

The University of Western Ontario
Chemistry 9555T, Winter 2021
Introduction to Photochemistry

Instructor:

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Enrollment:

Up to you all.

Description:

The main objective of the course is as an introduction to the study of the chemistry of photochemically generated excited states of molecules, with a concentration on organic molecules. It will introduce the basic concepts of the physical aspects of the formation and deactivation of the excited states that will allow for a better understanding of the chemical and mechanistic aspects of their photoreactions.

Topics:

Topics will include:

- A qualitative discussion of aspects of photophysics • radiative processes- absorption, fluorescence, phosphorescence
- non-radiative processes- internal conversion, intersystem crossing, chemistry
- kinetics of photophysical processes (and methods to study them)

(the above is essentially understanding, being able to discuss, the Jablonski diagram)

- excimers, exciplexes
- sensitization and quenching mechanisms; energy transfer and electron transfer

and may include aspects of:

- Methods and Techniques in Experimental Organic Photochemistry
- preparative and quantitative photolyses (apparatus and techniques) • quantum yields/ chemical actinometry • determination of rate constants; Stern-Volmer kinetics, laser flash photolysis (LFP) • spectroscopic and kinetic studies of transient intermediates

Resources:

None required. An excellent general text everyone doing photochemistry should have is:

“Modern Molecular Photochemistry of Organic Molecules”

2010 by Turro, Ramamurthy and Scaiano. Publisher : University Science Books;
1st edition

Or Principles of Modern Molecular Photochemistry: An Introduction by the same authors and Publisher.

Lectures / seminars:

Day/s: TBD – (one 2.5 hr slot a week for 4 weeks + 2 weeks presentations)

Time/s: TBD

Mode of instruction: will depend on COVID-guidelines. Likely online.

Evaluation

Exam of some sort -either written or oral (40%)

Presentation of a photochemical paper related to your research or general area of interest (40%) – 15 mins + discussion

Attendance/Participation (including during the presentation): 20%

Course attendance and missed/late assignments

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed.

Notes on Academic Honesty

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the

licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Health and Wellness

As part of a successful graduate student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your graduate degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre.

Numerous cultural events are offered throughout the year. For example, please check out the Faculty of Music web page <http://www.music.uwo.ca/>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca/>. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca/>. Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at http://www.health.uwo.ca/mental_health/resources.html.