

Seminar on

Modern Optics and Spectroscopy

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*Ultrafast electron transfer in
photosynthetic reaction centers*

October 26, 2004
12:00 – 1:00 p.m.

Abstract

The primary photochemical steps in the energy conversion process in photosynthesis occur in pigment-protein complexes called reaction centers (RCs). In the bacterial RC, membrane-spanning multi-step charge separation process takes place within 1 ns of with a quantum yield of ~1, and utilizes only one of two parallel electron-transport chains (the A branch). We have prepared and investigated a number of mutant RCs that afford electron transfer down the normally inactive cofactor chain (the B branch). The penultimate charge-separated state formed via the B branch differs in charge-recombination pathway and rate compared to the same state formed via the standard route involving the A branch. This “memory effect” is being studied to give insights into functionally significant gating events such as proton uptake or pigment-protein relaxations that accompany the overall charge-separation process.

Grier Room, MIT Bldg 34-401
Refreshments will be served