

not only by the rectilinear character of the vapor pressure curves when $\log p$ is plotted against $1/T$, but also by the observed sharpness of the melting point, and by the absence of any appreciable amounts of chloride, we feel that there can be little doubt concerning the actual composition of the substance.

When in contact with moist air or water, the substance is instantly hydrolyzed, the products formed including hydrogen, hydrofluoric acid, "silico-oxalic acid"—or 1,2-bis-(oxy-oxo)disilane—silicic and fluosilicic acids, the proportions of the several substances varying with experimental conditions. The quantitative study of this hydrolysis, which will also make possible the analysis of the original substance for silicon and fluorine, is now in progress, and will be described in the detailed account of this investigation in a later issue of *THIS JOURNAL*.

It may be added that the analogous preparation of hexafluoroethane, C_2F_6 , by the interaction of zinc fluoride with hexachloroethane, has failed to give satisfactory results at ordinary pressure.

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THE DECOMPOSITION OF PYROSULFURYL CHLORIDE, A HOMOGENEOUS UNIMOLECULAR REACTION

Sir:

According to the literature, given to date in Mellor's "Treatise on Inorganic and Theoretical Chemistry," Vol. X, p. 683, pyrosulfuryl chloride, $S_2O_5Cl_2$, decomposes at its boiling point and above at a rate which should be convenient for study. The molecule is sufficiently large that one might expect, in accord with present theories, that the decomposition might be unimolecular. The vapor phase decomposition has been investigated, and found to be homogeneous and unimolecular.

The reaction has been followed by the pressure-increase method in a Pyrex bulb, both empty and when filled with glass tubing. The pressure approximately doubles during the reaction, which is considered to be one yielding SO_3 and SO_2Cl_2 , and which, at 179° has a half-time of seven minutes in the empty bulb. When the surface is increased four times by packing, the half-time is approximately fifteen minutes.

Other temperatures are now being used, and the reality of the apparent decrease in rate with increased surface is being studied. The full report of the experiments will be submitted as soon as possible.

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