VIBRATIONAL SPECTROSCOPY OF GERMANIUM-CARBON CLUSTERS: $\nu_4(\sigma_u)$ MODE OF GeC_5Ge

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Recent results will be presented from FTIR (Fourier transform infrared) and DFT (density functional theory) studies of the vibrational fundamentals and structures of germanium-carbon clusters trapped in solid Ar, which have previously included linear GeC_3Ge[a] and GeC_3Si[b]. The linear germanium-carbon cluster GeC_5Ge has been detected using FTIR spectra generated when products from the dual laser evaporation of Ge and C rods are trapped in solid Ar matrices at $\sim$10 K. Comparison of frequencies and ^{13}C isotopic shift measurements with the predictions of DFT calculations at the B3LYP/cc-pVDZ level confirms the identification of the $\nu_4(\sigma_u)$ mode of GeC_5Ge at 2158.0 cm^{-1}.

[a] D. L. Robbins, C. -M. L Rittby, W. R. M Graham,*J. Chem. Phys.* **114**, 3570 (2000).
[b] D. L. Robbins, C. M. L Rittby, W. R. M Graham,*J. Chem. Phys.* **117**, 3811 (2002).