

## SPECTROSCOPIC DETECTION AND CHARACTERIZATION OF THE SELENOKETENYL (HCCSe) RADICAL

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In 1979, Kirshnamachari and Venkitachalam<sup>a</sup> reported a new transient absorption spectrum observed in the flash photolysis of selenophene. They found a series of strong, sharp bands in the 418 - 397 nm region and tentatively ascribed them to a C<sub>4</sub>H<sub>4</sub> species. We have detected the same band system by laser-induced fluorescence of the products of selenophene in a pulsed discharge jet experiment. Deuterium substitution experiments and the observed selenium isotope splittings show that the carrier of the spectrum contains a hydrogen and a selenium atom. We assign this band system to the previously unknown selenoketenyl or HCCSe radical. The *B* values for the ground and excited states have been determined by rotational analysis of high resolution spectra of the 0<sub>0</sub><sup>0</sup> bands of HCCSe and DCCSe. A combination of LIF and wavelength resolved fluorescence studies are in progress in an attempt to understand the vibronic structure in the spectrum.

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<sup>a</sup>S. L. N. G. Krishnamachari and T. V. Venkitachalam, *Chem. Phys. Lett.* **67**, 69 (1979).