with and without initiators. The initiators, when used, were present either as integral components of the acids, or as added water or some other solvent. The results show that this reaction is typical of an acid catalyzed reactions with a number of others superposed upon it. The reaction is catalyzed by the undissociated molecules of the acids and by the conjugated acid-base molecules, the latter being present in the reaction mixture. The undissociated acid molecules and acetate ions attack the initially formed acid-ethylene oxide complexes. The kinetic equation, based on the proposed reaction mechanism, predicts with satisfactory accuracy potential experimental data.

Reaction Sequence in Hydrogenation of Piperylene Over Skeletal Nickel Catalyst

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The stereoisomers of piperylene undergo selective hydrogenation to monoolefins over a skeletal nickel catalyst. Hydrogen adds to both dienes in all positions, but principally in the 3,4-position. Mixtures of piperylene isomers are hydrogenated simultaneously and at equal rates. No cis- or trans-conversion of the initial dienes is observed. The ratio of the cis- to the trans-isomers of pentene-2 in the hydrogenation products depends on the concentration of the stereoisomers in the charge stock. In hydrogenation of the monoolefin mixtures formed in the reaction the hydrogen first of all combines with pentene-1. The observed sequence of hydrogen addition is attributed to the adsorptive displacement of the monoolefins by the diene and of the β-olefin by the α-olefin.

Heats of Activation in Decomposition of Ammonia Over Catalysts Differing in Chemical Composition. I. Catalysts with Iron Base

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The mechanism of ammonia synthesis was studied by the decomposition route in a recycle-continuous unit, using an iron catalyst with promoters of various chemical composition. The results show that the activation energy values for ammonia decomposition depend upon chemical composition of the promoters. For example, activation energy is changed only slightly by the addition of potassium oxide alone; however, simultaneous addition of potassium and aluminum oxides decreases activation energy from 65 kcal/mol for the unpromoted iron catalyst to 54 kcal/mol for the doubly promoted carrier. Similarly, a four-fold promotion of the iron catalyst significantly decreases its activation energy.

Effects of Regeneration and Activation Upon Structure and Surface Hydration of Aluminochromic Catalysts

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Summarize the effect of heat treating with hydrogen, vaporized n-hexane, and air on structural changes of aluminochromic catalysts for use in hydrogenation-dehydrogenation of paraffins. The extent of surface hydration at these conditions is evaluated.

Determination of Interaction of Activated Carbon with Oxygen by a Contact Potential Difference Method

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Adsorption of oxygen on a degassed activated carbon was determined by a contact potential difference method. At room temperatures and low pressures adsorption of oxygen, which is irreversible, increases work function of the electron by 0.5 volt at 0.16% coverage of the surface. Heating the oxygen-containing carbon under vacuum, removes the surface oxygen as CO and CO_2 and, at the same time, decreases work function of the electron, which at 350° is equal to the value for a degassed sample.

Heating the carbon in gaseous oxygen up to 350°, increases work function of the electron to 1.25 v.

At equal coverages the relationship between the contact potential differences and the heats of oxygen adsorption is linear.