDCl}_3$ ): 7.34-7.24 (m), 5.90 (d,  $J = 3.7$ ), 5.84 (d,  $J = 3.7$ ), 4.66-4.38 (m), 3.18-3.04 (m), 1.44 (s), 1.37 (s).

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