

Light induced chemical and physical processes in small organic-/inorganic-/bio-molecules have been a subject of experimental and theoretical research for several decades. Recent advances in high resolution spatio-temporal techniques have offered detailed understanding of excited state processes in small molecules. In sharp contrast, however, information on electronic processes in biomolecules such as isolated proteins and DNA (and their complexes) is still in its infancy. Though extremely complicated to uncover, knowledge of photo-excited state processes of such biomolecules in the cellular/biological context is the eventual goal of scientists working in these areas.

Photochemical and photophysical processes in biomolecules are intimately involved in a multitude of functional processes, that include vision, photosynthesis, molecular recognition, gene replication, etc., and can be utilized in areas such as photodynamic therapy. Such processes in DNA are also of interest to both the biological and materials communities as memory devices and structural building blocks.

In this volume, the topics covered include:

- Light induced charge and energy transport in nucleic acids and proteins
- Photocrosslinking between nucleic acids and proteins
- Light induced damage and repair in nucleic acids and proteins
- Bionanophotonics

Front cover image courtesy of Dr Kimberly de La Harpe, Department of Physics, United States Air Force Academy, USA. Exploring the effects of a non-aqueous solvent on excited electronic states in DNA.

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