

**ABSTRACT:**

This study was focused on the development of a kinetic model and a reactor model for the enzymatic resolution of (R,S)-1-phenylethanol. The reaction progress curves catalyzed by immobilized lipases, ChiroCLEC-PC in batch stirred tank reactor were used to develop the kinetic model. The resolution followed Ping-Pong Bi-Bi mechanism with the inhibition of lauric acid, (R,S)-1-phenylethanol and water. The validity of the model was verified by fitting it to another experimental data catalyzed by immobilized lipases, Chirazyme L2, c.-f., C3, Iyo at the same reaction conditions. The rate equation was then applied for the development of reactor model in a recirculated packed bed reactor system. The overall effectiveness factor and Peclet number were used to determine the mass transfer and axial dispersion limitation in the reactor performance. The reactor model was verified by fitting it to the larger scale reactor data with the correlation coefficient value more than 0.99.