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Catalytic Cracking MAT Reactor Performance Using Pseudo Reaction Kinetics

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Abstract: Thefluid catalytic cracking(FCC) is one of the key process unit in modern oil refining . FCC process converts heavy distillates like gas oil or residue to gasoline and middle distillates using cracking catalyst.Modeling of FCC riser reactor are generally based on number of lumps classified based on boiling point, chemical type and Structure. Pseudo component based modeling approachconsider cracking of large number of lumps in the form of narrow boiling pseudo components.This modeling approach eliminates requirement of determininglarge number of rate constants compared to conventional Lump models.Two phase flow approach in the riser is also incorporated in the model. Model predictions are compared well with the yield pattern of MAT reactor data reported in the literature. Profiles for various output yields, change of coke content on catalyst, catalyst activity have also been studied. Simulation result shows that tuning parameters,catalyst to oil ratio have significant effect on the yield of products and reactor performance.
Key words: FCC, Cracking Catalyst, Riser ,Pseudo component, MAT reactor, Lumps.

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