COPYROLYSIS OF DIMETHYL ETHER AND METHANE UNDER PULSED ADIABATIC COMPRESSION

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Abstract: The copyrolysis of dimethyl ether (DME) and methane has been studied in a rapid compression machine over a range of temperature 1030–1860 K and the degree of conversion 0.15%–96.1%. When comparing the data obtained and the results of the previous study of impulsive pyrolysis of DME, it was found that the compositions of the mixtures of products coincide qualitatively, the addition of methane to DME does not have a noticeable effect on the degree of conversion, but affects the yields of products, especially at temperatures above 1700 K. It is shown that ethylene yield remains constant in the temperature range 1700–1860 K at the degree of conversion higher than 95% along with the decrease of ethane yield and the increase of acetylene yield.

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

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