# FT MICROWAVE STRUCTURE AND ANALYSIS OF FOUR ISOTOPOMERS OF THE ARGON-THIETANE VAN DER WAALS COMPLEX

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The Fourier Transform Pulsed Jet Microwave spectra of the argon-thietane ($C_4H_6S$) van der Waals complex has been assigned for four isotopomers including $^{32}S$ and $^{34}S$ and each of the $^{13}C$ $^{32}S$ isotopomers. We previously reported analysis of the parent spectrum[a]. The argon freezes out the ring inversion and converts the inversion dipole moment to a permanent moment. Using the isotopomers yields the unambiguous position of the argon that could not be determined from the parent complex alone. The argon is 3.780 Å above the plane containing the C-S-C bond and is 0.576 Å across the ring from the plane perpendicular to this angle containing the bisector of C-S-C angle. The $CH_2$ across the ring from the sulfur is below the C-S-C plane. This latter position could only be determined using isotopomers. Large amplitude cross ring argon motion causes the two carbons bonded to the sulfur to be equivalent.

[a] W. C. PRINGLE, et. al., paper TD 12, presented at the 51st Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH, June 1996.