

Abstract Submitted  
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**Infrared Spectrum of the Astrophysical Molecule SiC<sub>5</sub>** T.H. LE,  
W.R.M. GRAHAM, Texas Christian University — An infrared spectrum of SiC<sub>5</sub>,  
one of many Si-C molecular species expected to play roles in the atmospheres of late  
carbon stars and in the interstellar medium, has been observed for the first time.  
The Fourier transform infrared spectrum (FTIR) was recorded for SiC<sub>5</sub> produced  
by trapping, in solid Ar, the products of the Nd:YAG laser ablation of a sintered,  
silicon-carbon rod enriched with <sup>13</sup>C. Based on excellent agreement between mea-  
sured frequencies of <sup>13</sup>C and <sup>29,30</sup>Si isotopomers and the predictions of DFT (density  
functional theory) B3LYP/cc-pVDZ calculations, the linear geometry of SiC<sub>5</sub> has  
been confirmed and the  $\nu_4(\sigma_u)$  asymmetric stretching fundamental of SiC<sub>5</sub> has been  
identified at  $936.9 \pm 0.2 \text{ cm}^{-1}$ .

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