# ROTATIONAL SPECTRA OF JET-COOLED ION COMPLEXES

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Microwave spectra of complexes bearing molecular ions, Ar-$D_3^+$/$HD_2^+$ and Ar-$HCO^+$, were explored in a jet-cooled condition. The ionic complexes were formed by a pulsed electric discharge in a supersonic expansion. Their transitions were observed in the centimeter-wave region (7-40 GHz) with a Fourier-transform microwave spectrometer, guided by the previous millimeter-wave study in a static cell[a] or the recent infrared photodissociation study in a mass-selected ion beam.[b]
For Ar-$HCO^+$, rotational transitions of mono-substituted species on H, C, and O were also measured. The isotopic substitution has confirmed the linear Ar$\cdots$H-C-O configuration with the Ar$\cdots$H distance of 2.13 Å. The centrifugal-distortion constant for Ar-$HCO^+$ is two order of magnitude smaller than that for Ar-HCN, indicating much stronger binding in the ionic complex than the isoelectronic neutral counterpart.

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[a] M. Bogey, H. Bolvin, C. Demuynck, and J. L. Destombes, *Phys. Rev. Lett.* **58**, 988 (1987).
[b] S. A. Nizkorodov, O. Dopfer, T. Ruchti, M. Meuwly, J. P. Maier, and E. J. Bieske, *J. Phys. Chem.* **99**, 17118 (1995).