## Heterogeneous Vapor Phase Catalytic Oxidation of Allylene

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Allylene was oxidized in a flow system over catalysts containing $Cu_2O$, $MoO_3$, $V_2O_5$, $Sn(VO_3)_2$, $BiO_2$-$Mo_nO_m$, etc. The allylene was strongly diluted with $N_2(CH_3:O_2:N_2 = 0.5:0.5:9)$ to suppress the homogeneous reactions occurring between 300° and 500°C. The product carbonyl compounds were identified by thin-film chromatography of their 2,4-dinitrophenyl hydrazones on $Al_2O_3$.

## An X-Ray Study of Copper Polychelates and Their Interactions in Various Reaction Mixtures

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The authors studied the X-ray K absorption spectra of copper bound in polychelates in the course of model reactions. They showed that these polychelates participate in the decomposition of hydrazine and the oxidation of isopropylbenzene. The authors have determined the magnitudes and the direction of flow of the effective charge (normally concentrated on the copper) in these polychelates.

## Shift of the Catalyst Potential as a Function of the Reaction Rate in Liquid-Phase Hydrogenation. III. Quantitative Estimate of Catalytic Activity

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The author found two types of relationship between the shift of the catalyst potential and reaction rate. Thus, a linear relationship between these quantities yields a criterion $W/\Delta\varphi$ for estimating the activity of hydrogenation catalyst. Here $W/\Delta\varphi$ is the productivity of a unit effective catalyst surface in terms of the hydrogen. This is a quantity specific to a given catalyst; it is independent of the nature of the unsaturated compound being hydrogenated and the quantity of the catalyst. It is only governed by the nature of the catalyst and the reaction conditions. Hydrogenation under conditions of constant concentration of the unsaturated compound yields some quantitative characteristics of the reactivity of a given unsaturated compound with respect to a given catalyst.

## Catalytic Isomerization of Cyclenes on Aluminum Oxide. II. Isomerization of 1-Methyl-3-Cyclohexene and 1-Ethyl-1-Cyclopentene

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The above compounds were isomerized over $Al_2O_3$ by the pulse technique. It was shown that these cyclenes isomerize directly and form 1-methyl-1-cyclohexene and dimethylcyclopentenes. Comparison of the results with data on the isomerization of 1-methyl-1-cyclohexene shows that 1-methyl-3-cyclohexene and 1-ethyl-1-cyclopentene are indeed the intermediate products of isomerization of 1-methyl-1-cyclohexene. The authors propose a sequence of reactions accounting for the conversion of 1-methyl-1-cyclohexene on $Al_2O_3$.

## Chain Growth Sites in Ethylene Polymerization on a Chromia Catalyst

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The analysis of data on the inhibition of ethylene polymerization over chromia catalysts shows that the concentration of chain growth sites on these catalysts is approximately $4 \times 10^{-6}$ mole/gm. The catalyst activity is unaffected by interruption of the polymerization reaction for a long time (for example, by flushing out the monomer). This indicates the absence of fast chain-terminating processes (either spontaneous or those resulting from interaction of chain growth sites).

## Kinetics and Mechanism of the Synthesis of 2-Butyn-1,4-Diol

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The synthesis of 2-butyn-1,4-diol over cuprous acetylide/$SiO_2$ was studied in a nongradient reactor at atmospheric pressure and 90°C; the reaction orders with respect to acetylene, formaldehyde, and butyndiol were found, and a rate equation was derived.