MICROWAVE SPECTRA AND MOLECULAR STRUCTURES OF 2-CHLORO-1,1-DIFLUOROETHYLENE AND ITS COMPLEX WITH ARGON

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Chirped-pulse and Balle-Flygare spectrometers are used to obtain Fourier transform microwave spectra of 2-chloro-1,1-difluoroethylene and its complex with argon from 5.5 to 21.0 GHz, allowing for the geometries of both species to be determined. A total of six isotopologues are observed each for the monomer and dimer, including the most abundant species, the singly-substituted ^{37}Cl and two singly-substituted ^{13}C isotopologues in natural abundance, and deuterated versions of both the ^{35}Cl and ^{37}Cl species using an isotopically enriched sample. Similar to the previously studied argon-haloethylene complexes, the argon shows a preference for close contact with heavier atoms. Tunneling of the argon between two equivalent non-planar structures, similar to that in argon-*cis*-1,2-difluoroethylene, is not observed in this complex.