

MATERIALS 764 Solid State Polymer Analysis

Term: Spring 2020, May 4 – June 19

Instructor: Prof. Gu Xu, JHE 357a, xugu@mcmaster.ca, x 27341

Course Schedule: Monday, Wednesday, 9:30am-12:00pm, 7 weeks, 35 hours. Via MS Teams

Prerequisite: undergraduate degree in Chemistry, Physics, or Materials Science & Engineering

Course Objectives:

This course will introduce students to the various testing methods for polymeric materials in their solid state, in particular, the theory and applications of structural, thermal, mechanical, electrical and optical analyses.

Course Material:

In-house Lecture notes, reference materials to be distributed.

Course Content/Format:

Lectures, quizzes and presentations on:

- 1) X-ray diffraction analysis of polymer structure, and morphology
- 2) Thermal analysis of polymers in solid state
- 3) Mechanical analysis, viscoelasticity of polymers in solid state
- 4) Dielectric analysis of polymers in solid state
- 5) Optical analysis of polymers in solid state

Evaluation:

- 1) In-class quiz (20%)
- 2) Student Presentations (80%): Students will be required to deliver a presentation based on a topic to be chosen, to be followed by a class-wide Q&A session.