

## LABORATORY DETECTION OF LINEAR SiC<sub>n</sub>S (n=2-4, 6)

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The linear singlet chains SiC<sub>2</sub>S, SiC<sub>4</sub>S and SiC<sub>6</sub>S, as well as the triplet SiC<sub>3</sub>S, have been detected among the products of a laboratory discharge on the basis of high level coupled cluster ab-initio calculations and characterized by Fourier transform microwave spectroscopy. The molecules were generated in a supersonic expansion of diluted mixtures of silane, diacetylene and carbon disulfide in Ne. Their rotational and centrifugal distortion constants were accurately determined, as was the spin-spin coupling constant  $\lambda$  for triplet SiC<sub>3</sub>S. The microwave spectra of the <sup>29</sup>Si, <sup>34</sup>S and both <sup>13</sup>C isotopic species of SiC<sub>2</sub>S were measured, allowing a determination of the individual bond lengths. In addition, several satellite lines were observed near the rotational transitions of SiC<sub>2</sub>S, which were identified as belonging to different bending and stretching vibrational excited states.