

THE EFFECT OF VICINAL VERSUS GEMINAL SUBSTITUTION OF HYDROGEN BY CHLORINE: MICROWAVE SPECTRA AND MOLECULAR STRUCTURES OF THE COMPLEXES OF 1-CHLORO-1-FLUOROETHYLENE AND (*E*)-1-CHLORO-2-FLUOROETHYLENE WITH HYDROGEN FLUORIDE

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Previous work in our laboratory has demonstrated that increasing the degree of fluorine substitution in complexes of fluoroethylenes with protic acids results in a weaker primary hydrogen-bonding interaction. This has been interpreted as arising from a decrease in the nucleophilicity of the hydrogen bond-accepting fluorine atom as a consequence of the inductive, electron-withdrawing nature of the additional fluorine atoms. We have recently extended these studies to investigate the effects of substitution with the less electronegative, but more polarizable chlorine atom. Through analysis of their 6-21 GHz Fourier transform microwave spectra, molecular structures are obtained for the complexes of 1-chloro-1-fluoroethylene and the (*E*) isomer of 1-chloro-2-fluoroethylene with hydrogen fluoride. The structures are compared with each other and with their difluoroethylene counterparts.