ROTATIONAL SPECTRUM, HYPERFINE STRUCTURE, AND GEOMETRICAL STRUCTURE OF 2-AZETIDINONE

K. DEMYK, D. PETITPREZ, G. WLODARCZAK, J. DEMAISON, *Laboratoire PhLAM, UMR CNRS 8523, Université de Lille 1, F-59655 Villeneuve d'Ascq, France*; H. MØLLENDAL, *Department of Chemistry, The University of Oslo, NO-0315 Oslo, Norway*.

2-Azetidinone is the simplest four-membered lactam. There is great biological interest attached to this compound, because it is part of a series of antibiotics such as e.g. penicillins and cephalosporins. The biological activity shown by these antibiotics is presumed to depend on the lactam moiety. The microwave spectrum was already measured in the frequency range 18-38 GHz and an electron diffraction structure was determined (1). In the present work, the quadrupole hyperfine structure due to ^{14}N has been measured using microwave Fourier transform spectroscopy. The rotational constants of the ^{13}C, ^{15}N, and ^{18}O isotopomers have also been determined in natural abundance. An experimental and an ab initio structures have been determined and will be discussed. Finally, the rotational spectra of the ground vibrational state and of the first three excited puckering states have been measured from 8 to 470 GHz and accurate centrifugal distortion constants have been determined.

(1) K.-M. Marstokk, H. Møllendal, S. Samdal, and E. Uggerud, Acta Chem. Scand. 43, 351-363 (1989).