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Thermodynamic analysis of products distribution for propane aromatization process

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Abstract

The aromatization process of light alkanes is one of the major ways of adding value to the lower saturated hydrocarbons obtained from the refining process and Liquid Petroleum Gas, LPG. The thermodynamic analysis based on Gibbs free energy minimization subject to certain constraints was used to reduce the number of proposed species from thirty-six to thirteen at reaction conditions of 550 oC and 1 bar. The process of minimizing the Gibbs free energy equation was done using Aspen Plus software in a carbon free atmosphere. Influence of temperature, pressure and flowrate was studied on product distribution in the form of selectivity, yield and conversion of propane. It was observed that the formation of aromatics was least favoured as seen from the yield at various temperature. The hydrocarbon selectivity and yield were reported on carbon basis. This work also presented the computational justification for assuming that isomers of products obtained from propane aromatization is in quasi-equilibrium. The temperature which determines the maximum yield of the desired product was determine.

Biography:

Peter, Emmanuel Essiet, is a PhD student in chemical engineering of the Ahmadu Bello University, Nigeria. He had published two journal articles on kinetics and mass transfer with the University journal which is one of the reputable journals in Nigeria. He is currently working on computational approach for catalyst screening for propane aromatisation over a modified zsm-5.

Speaker Publications:

1. "Thermodynamic Analysis of Products Distribution for Propane Aromatization Process"; Journal of King Saud University; 2020.
2. "MASS TRANSFER EFFECT ON STEAM REFORMING OF GLYCEROL OVER RUTHENIUM-ALUMINA (Ru/Al 2 O 3) CATALYST"; 2020.
3. "REACTION MECHANISM AND KINETICS OF STEAM REFORMING OF GLYCEROL OVER RU/ALUMINA CATALYST"; Reaction mechanism and kinetics; 2029.

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