

عنوان مقاله:

CFD simulation of Non Porous Catalytic Reactor for the Decomposition of Ammonia

محل انتشار:

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نویسندگان:

Tabatabaei - Chemical Engineering Group, Semnan University, Semnan, Iran

Hormozi - Chemical Engineering Group, Semnan University, Semnan, Iran

Khoshandam - Chemical Engineering Group, Semnan University, Semnan, Iran

خلاصه مقاله:

Chemical reactors exhibit very complex behaviors such as multiple steady states, oscillations, etc. resulting from complex linkage between the transport processes and the non-linear chemical reaction kinetics. In the present work, we analyzed the fluid dynamics and convergence in catalytic microreactor systems for the decomposition of ammonia over a monolayer Ni non-porous catalyst. We consider the effect of geometry on the fluid flow pattern and rate of convert in a catalytic microreactor. The overall model for this convective-diffusive-reactive system consists of a flow model, a mass transport model, an energy conservation model and a reaction kinetics model for ammonia decomposition. The rate of reaction can be measured by the Arrhenius rate. The results are presented in the form of velocity vectors and concentration contours. The results are compared with the presented data in the articles and observed a good accordance. We observed that the circular catalyst has most conversion

کلمات کلیدی:

CFD, chemical reaction, geometry, catalytic reactor

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