

## CIDEP Studies of Carotenoid Radical Cations\*

By A. S. Jeevarajan<sup>1</sup>, M. Khaled<sup>1</sup>, M. D. E. Forbes<sup>2</sup> and L. D. Kispert<sup>1, \*\*</sup>

Department of Chemistry, University of Alabama, Tuscaloosa, AL 35487 and  
Department of Chemistry, Venable and Kenan Laboratories,  
University of North Carolina, Chapel Hill, NC 27599

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Time-resolved electron paramagnetic resonance (TREPR) studies of radical cations formed by 308 nm photoexcitation of several carotene analogues are reported. The spin-polarized EPR spectra are weak in intensity and have very broad line widths. Assignment is based on polarization patterns and on the time scales of the signals. Comparisons of *g* factors and line widths are made to the values of radical cations generated electrochemically from the same compounds and the results are discussed in terms of proposed radical structures. A dramatic solvent dependence of the signals is observed.

Es wird über zeitaufgelöste EPR-(TREPR)-Untersuchungen von Radikalionen berichtet, die sich nach Photoanregung bei 308 nm aus einigen Carotinoid-analogen Verbindungen bilden. Die spinpolarisierten EPR-Spektren weisen schwache Intensität und breite Linien auf. Die Zuordnung stützt sich auf die Polarisationsmuster und die Zeitskalen der Signale. Die *g*-Faktoren und Linienbreiten werden mit den entsprechenden Werten der elektrochemisch erzeugten Radikalkationen derselben Verbindungen verglichen und die Ergebnisse mit Bezug auf die vorgeschlagenen Radikalstrukturen diskutiert. Die Signale zeigen eine dramatische Lösungsmittelabhängigkeit.

## 1. Introduction

Carotenoids not only serve as light harvesting pigments and photoprotect devices in plant photosynthesis [1], but they are also believed to serve other functions [2, 3]. It has been reported that carotenoid radical cations are formed at the photosystem II reaction center [4]. It has also been shown [5]

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\*\* Author to whom correspondence should be addressed

<sup>1</sup> University of Alabama

<sup>2</sup> University of North Carolina.