FTS AND ICLAS RECORDS OF PREDISSOCIATED ROVIBRATIONAL STRUCTURE NEAR 10400 CM^{-1} FOR SYMMETRIC ISOTOPOMERS $^{16}O_3$ AND $^{18}O_3$ OF OZONE AND CONTOUR ANALYSIS

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This work is devoted to the study of low-energy quasi-bound states of the O_3 molecule. Previous analyses[a,b,c] allowed to caracterize a few vibrational levels of the first excited state $^3A_2$.

The absorption spectrum of $^3A_2$ in the region of its band $1_0^0\ 2_0^2\ 3_0^0$ presents unassigned features. The theoretical profiles related to the probable connected transitions make difficult an unambigious analysis of the spectrum at room temperature. To decrease the superpositions, absorption spectra at low temperature appeared necessary. Special cooled cells allowed us to record spectra by Fourier Transform Spectroscopy (FTS) and Intra Cavity Laser Absorption Spectroscopy (ICLAS). The predissociation broadening effects are important for these transitions and the rotational structure cannot be observed.

A comparison between theoretical and experimental profiles shows two or three types of transitions from the ground state $\widetilde{X}\ ^1A_1$. i) One centred at 10360 cm^{-1} corresponds to $^3A_2$ (0,0,1) $\longleftarrow$ $\widetilde{X}\ ^1A_1$ (0,0,0). ii) The others in the 10480 cm^{-1} region could be due to $^3B_2 \longleftarrow \widetilde{X}\ ^1A_1$ and/or $^3B_1 \longleftarrow \widetilde{X}\ ^1A_1$ and, simulations indicate that the upper level of the most intense absorption is probably $^3B_2$.

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[a] A.J. BOUVIER, G. WANNOUS, S. CHURASSY, R. BACIS, J. BRION, J. MALICET and R.H. JUDGE, Spectrochimica Acta (in press).

[b] A.J. BOUVIER et al. Spectrochimica Acta, 55A, 2811 (1999)

[c] A.J. BOUVIER et al. J. Mol. Spectrosc., 190, 189 (1998)