

عنوان مقاله:

Modeling and Simulation a Catalytic Fixed Bed Reactor to Produce Ethyl Benzene from Ethanol

محل انتشار:

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خلاصه مقاله:

Ethyl benzene used increasingly each year is the raw material of producing styrene monomer. This substance is produced from benzene alkylation with ethylene or ethanol, depending on the availability and cost of raw materials. In this study benzene alkylation in the presence of ethanol in a catalytic fixed bed reactor in three states of isotherm, adiabatic and non-isotherm-non-adiabatic is mathematically modeled with one-dimensional pseudo-homogeneous model; and then has been programmed with math lab software. The reaction kinetics model is used in this study which comes from the experimental equations found by Mr. U.S. Ridevi et al. in a zeolite catalyst impregnated with $AlCl_3$ obtained in isotherm mode. The results of this simulation in isotherm state are comparable with experimental data. The adiabatic and non-isotherm-non-adiabatic states also show acceptable results. Furthermore, in this study the effect of various factors such as the feed flow rate, substrate temperature, substrate density, fixed and variable heat capacity and viscosity of fluid has been investigated.

کلمات کلیدی:

Fixed Bed Reactor, Ethyl Benzene, Modeling, Simulation, Ethanol, catalyst

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