

## BRIEF COMMUNICATIONS

## Kinetics of Hydrolysis of Fluorosulfonate Ion in Alkaline Solution

I. T. RISS AND A. K. DRABKEENA

*Dn'yeprop'yetrovsk Engineering Institute  
for Railway Transport Industry*

The rate of hydrolysis of  $\text{SO}_3\text{F}^-$  ion in a strongly alkaline solution of a fixed ionic strength,  $\mu$ , is expressed by the equation,  $v = [k_1 + k_2(\text{OH}^-)][\text{SO}_3\text{F}^-]$ . At temperatures of  $60^\circ\text{--}80^\circ$  and  $\mu$  of 1.00,  $\log k_1 = 8.467 - 4,022.0/T$  and  $\log k_2 = 10,384 - 4,339.7/T$ . The calculated activation energies and entropies of each of the two parallel reactions are listed.

## Effect of Heterophase Admixtures on Thermal Decomposition of Silver Nitrate

V. V. BOLDIR'YEV AND V. I. YEROSHKEEN

*Institute of Chemical Kinetics and  
Combustion of Siberian Division of  
the Academy of Sciences of USSR*

The effect of semiconductor-type heterophase admixtures on thermal decomposition of  $\text{AgNO}_2$  was investigated. The admixtures of this type catalytically modify the rate of thermal decomposition of  $\text{AgNO}_2$ —their action possibly stemming from either the rise of a contact potential difference at the nitrite-additive interface or diffusion of ions from the additive into silver nitrite.

Characteristics of Thermal Decomposition of  $\text{NiSO}_4 \cdot (\text{NH}_4)_2\text{SO}_4$ G. A. LAZAR'YENKO AND  
L. P. MORDVEENTZEVA*Chemistry Department, V. I. Lenin  
State University of Byelorussia*

A study of kinetics of thermal decomposition of  $\text{NiSO}_4 \cdot (\text{NH}_4)_2\text{SO}_4$  at widely different temperatures shows that addition of ammonia, hydrogen, as well as of the solid product of the decomposition process—retard the decomposition. The added hydrogen alters the shape of the pressure-time curves. A decrease in the ammonia pressure from its maximum value, which occurs in the course of the  $\text{NiSO}_4 \cdot (\text{NH}_4)_2\text{SO}_4$  decomposition, is due to the presence of several reversible reactions. The experimental results show which of these reactions take place at the conditions investigated. Complexity of the process is evident from a mathematical analysis of the experimental data, which was carried out with the aid of the kinetic equations.

## Feasibility of Partial Desorption in Transition of Chemisorbed Oxygen to a Higher-Charged State

YU. P. SOLONEETZEEN

*A. A. Jdanov State University  
in the City of Leningrad*

This paper discusses the effect of transition of chemisorbed oxygen to a higher-charged state on the adsorption-desorption equilibrium of the system. The author demonstrates that the instantaneous transition at certain specified conditions can be accompanied either by additional adsorption or partial desorption of the oxygen.

Catalytic Effect of Nitrogen-Containing Compounds on Isomerization of Carbohydrates: Effect of Aliphatic Amines on  $\alpha,\beta$ -Isomerization of d-GlucoseV. A. AFANAS'YEV AND  
D. V. MAL'KOVSKAYA*Institute of Organic Chemistry  
of the Academy of Sciences of  
Kirghiz SSR*

A study of kinetics of  $\alpha,\beta$ -isomerization of glucose in aqueous solutions of aliphatic amines shows that the value of the reaction rate constant is a function of the solution pH and of the amine concentration. Activity of amines in this reaction decreases in the following order:

ethylamine  $\geq$  dimethylamine  $>$  propylamine  $\geq$   
diethylamine  $>$  butylamine  $\geq$  triethylamine.

## Mechanism of Chain Branching in Oxidation of n-Decane in the Presence of Cobalt Stearate Catalyst

G. M. BOOLGAKOVA, Z. K. MAIZOOS,  
AND I. P. SKEEBEDA*Institute of Chemical Physics of the  
Academy of Sciences of USSR*

The rate of decomposition of n-decyl hydroperoxide is proportional to the square of concentration of cobalt stearate catalyst and to the first power of the hydroperoxide concentration at low ROOH values. At high concentrations of the hydroperoxide, the decomposition rate ceases to be a function of the ROOH concentration. Formation of radicals in a hydroperoxide- $\text{St}_2\text{Co}$  system occurs via formation of an intermediate complex.

The information as to composition of the hydroperoxide-cobalt stearate complex,  $\text{St}_2\text{Co} \cdot \text{ROOH}$ , is based on the kinetic data. The rate constant,  $k_3$ , of elementary formation of the radicals by interaction of  $\text{St}_2\text{Co} \cdot \text{ROOH}$  complex with cobalt stearate, and the equilibrium constant,  $K$ , were also determined on the basis of the kinetic data.