ROTATIONAL SPECTRA AND ANALYSIS OF THE ARGON-MONOFLUOROPYRIDINE VAN DER WAALS COMPLEXES

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Chirped pulse Fourier transform microwave (FTMW) spectra of the van der Waals complexes of 2-fluoropyridine and 3-fluoropyridine with argon were serendipitously observed from 8-18 GHz while studying the pyridine monomers in 2011. These initial observations were used as a guide to measure the spectra of the complexes between 4 and 26 GHz using our Balle-Flygare FTMW instrument. With the higher resolution instrument, the ^{14}N quadrupole hyperfine structure was observed and analyzed. Based on our *ab initio* calculations (MP2/6-311++G(2d 2p)), the observed rotational spectra are consistent with a geometry such that the argon atom lies over the plane of pyridine within several degrees of the c-axis of the ring. The center of mass separation between the two moieties is between 3.5 and 3.6 Å.