

CHEE 990 Structure-Property Relationships of Polymeric Materials

Instructor and course information

Marianna Kontopoulou, Ph.D., P.Eng.

Department of Chemical Engineering

E-mail: kontopm@queensu.ca

Location: Dupuis Hall 311

Schedule: TBA

Start date: Week of October 17th

Course Description

This six-week graduate module provides students with background in physical polymer science as it relates to the formulation of materials to satisfy engineering applications. Starting from the characterization of molecular weight and composition distributions, the fundamentals of polymer science, such as phase transitions, solubility, adhesion and thermo-oxidative stabilization are discussed.

A. Lecture Topics

1. Classification of Polymer Structure
2. Chain conformations/Molar mass distributions/Intrinsic viscosity
2. Thermal Transitions
3. Structure-Property Relations in the Solid State
4. Polymer Solubility/Blends
5. Rubber Elasticity and Dynamic Mechanical Properties
6. Polymer Interfacial properties and Adhesion
7. Polymer Composites

B. Evaluation

Critical review of research papers

Each student will be required to critically review three peer-reviewed research papers related to the above topics and to complete three assignments based on these papers.

Assignments

Short problem sets will be provided in each topic

Term Paper

Each student is required to submit a term paper of a length between 2000 and 2500 words on a subject relating to the topics listed above. The paper must provide a literature review that critically examines a minimum of three (3) original papers from the primary literature (review articles unacceptable). The topic is to be discussed with, and approved by, the instructor and may be related to the student's thesis. The due date for this assignment will be announced.

Evaluation Scheme

Term paper	40%
Problem Sets	15%

Review of research papers 45%

Communication:

All lecture material and important announcements will be posted in onQ. Verbal announcements will be made in class, but onQ will be the only written notice.

Academic Integrity

Queen's students, faculty, administrators and staff all have responsibilities for upholding the fundamental values of academic integrity; honesty, trust, fairness, respect, responsibility and courage (see www.academicintegrity.org). These values are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the Senate Report on Principles and Priorities <http://www.queensu.ca/secretariat/policies/senate/report-principles-and-priorities>).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and their behaviour conform to the principles of academic integrity. Information on academic integrity is available in the SGS Calendar (<https://www.queensu.ca/academic-calendar/graduate-studies/academic-integrity-policy/>) and from the instructor of this course.

Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery, falsification and unauthorized use of intellectual property, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

- Plagiarism – Regardless of how and where you retrieve information, the principles of academic Integrity apply. You must cite all your sources properly.

Please visit these helpful websites to help you make sure that you are able to write things in your own words:

<https://www.queensu.ca/academicintegrity/students/avoidingplagiarismcheating>

<https://integrity.mit.edu/handbook/academic-writing/avoiding-plagiarism-paraphrasing>

http://writing.wisc.edu/handbook/YWA_paraphrase.html

Please note that Turnitin will be used in the various submissions. See statement on Turnitin at the end of this document.

- You are expected to work independently in all critical reviews, assignments and term paper. Collaboration of any means is not allowed.

Copyright of Course Materials

Course materials created by the course instructor, including all slides, presentations, handouts, tests, exams, and other similar course materials, are the intellectual property of the instructor. It

is a departure from academic integrity to distribute, publicly post, sell or otherwise disseminate an instructor's course materials or to provide an instructor's course materials to anyone else for distribution, posting, sale or other means of dissemination, without the instructor's express consent. A student who engages in such conduct may be subject to penalty for a departure from academic integrity and may also face adverse legal consequences for infringement of intellectual property rights.

Academic Accommodations for Students with Disabilities

Queen's University is committed to achieving full accessibility for people with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities.

If you are a student with a disability and think you may need academic accommodations, you are strongly encouraged to contact the Queen's Student Accessibility Services (QSAS) and register as early as possible. For more information, including important deadlines, please visit the QSAS website at:

<http://www.queensu.ca/studentwellness/accessibility-services/>

Academic Consideration for Students with Extenuating Circumstances

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances that are beyond their control and are interfering with their ability to complete academic requirements related to a course for a short period of time.

Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. SGS students can find the Academic consideration information at:

<https://www.queensu.ca/sgs/accommodation-and-academic-consideration>

If you need to request academic consideration for this course, please contact your instructor for directions.

- **Please note: if you are experiencing symptoms of any respiratory disease please do not come to campus unless your symptoms are improving. Contact your instructor to make arrangements.**

Turnitin statement

This course makes use of Turnitin, a third-party application that helps maintain standards of excellence in academic integrity. Normally, students will be required to submit their course assignments through onQ to Turnitin. In doing so, students' work will be included as source documents in the Turnitin reference database, where they will be used solely for the purpose of detecting plagiarism.

Turnitin is a suite of tools that provide instructors with information about the authenticity of submitted work and facilitates the process of grading. Turnitin compares submitted files against its extensive database of content, and produces a similarity report and a similarity score for each assignment. A similarity score is the percentage of a document that is similar to content held within the database. Turnitin does not determine if an instance of plagiarism has occurred. Instead, it gives instructors the information they need to determine the authenticity of work as a part of a larger process.

Please read [Turnitin's Privacy Pledge, Privacy Policy, and Terms of Service](#), which governs users' relationship with Turnitin. Also, please note that Turnitin uses cookies and other tracking technologies; however, in its service contract with Queen's Turnitin has agreed that neither Turnitin nor its third-party partners will use data collected through cookies or other tracking technologies for marketing or advertising purposes. For further information about how you can exercise control over cookies, see [Turnitin's Privacy Policy](#):

Turnitin may provide other services that are not connected to the purpose for which Queen's University has engaged Turnitin. Your independent use of Turnitin's other services is subject solely to Turnitin's Terms of Service and Privacy Policy, and Queen's University has no liability for any independent interaction you choose to have with Turnitin.