

Aspen Plus Simulation of Saponification of Ethyl Acetate in the Presence of Sodium Hydroxide in a Plug Flow Reactor

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Abstract : This work presents the modelling and simulation of saponification of ethyl acetate in the presence of sodium hydroxide in a plug flow reactor using Aspen Plus simulation software. Plug flow reactors are widely used in the industry due to the non-mixing property. The use of plug flow reactors becomes significant when there is a need for continuous large scale reaction or fast reaction. Plug flow reactors have a high volumetric unit conversion as the occurrence for side reactions is minimum. In this research Aspen Plus V8.0 has been successfully used to simulate the plug flow reactor. In order to simulate the process as accurately as possible HYSYS Peng-Robinson EOS package was used as the property method. The results obtained from the simulation were verified by the experiment carried out in the EDIBON plug flow reactor module. The correlation coefficient (r^2) was 0.98 and it proved that simulation results satisfactorily fit for the experimental model. The developed model can be used as a guide for understanding the reaction kinetics of a plug flow reactor.

Keywords : aspen plus, modelling, plug flow reactor, simulation

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