MTSE 3100: Materials Science and Engineering Lab II
Course Syllabus

Instructor: Dr. Zhenhai Xia
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Time: (W) 2:30-5:20 pm,  Room: DP D207A

Course Description: This course covers labs of essential processing methods for glass, polymer, and electronic materials, as well as computational materials. The labs will be conducted at faculty research groups with expertise of processing these types of materials within the MSE department.

Course Requirements: Mandatory attendance. No required text. Handouts will be provided.

Grading: Class participation is required for each of the labs. Lab reports are due at the end of each session (e.g. polymer, electronic, etc …). Grading is based on class participation and the reports.

Lab Schedules:
1. General introduction and overview; Discovery Park D207A (Dr. Xia)
   Jan. 18: Introduction

2. Polymer processing(3 labs); Lab Room: Discovery Park E-146 (Dr. Brostow)
   Jan. 25: Polymer forming methods (2:30pm-3:00, Room: DP-D207A)
   Feb. 1: Thermophysical analysis (DSC, TGA, DMA)
   Feb. 8: Polymer-based nanocomposites

3. Computational materials (3 labs); Lab Room: Discovery Park D207A (Dr. Xia)
   Feb. 15: Finite element (FE) methods
   Feb. 22: FE Simulation of tensile test
   Feb. 29: FE Simulation of hardening test

4. Electronic materials (4 labs); Lab room: Discovery Park D207A (Dr. Shepherd, Dr.Bouanani)
   Mar. 7: Silicon oxidation: growth and characterization -1
   Mar. 14: Silicon oxidation: growth and characterization-2
   Mar. 28: Cu thin films for IC: deposition, processing and characterization-1
   April 4: Cu thin films for IC: deposition, processing and characterization-2

5. Ceramic processing – glass melting (3 labs) Lab Room: Discovery Park E-135 (Dr. Du)
   April 11: Glass and glass formation methods
   April 18: Melting of soda lime silicate glasses
   April 25: Structure and composition characterization of glasses