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Department of Chemistry

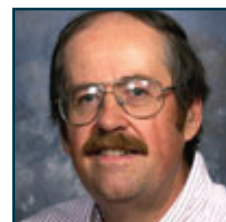
Special Seminar

4 p.m. Thursday, September 26, 2013 • 117/119 Smith Hall

Professor & Department Chair

Edward Clennan

Department of Chemistry
University of Wyoming



Type I and Type II Photooxygenations of Organic Sulfides

Research interest and approach is to combine physical and theoretical concepts with structure reactivity correlations to design new electron-transfer sensitizers.

Website: <http://www.uwyo.edu/chemistry/directory/ed-clennan.html>

Abstract

Singlet oxygen is involved in several biological systems. For example, it is a byproduct of energy transfer from the excited triplet-state chlorophyll pigments in the photosynthetic apparatus and it and other reactive oxygen species derived from it can destroy the integrity of membranes and abolish the function of many biomolecules. Many organisms protect themselves from these reactive oxygen species by quenching the singlet oxygen with carotenoids. However, the photosynthetic growth of cells lacking carotenoids suggests that there are other mechanisms to protect cells from singlet oxygen damage. The suggestion has been made that nitrogen containing molecules or sulfur-containing molecules can adopt this physical quenching function of carotenoids. In this presentation we describe our preliminary studies designed to explore this possibility. In particular, we will describe Type II (singlet oxygen) and Type I (radical cation) photooxygenations of organic sulfides. The results will demonstrate that sulfides do deactivate singlet oxygen by both non-reactive and reactive mechanisms. Physical Organic studies to understand both of these mechanisms and the mechanism of several Type I photooxygenations will also be presented.

Host: Professor Steven Kass