HIGH-TEMPERATURE HOMOGENEOUS PYROLYSIS OF ETHANE IN THE ADIABATIC COMPRESSION REACTOR

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Abstract: Thermal decomposition of ethane has been studied in a rapid compression machine over a range of temperatures 1073–1393 K (800–1120 °C). The main products (ethylene and hydrogen) and minor products (methane, acetylene, propylene, buta-1,3-diene, propane, n-butane, and but-1-ene) of reaction have been detected. Some of them like butyne-1, butyne-2, diacetylene, isoprene, etc. were identified for the first time. It is shown that the increase of the pyrolysis temperature along with the decrease of the residence time brings a little effect on the ethylene formation. Pathways to the minor products like n-hexane and isobutene have been suggested.

Keywords: ethane; ethylene; pyrolysis; rapid compression machine (RCM)

References


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