PURE ROTATIONAL SPECTRA OF RARE GAS-HCO^+ COMPLEXES

K. SEKI, Y. SUMIYOSHI, Y. ENDO, *Dept. of Pure and Applied Sciences, The University of Tokyo, Komaba 3-8-1, Meguroku, 153 Tokyo, Japan*; and Y. OHSHIMA, *Dept. of Chemistry, Kyoto University, 606-01 Kyoto, Japan*.

In addition to the rotational spectrum of Ar-HCO^+ reported previously[a], that of Kr-HCO^+ was observed for the first time by using a PDN-FTMW spectroscopy. The complex was produced in a supersonic jet by discharging a mixture containing H_2, CO, and Kr diluted in Ar. Rotational transitions of mono-substituted species on Kr, H, C, and O were also observed, yielding a precise substitution structure of the complex, where however a large amplitude bending motion of the complex had to be considered. The determined Rg-H distances were well explained for both species by considering a charge induced dipole-charge interaction. Furthermore, for Ar-HCO^+, the Ar-H distance and the vibrational frequencies of the van der Waals modes, which were extimated by the centrifugal distortion constant and an analysis of the large amplitude bending motion, were in good agreement with a recent *ab initio* calculation[b].

[a] Y. Ohshima, Y. Sumiyoshi, and Y. Endo, 51st International Symposium on Molecular Spectroscopy, Paper WF05 (1996).
[b] A. Nowek and J. Leszczynski, *J. Chem. Phys.*, **105**, 6388 (1996).