Some Aspects of Propagation of a Degenerate Branched-Chain Reaction in the Presence of a Branching-Induced Inhibitor

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The author discusses the relationship between the autocatalytic factor of a degenerate branching-chain reaction and the concentration of an inhibitor which terminates chain growth and increases the probability of its degenerate branching. Depending on the ratio $k_{\mathrm{prop.}}/k_{\mathrm{term.}}$ and the branching ability of the inhibitor, the latter either does not exhibit a critical concentration or has two such concentrations. The steady-state reaction takes place between these two critical concentrations. Where the inhibitor does not exhibit a critical concentration, the autocatalytic factor of the chain reaction decreases rapidly with the inhibitor concentration at low concentrations of the latter, and is virtually independent of it at high concentrations.

Effect of O_2 on the Line Widths of ESR Spectra of Organic Semiconductors Obtained from Polyethylene and Polyvinyl Acetate

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The author presents some data on the effect of O_2 on the line widths of ESR spectra of various polyethylenes and polyvinyl acetates modified by heat (heating at various temperatures above 600°C) and radiation. The line width is governed by an interaction which produces local magnetic fields upon elastic collision.

Local Activation in Pyrolysis of Polyurethanes

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Thermal decomposition of polyurethanes yields products containing a system of conjugated bonds. These products then activate the further decomposition of the polymer.

Deuterium Exchange in Cyclohexane over Partially Poisoned, Vapor-Deposited Platinum Films

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The catalysts were vapor-deposited platinum films partially poisoned by pyridine or CS_2, as well as double platinum-copper films. Isotopic exchange between cyclohexane and deuterium over such films exhibits a decrease or complete disappearance of that distribution curve peak which corresponds to the exchange of half of the hydrogens of the cyclohexane. This seems to confirm a previous hypothesis, according to which this exchange proceeds simultaneously via a doublet and a sextet mechanism.

Adsorptive Capacity and Catalytic Activities of Zeolites. II. Heats of Adsorption of Several Hydrocarbons and Nitrogen-Containing Compounds on Type-Y Zeolites

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Chromatography was used to determine the heats of adsorption of cumene, benzene, quinoline, and pyridine on the sodium form and the decationated form of type-Y zeolite. With the hydrocarbons the heat of adsorption is independent of the degree to which cations have been removed; however, quinoline and pyridine exhibit lower heats of adsorption as the sodium concentration in the zeolite drops. There appear to be two types of adsorption sites on the zeolite.

Effect of Light on the Decomposition of Hydrazine on Germanium

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Illumination of *n*-type germanium accelerates the decomposition of hydrazine. Measurements of potential differences showed that adsorption of hydrazine in the dark involves an increase in the electron work function. Illumination of germanium under hydrazine increases that function even further.

Chemisorption of Amine Radicals on ZnO and Their Heterogeneous Recombination

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Pyrolysis of benzylamine over thin films of ZnO induces a sharp drop in the conductivity of the latter. This appears to be due to the chemisorption of NH_2 radicals (formed in the pyrolysis) on ZnO. The data on the initial rate of change of the electrical conductivity of ZnO were used to