region from 350 - 1000 nm, yet their temporal widths are the same as the picosecond pulses which generate them. Thus these continuum pulses constitute excellent light sources for the measurement of time resolved absorption spectra of transient intermediates produced in photochemical reactions. Experimental configurations which generate and utilize picosecond continua will be described and the results of recent experiments employing them will be presented and discussed.

Acknowledgement is made to the Donors of the Petroleum Research Fund, administered by the American Chemical Society, for the support of this research.

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αθ9
Picosecond Resolution of Intersystem Crossing and Measurement of Quantum Yields in Rose Bengal

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Through the use of picosecond time resolved absorption spectroscopy, we have been able to determine the first excited singlet state lifetime of Rose Bengal, an iodinated analogue of Rhodamine 6G. We also measured the rate of ground-state repopulation. By combining these data with a literature value of the radiative lifetime, the quantum yields of intersystem crossing, internal conversion and fluorescence could be obtained without recourse to triplet quenching techniques or other secondary techniques. We suggest that this important development could find general applicability in measuring quantum yields of intersystem crossing and internal conversion.

This research was supported in part by the Office of Naval Research.

αθ10
Laser Photolysis in Globular Proteins

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Pyrene and several derivations of pyrene are solubilized in aqueous systems by using globular proteins such as serum albumin. The pyrene atmosphere resides in various parts of the protein, but not in the aqueous phase. Laser excitation of the pyrene leads to the excited singlet and triplet state. The lifetime of the excited singlet states is dependent on the pH and temperature of the system. The changes in the lifetime reflect structural changes in the protein. Several quenchers such as O_2, CH_3NO_2, I^-, Tl^+ quench the excited states of pyrene in the protein. These quenchers reside mainly in the aqueous phase. The experiments thus measure the factors that affect the permeability of the protein to these quenchers. The data also give information on the nature of the protein site containing pyrene.

βθ4
The Photochemistry of 3-Chloro-3-Methyldiazirine

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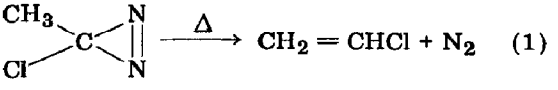
The mechanism of thermolysis of methyl diazirines has been elucidated [1]. In the ground state the decomposition products of 3-chloro-3-methyldiazirine (I) are nitrogen and vinyl chloride.



Bridge, Frey and Liu did not detect any other products [2].

The photolysis of I is known to produce [3] the products of reaction (1) as well as the fragmentation products, acetylene and hydrogen chloride [4].