solid responsible for the melting is unstable. The equation is

$$V = K(e^{\lambda t} - \lambda t - 1),$$

where $V =$ the volume of gaseous products at time t, and λ and K are kinetic constants incorporating the reaction rate constants. In the vicinity of the m.p. of the starting reagent, the thermal decomposition of pentaerythritoltetranitrate is satisfactorily described by this equation.

Selection of Catalysts for Homogeneous-Phase Hydrogenation

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The authors have investigated the ability of ions of 62 metals to catalyze the oxidation of molecular hydrogen in 70°C aqueous solutions. Ions of elements of groups IA and IB and of platinum metals are capable of homogeneous activation of H_2. Complexed compounds of platinoid elements and of Cu(II) catalyze the reduction of $Cr_2O_7^{2-}$. Noncatalytic oxidation of H_2 takes place in solutions of compounds whose redox potential is higher than +1.4 volts. The author proves that high-activity catalysts for the hydrogenation must be sought among the coordination compounds exhibiting a metal-metal bond.

Oxidation of *n*-Butenes and Methylacetylene on Mild Catalysts. Studies Involving Differential Calorimetry

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Differential calorimetry was used to study the oxidation of a mixture of *n*-butenes and methylacetylene on a copper and a bismuth-molybdenum catalyst. The catalysis on copper is heterogeneous-homogeneous, while that on bismuth-molybdenum is heterogeneous. It is hypothesized that the mechanism depends on the energies of the bonds between intermediate radicals formed during the reaction and the catalyst surface, as well as on the nature of these intermediate radicals.

Dehydrogenation of Butane in a Circulating System. 1. Kinetics of Butylene Formation and Carbon Deposition

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Dehydrogenation of butane was studied by the circulation technique in a fluid bed apparatus where the catalyst activity was constant. Initially, the activity of the regenerated catalyst increases, only to fall as a result of carbon deposition. The period during which maximum activity can be maintained depends on the temperature and the space velocity of the butane. It is thought that carbon deposition is a process which parallels the main dehydrogenation reaction.

Inversion of *l*-Menthone over a Silica-Alumina Catalyst

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The authors studied the inversion of *l*-menthone to *d*-isomenthone over a silica-alumina catalyst at atmospheric pressure and 180°-360°C. The studies were done in a flow system, with the space velocity varying from 21 to 144 min^{-1}. It was found that at 278°C the degree of conversion of the *l*-menthone over this catalyst does not exceed that previously obtained with a copper catalyst. This phenomenon is apparently due to the protonization of the hydrogen on the copper surface.

K-Spectra of X-Ray Absorption and the Reactivity of Chelate Copper Compounds

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The authors have studied the fine structure of *K*-spectra for X-ray absorption by copper. The copper was in the form of chelate compounds such as 2(O,O) Cu, 2(N,N) Cu, 2(N,O) Cu, 2 (N,S)Cu, as well as in various groups incorporated in the backbones of different monomers and polymers. The authors attempted to evaluate the degree to which ions are involved in the metal-ligand bond within the chelate moiety of various compounds. They also attempted to quantitatively characterize the effect that various groups, which are in the molecule but are not directly linked to the chelate moiety, have on the ionization of this bond. The authors found a correlation between the reactivity of polychelates and the magnitude of the effective charge concentrated on the copper atom. The reactivity of the polymers decreases with the decrease of the effective charge on the copper and with the increase of