Experimental Study and Simulation of Kinetics of Acetophenone Hydrosilylation with Diphenylsilane in the Presence of Rhodium Complexes in a Microreactor

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Abstract—The hydrosilylation of acetophenone with diphenylsilane in a microreactor in the presence of complexes $[Rh(cod)Cl]_2$ and $[Rh(CO)_2(\mu\text{-}Cl)]_2$ and (*R*)-(–)-*cis*-mirtanyl- and (*R*)-(+)-bornylamine in situ was studied, the kinetics simulation of the process was performed, and the multicriteria optimization of the process was carried out. The influence of the micro-mixing effect on the reaction rate was revealed. Best results in the microreactor were obtained for the $[Rh(cod)Cl]_2$–$BornylNH_2$ catalytic system. It was established that the formation of 1-phenylethanol and related enol silyl ethers are simultaneous competing reactions.

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