

## FALL 2019 COLLOQUIUM SPEAKER

### HRL Laboratories: History, Mission and Research Directions in Microelectronics

HRL laboratories. LLC. (HRL) is a world leading research laboratory nestled in the hills of Malibu, CA overlooking the Pacific Ocean. HRL, formerly a research laboratory for the Hughes Aircraft Company established in 1948 by Howard Hughes, is currently co-owned by The Boeing Company and General Motors. "HRL's primary mission is to strengthen our LLC members and enhance the mission of our government and commercial customers through the development and application of world class science, technology and engineering"<sup>1</sup>. Historically HRL contributed to the advancement of technology; the most notable achievements being the first laser (1960) using a fully synthetic ruby crystal, first liquid crystal light valve or LCD (1969), demonstration of ion propulsion (1961) and the first Autonomous Land Vehicle (ALV) (1987).

Currently HRL operates four laboratories namely, Sensors and Electronics, Materials and Microelectronics, Microfabrication Technology and Information and Systems Sciences laboratory, with various core competency areas for each of the labs. In this talk, I will present a general overview of HRL and present applications of microelectronic and electro-optic devices. I will give a bottom up approach from materials growth, device fabrication all the way to systems level applications of technologies of interest to the government in general. I will also try to give a concise description of a career path of an industrial researcher in the field of materials science.

**Nov 13, 2019**

**WINSTON CHUNG HALL 205/206**

**1 PM - 2 PM**



**Dr. Erdem Arkun**

HRL Laboratories, Malibu, CA

Dr. Erdem Arkun is currently a Sr. Staff Research Engineer working in the RF Devices and Materials group in the Sensors and Electronics Laboratory at HRL. He received his Bachelor's degree in Metallurgical and Materials Engineering from the Middle East Technical University (METU) in Ankara, Turkey (1999) and his PhD in Materials Science and Engineering from North Carolina State University in Raleigh, NC (2006). Since then he has worked as a post-doctoral researcher at University of Minnesota (UMN) and University of California Santa Barbara (UCSB) advancing MBE technologies for in-situ characterization of semiconductor materials. He has worked at Translucent Inc., a Silicon Valley start-up, which was acquired by IQE, plc in 2015. Since then he has worked at Teledyne Imaging Sensors as a research Scientist advancing the growth of HgCdTe materials. In 2018 Dr. Arkun joined HRL to work on materials for high power Monolithic Microwave Integrated Circuit (MMIC). He has >30 issued patents in the field of semiconductors and rare earth oxide materials. He has also authored and co-authored many scientific papers and presented at various conferences in the field of semiconductors.