

عنوان مقاله:

Hydrogen production by steam reforming of dimethyl ether over Cu/ZnO/Al₂O₃ and H-ZSM-5 catalysts: An experimental and modeling study

محل انتشار:

فصلنامه هیدروژن و پیل سوختی ایران، دوره 1، شماره 3 (سال: 1393)

تعداد صفحات اصل مقاله: 9

نویسندگان:

Paria Amirshaghghi - *Chemical Engineering Department, Babol University of Technology, P.O. Box ۴۸۴, ۴۷۱۴۸۷۱۱۶۷ Babol, Iran*

Ali Eliassi - *Chemical Technologies Research Department, Iranian Research Organization for Science and Technology (IROST), Tehran, Iran*

Majid Taghizadeh - *Chemical Engineering Department, Babol University of Technology, P.O. Box ۴۸۴, ۴۷۱۴۸۷۱۱۶۷ Babol, Iran*

خلاصه مقاله:

Hydrogen was produced by steam reforming of dimethyl ether (DME) using a physical mixture of commercial HZSM-5 zeolite (for DME hydrolyzing) and Cu/ZnO/ Al₂O₃ (for methanol steam reforming) as a catalyst in a fixed bed reactor. The experiments were performed at atmospheric pressure and in a temperature range from 270 to 310 °C. The effects of feed temperature and gas hourly space velocity (GHSV) between 2420 and 4615 h⁻¹ on DME conversion and H₂ and CO concentrations in the gas-phase products were investigated. In addition, the temperature changes along the catalyst bed were measured. The results showed that DME conversion increased with increasing temperature, and also, DME conversion decreased with increasing GHSV. Finally, a homogeneous one-dimensional model was used to model the reactor of hydrogen production by steam reforming of DME. The predicted temperature profile along the catalyst bed and conversion were compared with the experimental data. The model results and experimental data were found to be in good agreement.

کلمات کلیدی:

Dimethyl Ether, Hydrogen production, Steam Reforming, Modeling, Fixed Bed Reactors

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/704876>

