

that the centers of different acid strength participate in the reaction and that the centers of high acid strength have high catalytic activity.

#### Catalytic Conversion of Piperylene Diluted with Ethylene and with Steam

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Catalytic conversion of piperylene diluted with ethylene and with steam was carried out at temperatures of 550°–675°. At these conditions, the principal reaction products are cyclopentadiene, pentenes, and benzene. Conversion in the presence of ethylene at a temperature of 675° results in an 87% yield of the catalyzate, with concentrations of cyclopentadiene, aromatics, and pentenes in the product of 16, 20 and 22 per cent, respectively. The conversion in the presence of ethylene significantly decreases the coke lay-down; on the other hand, large amounts of coke are produced in processing piperylene diluted with steam.

#### The Infrared Spectra of V<sub>2</sub>O<sub>5</sub> Containing Various Amounts of Admixed Oxides of Molybdenum, Cobalt, and Phosphorus

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A study was made of the infrared spectra of crystalline systems of V<sub>2</sub>O<sub>5</sub>—MoO<sub>3</sub>, V<sub>2</sub>O<sub>5</sub>—Co<sub>2</sub>O<sub>3</sub>, and V<sub>2</sub>O<sub>5</sub>—P<sub>2</sub>O<sub>5</sub>. A comparison of the experimental infrared spectral data for V<sub>2</sub>O<sub>5</sub> and MoO<sub>3</sub> with the corresponding published X-ray spectral data leads to the conclusion that these oxides contain double and single — mainly covalent — bonds, such as V=O, MoO=O and —O—V—O—, —O—Mo—O—.

On the basis of the data relating changes in percentage compositions of the systems with the corresponding changes of the system spectra, conclusions are made regarding phase composition of the oxides. The published X-ray data of their structural properties support these conclusions.

#### Effect of Selenium Additive on Catalytic Properties of Silver

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The study of the effect of selenium addition in concentrations of 10<sup>-3</sup> — 10<sup>-1</sup> atom % on adsorptive properties of a silver catalyst shows that the additive alters the rate of oxygen adsorption on the catalyst. The rate of the oxygen desorption by

hydrogen decreases with increasing concentrations of the added selenium. The comparative data shown relate decreased reactivity of the adsorbed oxygen with a decrease in its polarity.

#### A Pulse-Chromatographic Method to Determine Adsorption Isotherms of the Components of Gas and Vapor Mixtures

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A pulse-chromatographic method is described to determine adsorption isotherms of the components of gas- and vapor mixtures — for example, of propane and propylene, from mixtures of the two compounds. Compared to the method of "vacant" chromatography, which is described in an earlier paper, determination of adsorption isotherms by the pulse technique is faster and requires relatively small beds of the adsorbents.

#### LETTERS TO THE EDITOR

#### Changes in Stationary Concentration of Triplet States and Photosensitized Decomposition of Methanol

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AND V. A. SMEERNOV

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#### A Mechanism of Hydroperoxide Acylation by Acetic Anhydride

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#### A Direct Method to Produce Complexes of Molecular Nitrogen with Compounds of Ruthenium

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#### Stability of Certain Polyphenylalkanes Exposed to Radiation

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