

Electrical and Computer Engineering Students Named 2012 Falvey Scholars

In recognition of their group project “Microstructured Optical Fibers for Environmental Sensing,” Mark Reimlinger EE ‘12, Emily Battinelli EE ‘12, and Frank Anuszewski ChE ‘12 have been named Falvey Scholars for 2012. They will present a summary of their research findings at an awards ceremony on Friday, April 27, which will also include a special congratulatory message from the Rev. Peter M. Donohue, PhD, PSA, ’75 A&S.

“I was very impressed with the level of professionalism, creativity and work ethic all students brought to the research environment,” says Dr. Rosalind Wynne, Associate Professor of Electrical and Computer Engineering and advisor to the team.

Mark received the Villanova University Center for Undergraduate Summer Research Fellowship (2010). As a result of his experimental work, we have constructed a novel sensing device and collected data that will assist in the development of an optical fiber based anemometer and spectroscopic chemical sensor for environmental air quality monitoring. The following summer Emily was awarded the Villanova University Center for Undergraduate Summer Research Fellowship (2011) and collaborated with Mark on the development of the microstructured optical fiber based sensors. Emily’s spectroscopy-based research projects presented a unique opportunity to develop novel optical fiber tools for addressing two unique research areas: 1) cryogenic preservation for tissue engineering and 2) monoclonal antibody detection for environmental monitoring. This project employed optical based sensors for the evaluation of the absorption characteristics of water for a range of low temperature (i.e. -20C to -40C) conditions. Recently, such sensing devices have become of interest to the cryogenic preservation community. The proposed device has the potential to provide insight to tissue engineering while scaling down required sample volumes and increasing thermal detection accuracy. She also collaborated with Frank on remarkable work that presents a label-free method to detect monoclonal antibodies in conventional media using only a fraction of a micro-liter volume of a sample. This work promotes the rapid detection of antibodies and has the potential to significantly influence the pharmaceutical, food production and medical diagnostic industries to benefit society. Mark and Emily both received Villanova University Center for Undergraduate Travel Grants (2011) to attend national and international conferences to present their findings.

According to the Falvey Memorial Library, the “Falvey Scholar award is an annual program established by Falvey Memorial Library to recognize outstanding undergraduate research. It is a collaborative initiative of the Library, the Honors Program, and the Center for Undergraduate Research and Fellowships.” Winners are named in five disciplines: Arts, Sciences, Engineering, Nursing, and Business. [View the winning papers here.](#)

Dr. Rosalind Wynne is a Center for Advanced Communications (CAC) faculty member and currently has a research contract from the US Army Research Office on a proposal titled, “Nano-Spectrometers with Microstructured Optical Fibers for Chemical Sensing”.