## The Energies of Bonding of Carbon, Oxygen and Hydrogen Atoms of Organic Molecules With Anhydrous Yittrium Oxide—Calculated from Heats of Adsorption

*By* I. I. Konenko, A. A. Tolstopyatova, and V. A. Ferapontov
*N. D. Zeleenskii Insitute of Organic Chemistry*

The energies of bonding of carbon, hydrogen, and oxygen atoms with anhydrous yittrium oxide at the catalytically active sites (determined by kinetic method) of the surface were calculated from the differential heats of adsorption of the reaction products and of isopropyl alcohol. On the basis of these calculated values, present a discussion as to the reasons for the ability of $Y_2O_3 \cdot nH_2O$ to dehydrogenate tetralin as opposed to $Y_2O_3$ alone.

## Investigation of Catalytic Oxidation of Hydrogen Over Vanadium Pentoxide and of Oxidation-Reduction Processes in the Catalyst by the Components of a Gaseous Mixture

*By* V. A. Roiter and V. A. Yusa
*L. V. Peesarjevskii Institute of Physical Chemistry of the Academy of Sciences of Ukrainian SSR*

Investigated were the kinetics of: reduction of vanadium pentoxide by hydrogen; oxidation of the lower oxides formed—by air, and of catalysis of the hydrogen-oxygen mixture over $V_2O_5$.

The results obtained contradict the catalysis mechanism concepts of alternate oxidation-reduction of the catalyst. An electrochemical scheme is offered to explain the mechanism of catalysis over vanadium pentoxide.

## Comparison of Activities and EPR Spectra of Chromium Oxide Catalysts

*By* V. V. Antoofiev†, M. P. Voteenov, A. G. Saveen, B. I. Sajeen, A. S. Semionova, and M. I. Laitman
*Scientific Research Institute for Polymerizable Plastomasses*

In this study a comparison is made of the electron paramagnetic resonance spectra of chromium oxide catalysts with their activities. A relationship is noted between the changes in intensity of the narrow spectral lines and the activities due to the effects of certain factors.

## Investigation by the EPR Method of the Nature of the Active Component of Chromium Oxide Polymerization Catalysts

*By* F. M. Bookanayeva, Yu. E. Piecherskaya, V. B. Kazanskii, and V. A. Dzeesko

A comparison is made between the catalytic activity of chromium oxide—on aluminosilicate catalysts with their EPR spectra. Show that the catalytic activity is not related to the intermediate states of oxidation of chromium in the catalysts, nor to the presence of hexavalent chromium in them. The activity depends upon presence of $Cr^{5+}$ ions stabilized on the carrier surface.

## Catalytic Activity of Organic Polymers. II. Catalytic Activity of the Polymer Formed by Dehydrochlorination of Polyvinylidenechloride

*By* N. P. Keiyer and I. V. Astafiev
*The Institute for Catalysis of Siberian Division of the Academy of Sciences of the U.S.S.R.*

Investigated was catalytic activity of the polymer produced by dehydrochlorination of polyvinylidenechloride. The polymer exhibits dehydrogenation-inclined catalytic activity in decomposition of formic acid and of isopropyl alcohol. Hydrazine is decomposed into ammonia and nitrogen with a 90% yield. The polymer is characterized by high chemisorption capacity.

## Application of Infra-Red Spectroscopy to a Study of Catalytic Polymerization of Ethylene Oxide

*By* Z. A. Markova
*Institute of Chemical Physics of the Academy of Sciences of U.S.S.R.*

Investigated were the infra-red adsorption spectra of ethyleneoxide molecules adsorbed on MgO, $Mg(OH)_2$, BeO and $Be(OH)_2$. From the changes in the analytical data for the adsorption-desorption processes, some conclusions are made regarding the nature of adsorbed ethylene oxide molecules and the mechanism of the polymerization process.

## Catalytic Activity of Iron-Nickel Alloys in Ammonia Synthesis

*By* M. V. Tovbeen and V. Ya. Zabooga
*T. G. Shevchenko State University in Kiev Division of Physical Chemistry*

An investigation was made of the catalytic activity of iron-nickel alloys in the ammonia syn-