

**THE EXPERIMENTAL INVESTIGATION OF THE
ISOBARIC HEAT CAPACITY OF THE REACTION
MIXTURE "ETHANOL / RAPESEED OIL" IN THE
PRESENCE OF A HETEROGENEOUS CATALYST**

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The measurements were made of the isobaric heat capacity of ethanol and a mixture of "ethanol / rapeseed oil" in the presence of a heterogeneous Al₂O₃ catalyst at initial molar ratios of 6 : 1 to 30 : 1 in the pressure range 9,8-29,4 MPa and temperatures from 303K to 563K in an experimental setup, created on the basis of the scanning calorimeter IT-s-400. To more efficiently mix the poorly-miscible reagents, the ultrasonic emulsifier UIP1000hd of the German firm Hielscher was used before they were fed into the measuring cell and the pressure maintenance system. Preliminary treatment of the mixture in an ultrasonic disperser leads to a displacement of the region of the heat capacity jump in lower temperature range. With increasing pressure and oil concentration, the magnitude of the thermal effect of the reaction decreases. The dependence of the change in the isobaric heat capacity over the entire range of the investigated pressures and the initial mole ratios with increasing temperature. The theoretical justification of the observed growth and fall in the values of the isobaric heat capacity of the initial mixture was analyzed by the Shaw method [1].

1. Lastovka, V. A similarity variable for estimating the heat capacity of solid organic compounds. Part II. Application: Heat capacity calculation for ill-defined organic solids. V. Lastovka, M. Fulem, M. Becerra, J.M. Shaw. Fluid Phase Equilibria.2008.134 p.