

The University of Western Ontario

Chem9784S Synchrotron/Materials II, Winter 2020_2021

Instructor T.K. Sham (tsham@uwo.ca)

Pre-requisite Chem9774Q is desirable but not mandatory

Description X-ray spectroscopy and imaging using synchrotron radiation with applications in materials analysis. Topics include

- Review of synchrotron radiation and X-ray absorption properties of elements
- X-ray Absorption Near Edge (XANES) spectroscopy
- Extended X-rays Absorption Fine Structure (EXAFS) Spectroscopy
- Photon-in, photon-out spectroscopy: X-ray Emission Spectroscopy (XES) and X-ray Excited Optical Luminescence (XEOL)
- X-ray Photoelectron Spectroscopy (XPS)
- Applications of X-ray micro beam for imaging and micro-spectroscopic analysis

Lectures Two one-hour lectures a week, six to seven weeks

Evaluation Problem sets (60 %),
Easy/oral presentation or CLS proposal/oral presentation (20%/20%)

Course Materials Relevant information will be distributed prior to lectures on owl.

Course attendance and missed tests/exams

Appeals related to information missed due to course absences will not be considered for the basis of a grade appeal.

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. The weight of missed course material will be transferred to the final examination in cases where medical accommodation has been granted.

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 the 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.