

MICROWAVE SPECTRUM AND MOLECULAR STRUCTURE OF THE ARGON-*CIS*-1,2-DICHLOROETHYLENE COMPLEX

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The non-planar molecular structure of the complex formed between the argon atom and *cis*-1,2-dichloroethylene is determined via analysis of its microwave spectrum. Spectra of the ^{35}Cl and ^{37}Cl isotopologues are observed in natural abundance and the nuclear quadrupole splitting due to the two chlorine nuclei is fully resolved. In addition, the complete quadrupole coupling tensor for the *cis*-1,2-dichloroethylene molecule, including the single non-zero off-diagonal element, has been determined. Unlike the argon-*cis*-1,2-difluoroethylene and the argon-vinyl chloride complexes, tunneling between the two equivalent non-planar configurations of argon-*cis*-1,2-dichloroethylene is not observed.