form photoeffect in organic semiconductors. Only the double-excitation processes can be shown to explain the experimentally observed kinetics of the photocurrent, the relationship between its fixed values and the intensities of active light and temperature, as well as the energetics of the ionization process.

Investigation of Oxidation Kinetics of Vanadium Trioxide

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A study of vanadium trioxide oxidation kinetics shows presence of a maximum point on the reaction rate-time curve. In some cases, this point is regarded as indication of autocatalysis. However, in oxidation of V_2O_3 its presence is due to increased rate of reaction as a result of heating up the oxide to a desired temperature.

The formally-derived equations, which are presented, satisfactorily describe the process kinetics within the temperature interval investigated. Reasons are offered to explain the markedly and increasingly diffusion-limited character of the V_2O_3 oxidation reaction at the oxidation levels in excess of 60% and reaction temperatures above 460°.

Apparent activation energy of V_2O_3 oxidation with air was calculated to be 29–37 kcal/mole.

Effects of Imposed Electrical and Magnetic Fields on Catalyst Performance

By P. M. STADNEEK AND E. YU. S'YEKER'YESH
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The effects of imposed electrical field on performance of zinc oxide and zinc oxide—copper catalysts were studied in oxidation of methane. It was found that the processing yields are substantially increased by the imposition of negative voltage.

The effects of imposed magnetic field on catalyst performance were studied, using oxidation of methanol over a silver catalyst as the example. It was found that an imposed magnetic field alone has no effect on the over-all conversion and selectivity characteristics of this catalyst in the reaction. However, simultaneous imposition of magnetic and electrical fields very noticeably alters the formaldehyde yields. The results show that the extent of methanol conversion is largely a function of the size of the angle formed by the lines of the electrical and magnetic fields.

EPR Spectra and Nature of Activity of Supported Chromium Oxide Catalysts in Polymerization of Ethylene

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Catalytic activity of chromium on different supports was evaluated for polymerization of ethylene. The preparations using silica gels and aluminosilicates with minor admixtures of aluminum oxide as the carriers are the most active.

The EPR spectra of each active catalyst invariably signal the presence of Cr^{+5} ions. At the same time, for like-based catalysts a correlation exists between catalytic activity and concentrations of pentavalent chromium at the active centers on their surface. Specific activities of dissimilarly-based catalysts are different. This finding and the observed differences in the shape of the EPR signals, lead to the conclusion that the structures of the active centers of dissimilarly-based catalysts are different.

A Mechanism of Interaction of Triethyl Aluminum with Tetrabutyl Titanium and the Structure of Resulting Complexes

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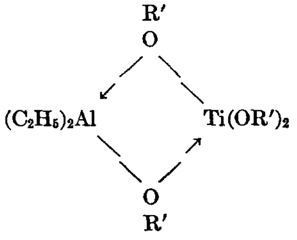
Reaction of $Ti(OC_4H_9)_4$ with triethyl aluminum in deuterated toluene is accompanied by separation of ethane only. This demonstrates that free radicals are not formed in this reduction process.

A study of the spectra in the visible range and of electroconductive properties of the systems with different Al/Ti ratios indicates formation of two complexes:



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