

P5

Development of Asymmetric Resolution System for the Production of Chiral Styrene Oxide by Microbial Epoxide Hydrolase

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Asymmetric enantioselective resolution system using epoxide hydrolase activity of *Aspergillus niger* LK was developed and operated for the production of optically pure styrene oxide. Two-phase hollow-fiber reactor system was employed for the enhanced solubility of racemic styrene oxide in organic phase and protection of epoxide hydrolase activity in aqueous phase. For the removal of phenyl-1,2-ethandiol, the inhibitor of epoxide hydrolase, cascade hollow-fiber reactor system was also developed. Chiral (*S*)-styrene oxide (39 mM in dodecane) could be asymmetrically resolved with high enantiopurity (> 99% *ee*) using these reactor system.