

# Dartmouth SPIE Chapter 2018-2019 Annual Report

## I. ELECTED OFFICERS (September 2018):

**Presidents:** Ethan LaRochelle, Alberto J. Ruiz

**Vice-President:** Benjamin Maloney

**Secretary:** Mahbubur Rahman

**Treasurer:** Rachael Hachadorian

**Outreach Chairs:** Samuel S. Streeter, Brook K. Byrd

## II. CURRENT CHAPTER MEMBERS

Bellow is a list of current Dartmouth SPIE Chapter members.

Muhammad Ramish Ashraf

Brook Byrd

Alicia Everitt

Sidan Fu

Rachael Hachadorian

Ethan Philip LaRochelle

Eldred Lee

Benjamin Maloney

Boyu Meng

Arthur Petusseau

Mahbubur Rahman

Alberto Ruiz

Hira Shahzad Sardar

Ruibo Shang

Irwin Tandler

Phuong Vincent

## III. CHAPTER ACTIVITIES

Dartmouth SPIE chapter held its first officer elections in September 2018. The chapter did not receive SPIE activity grants for the 2018-2019 year. Below is a list of the chapter activities that took place in the last year.

### Member Meetings

Officer Elections (September 2018) – members met to elect officers for the chapter. Next election will be held on September 2019.

SPIE BIOS Presentation Practice (January 2019) – Members attending Photonics West practiced their talks to obtain feedback from fellow members and faculty.

Dartmouth at SPIE Photonics West –Nine Dartmouth SPIE chapter members attended the SPIE Photonics West conference and gave the following talks during the BIOS section:

Brook K. Byrd: “Exploiting short-wave infrared (SWIR) fluorescence properties of conventional NIR fluorophores in pre-clinical and clinical imaging”

Rachael L. Hachadorian: “Correcting Cherenkov Images for Large-Scale Tissue-Optical Property Attenuation Using SFDI and Patterned Light Reflectance for Quantitative Dosimetry”

Ethan P. M. LaRochelle: “Modeling PpIX-effective fluence rate in tissue for multiple light sources used in photodynamic therapy of skin” and “Advancing optical methods for real-time non-contact pO<sub>2</sub> estimation during external beam radiation therapy”

Boyu Meng: “Noninvasive quantification of drug-target engagement using MRI-coupled dual-agent fluorescence tomography”

Alberto J. Ruiz: “Smartphone-based fluorescence imager for PpIX-based PDT treatment planning: System design and initial results”

Hira Shahzad Sardar: “Comparison of detection sensitivity of near infrared (NIR) surgical imaging systems using a connective tissue phantom model”

Samuel S. Streeter: “High spatial frequency structured light imaging texture analysis differentiates tumor from normal tissue subtypes”

Arthur Petusseau: “SPAD based imaging of Cherenkov light in radiation therapy”

Outreach Demos Meeting – Outreach co-chair Sam Streeter led member meeting to brainstorm demos for upcoming events, focusing on optics phenomena for elementary and middle school students in the Upper Valley area. These events (Engineering day and After School Science) are described in the next section.

### **Officer Meetings**

October 2019 – Officers met to brainstorm events for the upcoming months and coordinate duties for the upcoming year.

December 2019 – Met to finalize days to upcoming events

February 2019 – Met to discuss activity grant funding application

#### **IV. PLANNED CHAPTER ACTIVITIES**

The Dartmouth SPIE Chapter is currently planning activities for the 2019-2020 year and preparing the application for \$700 activity grant funding to host these events. Below are some of the upcoming events.

Engineering Day at Dartmouth – The Thayer School of Engineering at Dartmouth hosts a community event aimed at exposing youth to science and engineering. Dartmouth SPIE will put together an optics-centric demo area to explore optical phenomena.

After-School Science event – Work alongside the after-school science group to develop an optics-centric lecture for elementary and middle school students. The SPIE chapter will guide the session at a local school.

Photonics Seminar – Coordinate with Thayer School of Engineering at Dartmouth to bring a photonics expert for a seminar held during the Fall 2019 term (Jones Seminar at Thayer).

#### **V. FINANCIAL INFORMATION**

The Dartmouth SPIE Chapter did not receive any monetary funding for this past year of operation. The chapter will be submitting an activity grant for this upcoming calendar year.