THE INFRARED SPECTRA OF BF_3 CATION AND BF_2OH CATION TRAPPED IN SOLID NEON

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New, more detailed studies of the photoionization and Penning ionization of BF_3 trapped in solid neon have confirmed the earlier[a] infrared spectroscopic identification of BF_2 and BF_2 cation and have yielded a revised assignment for the infrared absorptions of BF_3 cation. The position of the absorption attributed to ν_3 of that molecule is consistent with the distortion of the ground-state cation from D_{3h} symmetry because of strong vibronic interaction between levels of the $\tilde{B}\ ^2E'$ state and E' levels of the $\tilde{X}\ ^2A_2{}'$ ground state, as predicted by Haller and co-workers.[b] The facile reaction of BF_3 with traces of H_2O desorbed from the walls of the vacuum system leads to the stabilization of sufficient BF_2OH for the identification of two vibrational fundamentals of BF_2OH cation.

[a] M. E. Jacox and W. E. Thompson, J. Chem. Phys. 102, 4747 (1995).

[b] E. Haller, H. Koppel, L. S. Cederbaum, W. von Niessen, and G. Bieri, J. Chem. Phys. 78, 1359 (1983).