Organic photochemistry and pericyclic reactions - Video course

COURSE OUTLINE

The course will involve a discussion of molecular organic photochemistry and pericyclic reactions. Initially, we will study in brief the fundamental principles of photochemistry. In the following lectures we will discuss the primary photochemical reactions of n,π*states.

In the second half of our course we will be focusing on the primary photochemical reactions of π,π*states where we will discuss in detail about the pericyclic reactions. We will end our course by studying some important applications of photochemistry.

COURSE DETAIL

No.	Lectures
1	Introduction to organic photochemistry
2	Primary photochemical reactions of n,π*states
3	Photophysical process of n,π*states: Electronic energy transfer
4-5	Detail analysis of primary photochemical process of α-cleavage
6-7	Detail analysis of primary photochemical process of hydrogen abstraction
8-9	Detail analysis of primary photochemical process of addition to π system
10	Detail analysis of primary photochemical process of electron transfer reactions
11	Primary photochemical reactions of π,π*states
12	Detail analysis of cis-trans isomerisations
13	Study on di- π-methane rearrangements
14	Introduction to pericyclic reaction

NP-TEL

NPTEL

http://nptel.iitm.ac.in

Chemistry and Biochemistry

Additional Reading:

1. M. Klessinger and J. Michl, Excited States and photochemistry of Organic Molecules, VCH, New York, 1995.
2. J. C. Calvert and J. N. Pitts, Jr., Photochemistry, Wiley, New York, 1966.

Hyperlinks:

1. www.unibas.ch/epa/glossary/glossary.htm
2. www.chemres.hu/pchem
3. allen.rad.nd.edu/icabr/PhotoDocs/hpc.html

Coordinators:

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15-16	In depth analysis of Cycloaddition and Diels –Alder reactions
17-18	In depth analysis of Electrocyclic reactions
19-20	Detail study of Sigmatropic reactions
21	Chelotropic reaction
22	Group transfer reactions
23	Ene and retro ene reactions
24	Coarctate reaction
25-26	Photochemical production and reactions of carbenes
27-28	Photochemical production and reactions of nitrenes
29	Photochemical reaction of azo compounds
30-31	Photochemical oxygenations-Singlet Oxygen
32	Photochemistry of halogen containing compounds
33-34	Photoinduced electron transfer reactions
35	Factors influencing the course of photochemical reaction
36-40	Applications of photochemistry

References:

1. N. J. Turro, "Modern Molecular Photochemistry" (MMP), University Press, Menlo Park, CA, 1978
2. A. Gilbert and J. Baggott, "Essentials of Molecular Photochemistry," CRC Press, London, UK, 1991
3. J. Mattay and A. Griesbeck, eds., "Photochemical Key Steps in Organic Synthesis", VCH, New York, 1994
4. J. D. Coyle, ed., "Photochemistry in Organic Synthesis", Royal society of Chemistry, London, 1986