

Treatments for Transformations in New Materials

PROJECT DESCRIPTION

"The ultimate goal of this project is to understand how materials transform acquiring new properties through a combination of time and temperature. Examples of these transformations are the quench and temper of swords, which transforms the steel from weak and soft into tough and strong, and the artificial aging of aluminum, which transforms it from soft and useless into a space-age material. These new properties are acquired through the phase transformation of the materials, a physical akin to the long sought "transmutation," but in this case, being a scientific, controllable fact. The measurement of amount of transformation is essential for the development of new alloys and the developments treatments aiming at particular properties.

In this project students will learn the theory behind the measurement of these transformations, and will use latest-generation scientific equipment to measure these transformations in practice. In particular, students will use a \$150K dilatometer, learn metallographic techniques and microscopy.

Required skills for this project include having passed an introduction to materials science class, basic use of Microsoft Excel, manual dexterity, self-motivation, natural curiosity, patience, and ability to act on feedback from the supervisor.

Desirable skills for this project include the ability to write code (e.g. Matlab), and previous experience on metallography techniques (cut, mount, polish, optical microscopy)."

FACULTY-DEPARTMENT

Engineering- Chemicals and Materials Engineering

DESIRED FIELD OF (STUDENT) STUDY

Chemical Engineering, Mechanical Engineering, Materials Engineering, Mathematics, Physics, Computer Science or Engineering. Other fields welcome

INTERNSHIP LOCATION

University of Alberta Main Campus – Edmonton

NUMBER OF INTERNSHIP POSITIONS

1

Contact: Brendan Cavanagh, Internship Coordinator (Inbound)
University of Alberta International
intern@ualberta.ca

INTERNSHIP START DATE

July 4, 2018

INTERNSHIP END DATE

3 months after start date

ARE THE DATES FLEXIBLE?

Yes, I am flexible regarding the internship dates. Selected students can contact me to request a date change.