

F22.033: Development of an Experimental Program for Detecting Fracture Nucleation and Growth Using the Direct Current Method

Faculty mentor: Constantin Ciocanel

Overview

This project is focused on the development of an experimental research program for the detection of crack nucleation and growth in metallic alloys, using magnetic shape memory alloys as a case study. The student will be responsible for learning how set up and use state of the art equipment for detecting crack nucleation and monitoring crack growth in samples loaded with various magneto-mechanical loads. The experimental program will have to be developed in accordance to the ASTM 647 standard for crack growth monitoring.

What the student will DO and LEARN

The student will

- learn how state of the art crack detection and measuring equipment works.
- learn how to use state of the art material testing equipment.
- develop an experimental program for crack/defects detection and monitoring.
- carry out experiments to detect crack nucleation and growth.

Additional benefits

The student will receive academic and career mentorship from me and from at least one of the graduate students in my group.

Additional qualifications

Self-motivated, very well organized, great time management, and eager to learn new things.

Time commitment

6 hrs/week for 30 weeks