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**A Modeling Analysis of Non-isothermal Bubble Column Reactors**

Shaikh, A. A.; Zarook, S. M

Department of Chemical Engineering, King Fahd University of Petroleum & Minerals,  
Dhahran, Saudi Arabia

**Abstract**

A generalized mathematical model was developed to simulate the non-isothermal performance of bubble column reactors. Steady-state reactor behavior was rigorously described without limitations on the extent of macro-mixing, flow configuration, absorption-reaction regime, and the nature of reactive species. A parametric sensitivity analysis showed that the idealized lumped-distributed models did not offer a realistic portrait of the non-isothermal behavior of bubble column reactors. Implications on the possible occurrence of static bifurcations were discussed.