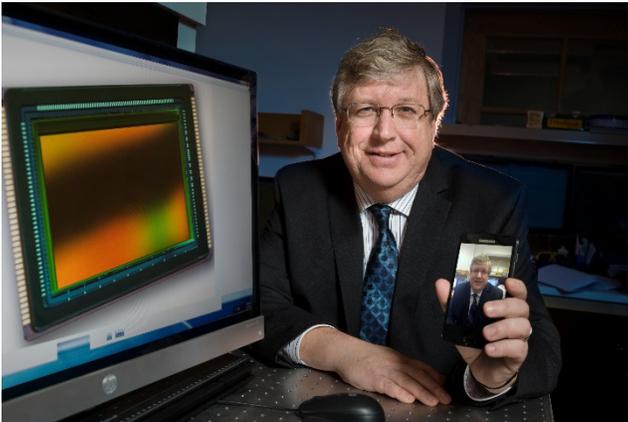




Department of Electrical  
and Computer Engineering  
UNIVERSITY OF WISCONSIN-MADISON

## SEMINAR NOTICE

Monday, November 6, 2017  
4:00 – 5:00pm, RM 1610 EH



**DR. ERIC R. FOSSUM**  
Professor and  
Associate Provost for  
Entrepreneurship and Technology  
Transfer  
Dartmouth College

### Quanta Image Sensor – Megapixel Photon Counting Image Sensor at Room Temperature

**Abstract** - *The Quanta Image Sensor (QIS) is a possible 3<sup>rd</sup> generation solid-state image sensor technology that is based on photon-counting. Primarily focused on scientific and defense applications, it may also be useful for consumer applications. In this talk, the specialized QIS pixel device and its deep sub-electron read noise will be discussed. The specialized pixel uses ultra-low capacitance rather than avalanche multiplication to achieve single photoelectron detection capability. The high frame rate, low power readout will also be described. Recent results on a 1Mpixel QIS with 1.1um pixel pitch, deep sub-electron read noise ( $<0.3e^-$  rms), 1000fps readout at  $<25mW$  total power dissipation at room temperature will be reported. The device was implemented in a backside-illuminated stacked CMOS image sensor process with room temperature dark current less than  $1e^-/sec$ .*

**Biography** - *Dr. Eric R. Fossum is best known for the invention of the CMOS image sensor “camera-on-a-chip” used in billions of cameras, from smart phones to web cameras to pill cameras and many other applications. He has been a Professor with the Thayer School of Engineering since 2010. He also serves as Dartmouth’s Associate Provost for Entrepreneurship and Technology Transfer. Honors include the 2017 Queen Elizabeth Prize, essentially the Nobel Prize of Engineering and the world’s largest engineering prize, induction into the National Inventors Hall of Fame, and election to the National Academy of Engineering. He also received the NASA Exceptional Achievement Medal, the IEEE Andrew Grove Award and Medal, the Royal Photographic Society’s Progress Medal, and the SMPTE Camera Origination and Imaging Medal. The CMOS image sensor technology was invented while Fossum was at JPL, and he led its development and subsequent transfer of the technology from JPL to US industry. Fossum co-founded Pasadena-based Photobit Corporation with other JPL-ers to commercialize the technology and served in several top management roles including Chairman and CEO. At Dartmouth, he and his students formed Gigajot Technology to commercialize the photon-counting image-sensor technology invented at Dartmouth.*