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**Liquid and Gaseous Phase Oxidation of Methyl-Ethyl Ketone**

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the Academy of Sciences of U.S.S.R.*

The changes in the kinetics and the product compositions when going from liquid to gaseous phase oxidation of methyl-ethyl ketone are caused not only by changes in reactant concentration but also by the change in the polarity of the medium.

MEK is consumed by a chain reaction only, whereas its oxidation products, diacetyl and keto-hydro peroxide, are consumed via a chain and a non-chain reaction processes. One non-chain decomposition path leads to formation of the radicals by degenerative chain branching. Aside from the chain reaction path, acetic acid is also formed by the non-chain conversion of diacetyl to two molecules of the acid.

The chain branching processes of MEK oxidation are the same in the liquid and the gaseous phase.

**Alkylation of Chlorobenzene with Isopropyl Chloride in Presence of Aluminum Chloride**

By E. P. BABEEN AND A. A. KOLPAKCHEE

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The kinetics of alkylation of chlorobenzene with isopropyl chloride in presence of aluminum chloride was studied at temperatures of 0°, 20°, and 60°, and kinetic equations for the reaction system developed at various molar ratios of isopropyl chloride to chlorobenzene. The results show the effect of the molal ratios of these reactants on yields of isopropyl chlorobenzene.

**A Study of Kinetics of Isotopic Exchange Between Gaseous Oxygen and the Oxygen in Complex Organic Compounds of Cobalt**

By G. M. PANCHENKOV AND  
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Isotopic exchange between gaseous oxygen and the oxygen in the complex organic compounds of cobalt, bis-(N,N'-disalicylal-ethylenediamine)- $\mu$ -

aquodicycobalt and bis-[N,N'-di-(3-nitrosalicylal)-ethylenediamine]- $\mu$ -aquodicycobalt, was studied.

The isotopic exchange rates are a complex function of the reaction temperature. A mechanism is offered to explain the rate-temperature relationship.

**Effects of Temperature and Irradiation Dosage Upon Radiolysis and Oxidation of Diisopropyl Ether**

By V. V. SARAYEVA, N. A. BAKH,

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X-ray irradiation of diisopropyl ether was studied. In absence of oxygen, the radiolysis results in formation of alcohols by a non-chain mechanism and in simultaneous production of aldehydes via a chain reaction mechanism. The activation energy of the latter reaction is 11 kcal/mole.

In presence of oxygen, the irradiation at low temperatures results in a non-chain type formation of peroxides and carbonyl compounds. Reaction temperatures of 10°, and higher, result in chain reactions with activation energies of 15 to 20 kcal/mole, the value increasing with temperature.

**Basic Reaction Rate Constants for Oxidation of Ethylbenzene by Molecular Oxygen**

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In intermittent oxidation of ethylbenzene by elementary oxygen the reaction rate constants were determined for the reactions involving continuous and interrupted chain formation. Also determined were the rate constants for the peroxy radical of ethylbenzene inhibited with  $\alpha$ -naphthol and  $\beta$ -naphthol.

**Kinetics of Oxidation of Hydrazine by Aqueous Solution of Nitric Acid**

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The kinetics of oxidation of hydrazine by