VAN DER WAALS COMPLEXES OF 3-HYDROXYTETRAHYDROFURAN: 3-HYDROXYTETRAHYDROFURAN-H_2O AND 3-HYDROXYTETRAHYDROFURAN-Ar

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Microwave spectra have been measured for the most abundant isotopic species of two van der Waals complexes of 3-hydroxytetrahydrofuran: 3-hydroxytetrahydrofuran-H_2O and 3-hydroxytetrahydrofuran-Ar. For the H_2O complex the fitted rotational constants suggest that the water molecule forms a double hydrogen bond with the furan by donating a hydrogen bond to the ring oxygen and accepting a hydrogen bond from the hydroxyl group. Preliminary Stark effect experiments have been performed, yielding μ_a = 1.2 (3), μ_b = 1.82 (1), and μ_c = 0.7 (4) D. The rotational constants of the argon complex are fit best by a model that has the Ar atom situated on the same side of the ring as the hydroxyl group.