molecules approaches that of liquid C_6H_6; on highly methoxylated and dehydroxylated adsorbing surfaces the C_6H_6 molecules approach gaseous state.

Electroconductivity and Adsorptivity of Gases on Semi-Conductors of Zinc Blende Structural Type

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Adsorption of oxygen and hydrogen gases was determined volumetrically, using the following isoelectric compounds: Ge, GaAs, ZnGe, CuBr. For each substance, the temperature of initial activated adsorption was found to be directly related to the corresponding range of unfavorable adsorption conditions. Electroconductivities of Ge, GaAs, and CuBr in hydrogen and oxygen were determined at various temperatures and pressures. Electroconductivity of each substance tested was found to depend upon its physical properties, and the contact time and pressure of each gas. Ideas are presented regarding the nature of chemisorptive bonding of the gaseous particles with the surface of the semi-conductors studied.

Relationship Between Catalytic and Electronic Properties of Semi-Conductors: Decomposition of Nitrous Oxide on Thin Copper Oxide Films

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Changes in the electron work function with reaction conditions were determined in decomposition of nitrous oxide on CuO films. At a room temperature the gas is adsorbed without decomposition. Adsorption of the gas on CuO films decreases the work function. The electron work function is at the minimum in the reaction over the films preheated in N_2O atmosphere to temperatures of 260°–280°. Initial decomposition of nitrous oxide occurs in this temperature interval.

The test-samples with relatively higher initial work function values have higher catalytic activity. Heating the more active catalyst samples in N_2O atmosphere produces greater change in the work function values than with the less active catalysts.

A mechanism is proposed for decomposition of nitrous oxide over copper oxide catalysts.

Hydrogenative Condensation of Olefins Over a Cobalt/Clay Catalyst in Presence of Oxygen as Reaction Initiator: Conversion of Butene-1

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In presence of oxygen as the reaction initiator, butene-1 condenses over a cobalt/clay catalyst to form liquid aliphatic hydrocarbons. For the reaction to proceed, hydrogen must be present. The greatest yields of liquid products are obtained at reaction temperatures of 100°–140° and initial butene-1/hydrogen ratios of 1.5/1.0. Concentration of the added oxygen in the optimum reaction mixture is 1–2 per cent.

The oxygen-initiated catalytic condensation of butene-1 apparently proceeds via a radical-chain mechanism, which closely parallels that of hydrogenative polymerization of this olefin over the same catalyst in presence of carbon monoxide as the initiator.

Infra-Red Spectroscopic Studies of Transformations of Isomeric Cresols Over a Ni/Al_2O_3 Catalyst

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A study was made of the infra-red spectra of cresol isomers chemisorbed on a Ni/Al_2O_3 catalyst. With m-cresol, physical adsorption of the molecules is observed. With o- and p-cresols, the material chemisorbed on the catalyst surface is a complex substance, indicating possible splitting of the aromatic rings by the catalyst.

Kinetics of Catalytic Dehydrogenation of Alcohols Over Germanium

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An investigation of catalytic dehydrogenation of ethyl and isopropyl alcohols was carried out, using samples of powdered germanium with different conductance and specific electroconductivity properties. The results show that compared