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**DYNAMICS OF AN ISOTHERMAL CATALYST PELLET WITH SIMULTANEOUS
CHEMICAL REACTION AND ADSORPTION**

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ABSTRACT

The dynamics of a porous, isothermal catalyst pellet with simultaneous chemical reaction, diffusion and reactant adsorption is analyzed. The influence of reactant adsorption is characterized for the linear isotherm and two Freundlich isotherms. Transient responses of the catalyst pellet to different initial conditions and to external perturbations of the reactant concentration are evaluated. External perturbations include step and periodic variations of the bulk reactant concentration. It is demonstrated that both adsorption of the reactant and the shape of the isotherms considered have a significant impact on the dynamics of the catalyst pellet. Such influence is verified with both disturbances, by imposing initial conditions different from the steady state and by applying external perturbations. For periodic variations of the bulk reactant concentration, the shape of the sorption isotherm adopted also influences

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