

behaves more like carbonmonoxide than like a common isonitrile. In the reaction of $\text{Fe}_3(\text{CO})_{12}$ with CF_3NC the isonitrile bridged cluster $\text{Fe}_3\mu\text{-CNCF}_3(\text{CO})_{11}$ is formed and can be isolated by column chromatography. In addition the reactions of CF_3NC with SF_5Br , SeF_5Cl , TeF_5Cl are presented.

I-9

COMPOSITION OF GAS HYDRATES OF CHClF_2 , CCl_2F_2 AND SF_6

George H. Cady

Department of Chemistry, University of Washington, Seattle, WA 98195 (U.S.A.)

Gas hydrates are forms of ice stabilized by the presence of molecules of gas occupying cavities in the solid water lattice. There are two common forms: structure I and structure II. The mean free diameters of the two types of cavities in structure I are about 5.0 and 5.8 angstroms. Very small gas molecules such as Xe or H_2S can occupy both. In the past it has been considered that gas molecules of larger diameter than 5.0 angstroms could not occupy the smaller cavities. It has now been shown through measurement of hydration numbers of CHClF_2 (diameter about 5.4 angstroms) under various pressures at 0° , that some of the small cavities are filled. This state of affairs also exists for CH_3Br . In structure II, the mean diameters of the two types of cavities are about 5.0 and 6.6 angstroms. Hydration numbers of SF_6 (diameter about 5.8 angstroms) and CCl_2F_2 (about 6.2 angstromsm) show that nearly all of the large cavities but essentially none of the small cavities are occupied.

I-10

ClF_6^+ AND ClF_4^+ CHEMISTRY

W. W. Wilson* and K. O. Christe

Rocketdyne Div., 6633 Canoga Avenue, Canoga Park, CA 91304 (U.S.A.)

Although the ClF_6^+ cation is known to exist, it has previously been prepared only in the form of its PtF_6^- or AuF_6^- salts using very exotic fluorinating agents. A systematic study was carried out to determine the feasibility of preparing other more simple ClF_6^+ salts and to provide improved synthetic methods. In addition, the vibrational spectra of $\text{ClF}_4^+\text{SbF}_6^-$ were redetermined, and the assignments for ClF_4^+ were revised and used for a normal coordinate analysis.