

## EXPERIMENTAL TESTING THE INVARIANT FOR THE NON-LINEAR CHEMICAL REACTION

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### Abstract

The first non-Onsager thermodynamic invariant for non-linear chemical system was found experimentally in some domain “far from the equilibrium” using ‘the dual kinetic experiment’ in the batch reactor in which the reaction of etherification of ethanol is studied jointly with the reaction of hydrolysis of ethylacetate. In a typical experiment, the glass flask was loaded with 200 mL of 1 mol/L ethanol and acetic acid in acetonitrile for etherification or 1 mol/L ethyl acetate and water in acetonitrile for hydrolysis (the temperature chosen were 20, 30, and 40 °C). The obtained experimental result is a justification of the theory presented previously [6].

(D. Constaes, G.S. Yablonsky, and G.B. Marin, “Thermodynamic time invariances for dual kinetic experiments: nonlinear single reactions and more”, *Chem. Eng.Sci.*, 73(2012)20-29)