FTMW SPECTROSCOPY AND DETERMINATION OF THE 3-D POTENTIAL ENERGY SURFACE FOR Ar-CS

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Pure rotational transitions of the Ar-CS complex have been observed by FTMW spectroscopy for the normal species with $v_{CS} = 0, 1, 2$ and for $C^{34}S$ in the ground vibrational state. All the observed transition frequencies have been utilized to determine a 3-Dimentional potential energy surface for the complex, explicitly considering the dependence of the CS stretcing for the intermolecular potential between Ar and CS, which is indispensable to analyze the transitions for the excited vibrational states and those of the ^{34}S species simultaneously. High-level *ab initio* calculations have been performed to obtain the initial 3-D potential. The *ab initio* poteintial has been fitted to an analytical function with determinable parameters. The parameters have been improved by fitting the observed transition frequencies. All the observed transition frequencies have successfully been fitted almost within their experimental accuracies.