BRIEF COMMUNICATIONS

Kinetics of Hydrolysis of Fluorosulfonate Ion in Alkaline Solution

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The rate of hydrolysis of SO_3F^- ion in a strongly alkaline solution of a fixed ionic strength, μ, is expressed by the equation, $v = [k_1 + k_2 (OH^-)][SO_3F^-]$. At temperatures of 60°–80° and μ 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 Nitrite

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The effect of semiconductor-type heterophase admixtures on thermal decomposition of $AgNO_2$ was investigated. The admixtures of this type catalytically modify the rate of thermal decomposition of $AgNO_2$ —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 $NiSO_4 \cdot (NH_4)_2SO_4$

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A study of kinetics of thermal decomposition of $NiSO_4 \cdot (NH_4)_2SO_4$ 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 $NiSO_4 \cdot (NH_4)_2SO_4$ 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

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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 α,β-Isomerization of d-Glucose

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A study of kinetics of α,β-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 ⩾ dimethylamine > propylamine ⩾
diethylamine > butylamine ⩾ triethylamine.

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

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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-St_2Co system occurs via formation of an intermediate complex.

The information as to composition of the hydroperoxide-cobalt stearate complex, $St_2Co \cdot ROOH$, is based on the kinetic data. The rate constant, k_3, of elementary formation of the radicals by interaction of $St_2Co \cdot ROOH$ complex with cobalt sterate, and the equilibrium constant, K, were also determined on the basis of the kinetic data.