MODELING OF HYDRO-CRACKING LUMPS OF SERIES-PARALLEL COMPLEX REACTIONS IN PLUG FLOW REACTOR PLANT

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ABSTRACT

This paper presents mechanistic kinetic model of hydrocracking-lumps of series-parallel reactions of hydrocarbons fractions in reactor plant of Alesa-Eleme. The crude oil fractions kinetic parameters were determined mathematically e.g. activation energies, rate constant, and equilibrium constant of the fractions. The results obtained are presented in figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14; with the profiles depicting the actual dynamics of mole fractions of feed fractions conversion with space-time and the temperature effects in reactor 1, 2, and 3. These profiles are in agreement with typical hydrocracking process of improved products for blending into premium motor spirit in refining activities.

Keywords: Hydrocracking, kinetic model, constrain optimization, reactor, Gases C_{1-4}