HOMOGENEOUS PYROLYSIS OF DIMETHYL ETHER UNDER PULSED ADIABATIC COMPRESSION

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Abstract: Thermal decomposition of dimethyl ether (DME) has been studied in a rapid compression machine over a temperature range1060–1920 K. The main products (H_2, CO, CH_4, and formaldehyde) and minor products of reaction have been identified. Some of them like propane, propene, allene, methylacetylene, butadiene-1,3, vinylacetylene, diacetylene, cyclopentadiene, benzene and toluene were identified for the first time. It is shown that ethylene yield remains constant in the temperature range 1700–1920 K at the conversion degree of DME exceeding 95% along with the decrease of methane and ethane yields and the increase of acetylene yield.

Keywords: dimethyl ether (DME); pyrolysis; rapid compression machine (RCM); formaldehyde; ethylene

Acknowledgments

The work was fulfilled in the Institute of Petrochemical Synthesis of the Russian Academy of Sciences as a part of State Task of the Federal Agency for Scientific Organizations of Russia (No. 79).

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Received January 10, 2018

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