FTIR INVESTIGATION OF MONOSILICON CARBON CHAINS IN SOLID ARGON: SiC_7 AND SiC_9

XIANDE DING, SHUNLIN WANG, C. M. L. RITTBY and W. R. M. GRAHAM, *Department of Physics, Texas Christian University, Fort Worth, TX 76129*.

Silicon-carbon clusters consisting of long carbon chains with one or two terminal silicon atoms, are potentially important astrophysical species in circumstellar shells and in the interstellar medium. Systematic Fourier transform studies have been undertaken on SiC_n chains generated by trapping the laser evaporation products from silicon/carbon rods in Ar matrices at about 10 K. Comparison of extensive ^{13}C isotopic shift measurements with the results of new density functional theory calculations (DFT) has so far confirmed the observation of two new species SiC_7 and SiC_9, with the identification of their C-C stretching modes $\nu_4(\sigma)$ = 1935.8 cm^{-1} and $\nu_1(\sigma)$ = 2100.8 cm^{-1}, respectively.