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## The Solubility of Copper Iodate in Aqueous Salt Solutions

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## THE HEATS OF ADSORPTION OF ORGANIC VAPORS ON CHARCOAL AT 25° AND 50°

J. N. PEARCE AND G. H. REED

The heats of adsorption of carbon tetrachloride, chloroform, methylene chloride, and ethyl chloride were determined by the method of Pearce and McKinley. The effect of temperature on the molecular heats of adsorption is very small. The molecular heats of adsorption, ranging from 12.1 kilogram calories for methylene chloride to 15.4 kilogram calories for carbon tetrachloride, seem to increase with the number of substituted chlorine atoms in the molecule.

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## THE ADSORPTION OF CERTAIN VAPORS BY ACTIVATED CHARCOAL

J. N. PEARCE AND PAUL E. PETERS

Isotherms for the adsorption of ethane, propane, dimethyl ether and diethyl ether by activated charcoal were obtained at temperatures from 0° to 183° and at pressures varying from less than 1 mm. to about 1 atm. With the hydrocarbons equilibrium was attainable only after long periods of time. The isotherms for the hydrocarbons are in general almost rectilinear; those for the ethers have the usual form. At low temperatures the isotherms for the hydrocarbons show a peculiar type of break in the curve. The amount of vapor adsorbed decreases with an increase in the complexity of the adsorbed molecules. Semi-log isotherms, double-log isotherms, isobars and isosteres were calculated from the natural isotherms. The heat of adsorption was calculated from the slope of the isosteres.

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## THE SOLUBILITY OF COPPER IODATE IN AQUEOUS SALT SOLUTIONS

BEN H. PETERSON AND EARL L. MEYERS

The solubility of copper iodate in pure water and in solutions of potassium chloride, potassium sulphate, magnesium chloride and

magnesium sulphate was measured. The solubility in pure water was found to be 0.003695 mols Cu (10<sub>3</sub>)<sub>2</sub> per liter. The activity coefficients of copper iodate were calculated from this data by the equation

$$\log f = \log f_0 - \log \frac{S}{S_0}$$

the value of  $\log f_0$  being obtained by extrapolation according to the method used by Le Mer.  $\log \frac{S}{S_0}$  is the logarithm of the ratio of the solubility in the salt solution and in pure water. Below values of about 0.007M the observed values for  $\log f$  agree with those calculated from the Bronsted and Le Mer form of the Debye- Huckel equation

$$-\log f = 1.01 \sqrt{\mu}$$

Above 0.007M the observed values are higher than the calculated.

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## THE ADSORPTION OF CHROMATE IONS BY COLLOIDAL ALUMINUM HYDROXIDE

BEN H. PETERSON AND KIETH H. STORKS

A stable suspension of Aluminum Hydroxide was prepared by electro-dialysis of the precipitate formed by the reaction between Aluminum Chloride and Ammonium Hydroxide. Increasing quantities of a solution of potassium chromate solution were added to equal quantities of the suspension and the quantity adsorbed determined by titrating the residual solution with standard ferrous sulphate. At the concentrations below that required for complete coagulation, the suspensoid was removed by ultrafiltration.

The results show three distinct stages of adsorption with increasing concentrations of the coagulating ion; one before complete coagulation, a second just after complete coagulation the magnitude of which seemed to bear some relation to the age of the suspension, and a third which follows the Adsorption Isotherm fairly well. It is evident that the mechanics of adsorption before and after coagulation are not identical.

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