Research performed on this contract during the period 12/1/86-11/30/88 is described. It involves solvent dynamics in electron transfer reactions (Debye solvents and vibrational effects; non-Debye solvents), the early electron transfer steps in bacterial photosynthesis and the use of artificial intelligence searching methods to treat many-quantum state problems in dynamics. These results were described in seven Technical Reports, published in various journals.
OFFICE OF NAVAL RESEARCH

Contract N00014-87-K0064

R & T Code 4133004-02

FINAL REPORT

by

R. A. Marcus, Principal Investigator

California Institute of Technology
A. A. Noyes Laboratory of Chemical Physics
Pasadena, CA 91125

July 24, 1989
Research Accomplished

During the tenure of this contract research was performed on a number of aspects of electron transfer reactions (solvent dynamics including vibrational effects, non-Debye solvent dynamics, early steps in bacterial photosynthesis) and of the use of artificial intelligence searching methods, the latter, in part, as a prelude to our current study of electron transfer reactions in structurally complicated systems such as proteins. Seven Technical Reports were issued during this period, listed below, and research on several topics was initiated: the study of the relation between charge transfer absorption and fluorescence spectra and the inverted region, a "nonadiabatic/adiabatic" coherent mechanism for electron transfers, and electron transfers between two immiscible-liquid phases and between a semiconductor and an electrolyte.

ONR Technical Reports


Research Personnel

The research personnel included Dr. W. Nadler and two graduate students, S. Klippenstein and S. Lederman, who have now received their Ph.D.'s at this Institute.

Respectfully submitted,

[Signature]

R. A. Marcus
Principal Investigator