of the corundum support is disposed in the form of discreet particles which occupy but a small portion of the carrier surface. Increasing the silver content of the catalyst results in the formation of comparatively larger aggregates of the metal within the voids of the carrier particles and in a decrease of specific surface of the silver. Relative to the unit surface of the silver, activity of the catalysts remains approximately constant, regardless of concentration of the silver component in them.

Heats of Oxygen Chemisorption on Silver

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The effects on differential heat, Q, of O_2 adsorption due to (a) simultaneous adsorption of oxygen and sulfur on a solid surface and (b) the degree of the surface coverage, θ, by the oxygen —were determined calorimetrically in adsorption of oxygen on silver at a temperature of 110°. Increasing the value of θ from 0 to 1, decreases the heat of the O_2 adsorption from $\sim$130 kcal/mol to $\sim$10 kcal/mol. Q is decreased by preadsorption of small amounts of sulfur.

The results of this study are discussed on the basis of the assumption that the oxygen adsorbed on the surface of silver is present in two forms.

Investigation of Kinetics of Heterogeneous Catalytic Reactions by a Non-Chromatographic Pulse Technique

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This study demonstrates that, in principle, kinetics of heterogeneous catalytic reactions in the gas phase can be determined, when the width of a pulse exceeds the catalyst bed height. At these conditions, chromatographic separation of substances practically does not occur.

Brief Communications

Formation of Radicals in Radiolysis of Organic Solids: Yields of Radicals in Irradiation of Certain Sulfur-Containing Compounds

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The yields of radicals, G_R, were determined by an EPR technique in irradiation of various classes of sulfur-containing compounds: hexylmercaptan, hexyldisulfide, thiophenol, thiophene, and thiophene derivatives. A comparison of the G_R yields in the radiolysis of the sulfur compounds with those in the irradiation of saturated- and of oxygen-containing compounds of the analogous structures shows the following:

(1) G_R of the saturated sulfur-containing compounds is $0.4 \times \frac{1}{100}$ ev, whereas G_R of the structurally-analogous saturated hydrocarbons and alcohols is $(4\text{–}8) \times \frac{1}{100}$ ev;

(2) G_R of the sulfur-containing aromatics and of their derivatives of $(0.03\text{–}0.3) \times \frac{1}{100}$ ev is identical with the G_R of the corresponding cyclic hydrocarbons.

Formation of Free Radicals in Ultraviolet Irradiation of Naphthalene Dissolved in Hydrocarbons at 77°K

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An EPR investigation of kinetics of the diquantum process of formation of alkyl radicals was carried out at a temperature of 77°K in intermittent irradiation by ultraviolet light of naphthalene dissolved in 3-methylpentane. For continuous and interrupted irradiation of the naphthalene generalized correlations were derived between the rates of the radicals formation and (a) the time, θ, of the exposure and the black-out periods; (b) τ_1, duration of the period of accumulation of the radicals in the triplet state produced by the action of UV light; and (c) τ_2, lifetimes of the radicals in the triplet state in the absence of the excitation light. The results obtained validate the concept that in the triplet state a molecule of naphthalene absorbs the second quantum of light. The results also show that the subject photochemical reaction can take place only by adsorption of the second quantum with energy, λ, of <370 mμ.

Catalytic Action of Nitrogen-Containing Compounds in Isomerization of Carbohydrates: Catalytic Activity of α-Aminoacids in α,β-Isomerization of d-Glucose

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In acidic α,β-isomerization of glucose, the greatest catalytic activity is exhibited by the aliphatic α-aminoacids containing carboxyl groups.