HIGH RESOLUTION INFRARED AND MICROWAVE STUDY OF $^{10}BF_2OH$ AND $^{11}BF_2OH$: the 5^1, 6^1, 7^1, 8^1, 9^1 AND $8^1 9^1$ VIBRATIONNALLY EXCITED STATES.

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High resolution (2-3 x 10^{-3} cm^{-1}) Fourier transform infrared spectra of gas phase ^{10}B and ^{11}B enriched isotopic and natural samples of BF_2OH (difluoroboric acid) were recorded in the 400- 4000 cm^{-1} spectral range. Starting from the results of a previous study[a] which involved the ν_8 (BF_2 out-of-plane bending) and ν_9 (OH torsion) bands of $^{11}BF_2OH$, it has been possible to perform the first rovibrational analysis of the ν_5 (BF_2 bending), ν_8, ν_9 and ν_8+ν_9 bands of $^{10}BF_2OH$, and of the ν_5, ν_7 (F_2BO in-plane bending) and ν_8+ν_9 bands of $^{11}BF_2OH$ up to very high rotational quantum numbers. In addition microwave transitions within the 5^1, 6^1, 7^1, 8^1 and 9^1 vibrational states of $^{11}BF_2OH$ were measured using predictions performed from ab initio calculations. For the ν_5 and ν_7 bands of $^{11}BF_2OH$, C-type Coriolis resonances coupling the 5^1 and 7^1 energy levels with those of the 7^2 and 6^1 dark states respectively were accounted for in the calculations. The other bands appeared to be unperturbed,

[a] D.Collet, A.Perrin, H.Bürger, and J.-M.Flaud, J. Mol. Spectrosc. 212, 118 (2002)