THE MICROWAVE SPECTRUM AND MOLECULAR STRUCTURE OF THE CHIRAL TAGGING CANDIDATE, 3-FLUORO-1,2-EPOXYPROPANE (EPIFLUOROHYDRIN), AND ITS COMPLEX WITH THE ARGON ATOM

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Continuing our efforts in characterizing small molecules for use as potential chiral tags for the conversion of enantiomeric molecules into spectroscopically distinct diastereomeric complexes for chiral analysis, we examine the microwave spectrum and molecular structure of 3-fluoro-1,2-epoxypropane. Although this species has a lower vapor pressure than the trifluoro- and difluoro- analogues previously reported at this meeting, it is still relatively easy to incorporate into a free jet expansion by flowing a carrier gas over a heated liquid sample. In common with the structurally similar trifluoro- and difluoro- species, it has a simple, hyperfine-free rotational spectrum. This spectrum has been obtained for the most abundant and four singly-substituted isotopologues, all in natural abundance, and the structure of the molecule determined. Multiple minima of similar energies are predicted for the complex of 3-fluoro-1,2-epoxypropane with argon, and progress on assigning and analyzing the spectra of these complexes will be reported.