ing kinetic equations. The experimental data are utilized to evaluate the kinetic constants used in these equations.

An Extensive Investigation of Iron Catalysts for Use in Ammonia Synthesis

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A study was made of the effect of concentration (0–88 wt. %) of aluminum oxide in CO-precipitated iron catalysts—for use in high pressure ammonia syntheses—upon their phase composition, texture, catalytic activity, and magnetic properties. The structure, texture, composition, and activity of the catalysts were determined, using both the oxidized fresh- and the reduced used catalysts. The effects of these properties and of the reaction temperature upon specific catalytic activity were determined. Also investigated was the relationship between the reducing characteristics of the catalysts and their phase compositions.

Investigation of Catalytic Dehydrogenation of *n*-Butylenes at Pulsed Flow Conditions

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Catalytic dehydrogenation of n-butylenes to divinyl was studied by a pulsed chromatographic technique, using an aluminum-chromium catalyst. Consecutive contacting of the test samples with the catalyst gradually changes the character of the resulting chromatograms: initially only pure divinyl is present; subsequently, along with divinyl, there gradually appear α-butylene, β-cis-, and β-trans-butylenes; later, the character of the chromatograms changes but little.

At low reaction temperatures (85°–200°) the actual yields of divinyl are 1.5–2.0 times greater than the equilibrium yields calculated for the conditions employed. The heats of adsorption of the butylenes and of divinyl on the aluminum-chromium catalyst were determined chromatographically. The feasibility of evaluating activated adsorption processes by chromatographic techniques is pointed out.

Study of Ammonia Oxidation Over a Platinum Catalyst by a Secondary Ion Emission Method

By Ya. M. Fogel, B. T. Nadikto, V. F. Ribalko, V. I. Shvachko, and I. E. Korobchanskaya

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A new method was developed by the authors to study heterogeneous catalytic reactions. Its effectiveness in studying catalytic oxidation of ammonia over a platinum catalyst is described. The new method involves running cross-comparisons of the slopes of the I(T) curves (I, intensity of a certain line in the mass-spectrum; T, catalyst temperature) for the secondary ions, displaced from the catalyst surface by the primary ion beams, *and* for the ions formed by ionization of the gaseous media around the catalysts. The nature of some of the elementary processes occurring in catalytic oxidation of ammonia are described. Some of the phenomena resulting from poisoning of the platinum catalyst by hydrogen sulfide are also described.

Determination of Surface Areas of Supported Silver Catalysts by Chemisorption

By K. M. Khol'yav'yenko, M. Yu. Roobaneek, and N. A. Chernookheena

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Chemisorption of oxygen by catalytic substances was investigated at a temperature of 200° and pressures of 0.1–5 mm Hg. The catalysts studied were tableted silver, silver deposited on fragments of porcelain and on corundum, and silver with added $Be(OH)_2$. The results show that the chemisorbed oxygen reaches saturation at pressures of 2–3 mm Hg.

Based on the results of chemisorption of oxygen and physical adsorption of krypton, the calculated surface areas of the various tableted silver catalysts were found to be nearly equal. This finding formed the basis upon which the method for determination of the surface areas of complex silver catalysts was developed.

Adsorption of Hydrogen on the Oxygen-Covered Surface of Tungsten

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A study was made of the effect of preadsorbing oxygen on a tungsten surface upon the condensa-