Kinetics of the Alkaline Hydrolysis of $[F_3BONH_2]^-$ and of the Acidic Hydrolysis of F_3BONH_3

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$[F_3BONH_2]^-$, the anion formed in the coordination reaction of BF_3 and hydroxylamine, is hydrolyzed in aqueous alkaline solutions via the solvolytic dissociation mechanism; the rate of split-off of the first F^- is the limiting step of the reaction. The activation energy and entropy of the process are 17.10 kcal/mol and -20.5 entropy units.

Hydrolysis of F_3BONH_3 is catalyzed by the H_3O^+ cation due to the reversible formation in small amounts of a protonated complex, followed by rapid solvolytic dissociation of the B—O bond of the complex.

The kinetic data for the hydrolysis of $[F_3BONH_2]^-$ and F_3BONH_3 are compared with the known kinetic data for formation of BF_4^- and $F_3BON(CH_3)_3$, and for the combination reactions of BF_3 with amines.

Stereospecific Mutarotation of α-L-Rhamnose by the Catalytically Active Optical Isomers and Racemate of α-Phenylethylamine

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A study was made of the effect of stereospecificity of α-phenylethylamine catalyst on the kinetics of conversion of the L-substrate. The results show that the optical isomers and the racemate of the catalyst affect differently the kinetics of the isomers transition and that the observed difference is entirely due to the stereospecificity of the catalyst.

Effect of Electronic Structure on Catalytic Properties of Iron–Nickel Catalysts

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The data presented cover catalytic properties of iron-nickel alloys in decomposition of ammonia. The listed properties include the values of magnetic saturation moment and electron work function of the catalysts. The authors conclude that activity of the catalysts increases with increasing number of the unpaired *d*-electrons and with increasing value of the electron work function.

Effect of Alkali Metals on Properties of Platinum Catalysts in Dehydrocyclization of *n*-Hexane

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The promoting effect of Li, Na, and Cs additives on activity of Pt/Al_2O_3 and Pt/SiO_2 catalysts was evaluated in dehydrocyclization of *n*-hexane. X-ray analyses of the Pt/SiO_2 structure show that the alkali metals retard crystallization of the Pt-component and that effectiveness of the alkyli metals as the promoters decreases in the following order: $Cs > Na > Li$. The difference in the effectiveness of these metals is attributed to the differences in the size of their ionic radii.

Catalytic Activity of Aluminum Fluoride

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Aluminum fluoride is an active and stable catalyst in dehydration of ethyl alcohol and in cracking reactions. Kinetics of these reactions over the AlF_3 were determined.

pH of Silica-Alumina Cracking Catalysts at the Isoelectric Point

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The pH values of aqueous solutions of potassium chloride were determined before and after adsorption on various silica-alumina catalysts. Based on the experimental data, the pH values of a series of mixtures of silica-alumina catalysts of different composition were determined at the isoelectric point. At this point, the samples containing 30% Al_2O_3 and 70% SiO_2 had the lowest pH.

Electron Work Functions of the Samples of Germanium of Different Types of Conductivity in Catalytic Reactions

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In catalytic dehydration of ethanol, the electron work function values of germanium catalysts