Department of
Biomedical Engineering
UNIVERSITY OF WISCONSIN–MADISON

Fall 2018 Seminar Series

Polarimetry as a novel source of contrast in intravascular OCT

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Intravascular OCT is widely available for coronary artery imaging to guide percutaneous intervention and characterize atherosclerosis. Conventional OCT provides cross-sectional images based on the intensity of back-scattered infrared light and is characterized by high resolution and high acquisition speed. Polarizationsensitive OCT is well known for its ability to characterize the birefringence of biological tissues but robust implementation of polarimetry through rotating optical catheters has proven challenging. This seminar will focus on the physical principles underpinning polarimetry and the hurdles to its use in intravascular imaging. A new processing approach will be discussed that permits accurate quantitative polarimetry and results from a study of human cadaver vessels with comparison to histopathology. Recent results from a human pilot study *in vivo* will also be presented, demonstrating the potential of polarimetry for enhancing image contrast and the information that can be obtained about coronary atherosclerosis.

ABOUT the SPEAKER

Dr. Bouma studied physics and math as an undergraduate at Hope College and pursued nuclear physics, starting graduate studies at the National Superconducting Cyclotron Laboratory at Michigan State University before changing course to atomic and molecular physics and conducting his dissertation research in the high intensity ultraviolet laser facility at the University of Illinois at Chicago. Prior to joining the faculty of Harvard Medical School, he was a Research Scientist at MIT. He has published over 250 manuscripts that have collectively accumulated over 53,000 citations, reflecting an h-index of 72 (Web of Science) and 120 (Google Scholar). Dr. Bouma's research has led to over 300 issued/allowed patents, with over 100 additional patent applications pending. Many of his patents have been licensed to four different companies, resulting in five distinct medical devices on the market.

Monday, October 29, 2018
12 PM in Tong Auditorium (1003 Engineering Centers)