Faculty Name: Victor Yang

Project Title: Characterization of changes in optical properties of laser ablated tissue

Description of Project (Provide ½ page project description)

The use of lasers in surgical applications can either be thermally dominant or plasma dominant in the nature of their cutting. Should thermal dominant laser ablation be prominent, there will be major changes to the optical properties of the tissue caused by tissue carbonization. Monitoring using Optical Coherence Tomography (OCT) requires the optical properties to be known and characterized in order to be able to continue to monitor ablation during laser cutting. As such, a project to characterize the optical properties of the tissue is necessary in order to proceed with OCT monitoring of laser ablation.

Responsibility of Student (Specify the duties and responsibilities of the student)

The student will have the responsibility of assisting a graduate student in carrying out test cuts on various materials. Independently, the student will image the tissue using a number of OCT systems, and will use various tools as well as data processing techniques in order to analyze the changes in the optical properties. Once the changes have been characterized, the student, with the assistance of the graduate student, will attempt to implement algorithms in order to compensate for changes in optical properties to allow for better patient monitoring.

Specify Requirements (Please state any specific requirement of this position)

The student applying must have the following qualifications:

- Basic experience with MATLAB
- Experience in C, C++, Java or Python is an asset