عنوان مقاله:

Mathematical modeling of liquid-liquid extraction in packed and pulsed packed column for LPG sweetening process

محل انتشار:

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نویسندگان:

Ali Zarei - *Department of Chemical Engineering, Shahid Bahonar University of Kerman, Kerman, Iran*

Saber Maharati Azar Znooz - *Process Engineering Department, Phases ۶,۷ and ۸ of South Pars Gas Complex, Assaloyeh, Iran*

خلاصه مقاله:

A mathematical model was developed for conventional packed bed extraction column of mercaptan removal from liquid propane. The conventional unit is extraction column of LPG sweetening unit of South Pars Gas Complex. Extraction column is filled with pall rings structured packing where mercaptan is extracted from continuous (organic) phase to dispersed (aqueous) phase accompanied by a chemical reaction in propane/mercaptan/caustic system. Mathematical model was compared with experimental data and it was concluded that the simulated model corresponds to experimental data. The developed model was also compared with a pulsed packed column as a result of more mass transfer in this configuration. All important hydrodynamic parameters such as hold up, flooding velocity and continuous and dispersed phases flow rates were studied together with the effect of chemical reaction on increasing mass transfer. Mass transfer depends mainly on contact interfacial area between continuous and dispersed phases which increases with dispersed phase hold up and lower droplets size. However, hold up increases with pulse intensity in pulsed column and more mass transfer of mercaptan will occur in this case. In the bottom of column driving force for mass transfer is low and effect of reaction will become more important.

کلمات کلیدی:

liquid-liquid extraction, mercaptan removal, packed column, pulsed packed columns, hold up, flooding velocity :