

ANALYSIS OF THE ν_2 BAND OF THE FCO₂ RADICAL: PRELIMINARY RESULTS

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The unique fluoroformyloxyl radical (FCO₂) is assumed to participate in atmospheric processes such as the degradation of hydrofluorocarbons that have been considered as chlorofluorocarbon substitutes. Despite this atmospheric interest, the molecular and spectroscopic properties of FCO₂ have not yet sufficiently been explored. The high resolution FT IR gas phase spectrum of the fluoroformyloxyl (FCO₂) radical was recorded in the 650 - 1500 cm⁻¹ spectral range at the University of Wuppertal. Using this spectrum and the ground state parameters achieved recently^a we carried out the first high resolution study of the ν_2 A-type band (C-F stretching mode) centered at 970.209 cm⁻¹. The analysis was difficult because the band is congested. In addition the spin doublets are difficult to identify except for high K_a values. However, we could take advantage of the fact that only K_a=odd values are observable for symmetry reasons. The line position calculation accounts for the spin rotation doubling and for the Fermi-type resonances linking the 2¹ and 5² spin rotation energy levels.

^aKolesnikova, Varga, Beckers, Simeckova, Zelinger, Nova Striteska, Kania, Willner, and Urban, *J. Chem Phys* 128, 224 (2008)