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Title: PHOTOABSORPTION AND PHOTOIONIZATION CROSS-SECTIONS OF GAS-PHASE GEH-4 AND RYDBERG STRUCTURES OF GEH-4 AND SIH-4

Source: JOURNAL OF CHEMICAL PHYSICS, vol. 99, issue 3, (AUG 1, 1993) : pp. 1530-1536.

Abstract: The photoabsorption and photoionization cross sections of GeH₄ from the ionization threshold to 1060 angstrom have been measured using synchrotron radiation as the continuum light source. The cross sections for the production of neutral products in the same spectral region have also been determined. Weak diffuse structures were observed in both the photoabsorption and photoionization spectra. The steplike ionization structures in the ionization spectrum were observed. The adiabatic ionization potential was determined to be at 1177.6+/-0.5 angstrom which is in excellent agreement with a value recently reported by Ruscic et al. [J. Chem. Phys. 92, 1865 (1990)] using a photoionization mass spectrometry technique. Rydberg series in the 1060-1180 angstrom region converging to the ground state of GeH⁺ have been tentatively assigned. In addition, the assignments of Rydberg states of SiH₄ reported in the literature have been re-examined in light of the recently reported ionization potential [Berkowitz et al., J. Chem. Phys. 86, 1235 (1987)].

Authors Abstract: N

English Abstract: Y

Language: eng

Pub. Type: ARTICLE

References: 41

ISSN: 0021-9606

ISI Order #: LN782 (For ordering reprints from ISI)