FOURIER TRANSFORM INFRARED SPECTRA OF Ge_n CLUSTERS TRAPPED IN SOLID Ar

S. DEVDAS,C.M.L. RITTBY, AND W.R.M. GRAHAM, *Department of Physics and Astronomy, TCU, Fort Worth, TX 76129.*

The structures and vibrational fundamentals of Ge_n clusters trapped in solid Ar are under investigation using Fourier transform infrared spectroscopy. Ge_n^- anions (n=2 - 15) were studied earlier by Neumark et al.[a], using anion photoelectron spectroscopy and zero electron kinetic energy spectroscopy. Tentative assignments were made for a fundamental vibration of each of Ge_3 and Ge_4, although vibrational structure was unresolved for larger clusters. We present vibrational spectra obtained for Ge_n species produced by laser ablation of pure germanium followed by trapping in an Ar matrix and compare the experimental observations with the predictions of density functional theory calculations.

[a] G. R. Burton, C. Xu, C. Arnold, and D. Neumark, J. Chem. Phys. 104, 2757 (1996).