

8:30 Continental Breakfast and Walk-in Registrations

9:00	Welcome and overview of CREOL	Bahaa Saleh	Dean & Director, CREOL, UCF
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Technical Symposium**Session I**

9:45	Optical Challenges in LIGO: Past and Future	Stan Whitcomb	California Institute of Technology (Caltech)
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10:15	Parity-Time and other Symmetries in Optics	Demetrios Christodoulides	CREOL, UCF
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10:35 BREAK &amp; EXHIBITS

**Session II**

10:55	Optics Research within the Naval Research Enterprise	Craig A. Hoffman	Naval Research Lab
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11:25	Ultrafast Nonlinear Optics: New Tricks from Old Materials	David Hagan	CREOL, UCF
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**Product Review**

11:45	IPG	Alexie Glebov	
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11:53	Q-Peak	Eric Park	
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12:01	TBD	TBD	
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12:10 **LUNCH Served**

1:25	SPIE	Kent Rochford	CEO
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**Session III**

1:45	Laser structuring of fibers and films	Ursula Gibson	Norwegian University of Science and Technology
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2:15	Topological Photonics	Miguel Bandres	CREOL, UCF
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2:35 BREAK &amp; EXHIBITS

**Session IV**

2:55	TBD	TBD	TBD
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3:25	Controlling Light with Spatially-Variant Photonic Crystals	Stephen Kuebler	CREOL, UCF
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**Award Presentations**

3:45	Distinguished Alumni Award	Clara Rivero-Baleine	Lockheed Martin
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4:00-5:00 Reception

# Advances in Optics & Photonics Industrial Affiliates Symposium

## 14-15 March 2019

*CREOL 103 & Harris Engineering 125*

Thursday, March 14

### Short Courses 9:00AM–12:15PM

**9:00-10:30AM, CREOL Building, Room 102**

**Title: Computational Optical Imaging**

**Instructor: Shou “Sean” Pang**

Computational imaging is the process of image forming from indirect measurements that does not resemble the image of interest. In optical imaging, in contrast to traditional lens-based imaging, computational imaging systems requires the integration of the sensing system and the computation requires algorithms to reconstruct the image. The ubiquitous availability of fast computing platforms (such as multi-core CPUs and GPUs) and the advances in algorithms open the opportunity for redesigning the imaging systems with enhanced performance in acquisition time, dynamic range, image resolution, etc.. In this Short Course, we will introduce the principles of computational imaging and its application in optical imaging systems.

**10:45-12:15PM CREOL Building, Room 102**

**Title: Emerging Augmented Reality and Virtual Reality Displays**

**Instructor: Shin-Tson Wu**

Virtual reality (VR), augmented reality (AR) and mixed reality (MR) displays are growing rapidly with numerous applications, such as entertainment, education, tourism, medicine, and simulation training. Display panel and imaging optics play critical roles on the ergonomics and optical performance of these head mounted (or glass-type) display systems. Some technical challenges including resolution density, field of view, motion picture response time, high dynamic range, compactness and lightweight, latency, focus cue mismatch, and occlusion capability remain to be improved. Presently, three technologies are competing for near-eye displays; they are organic light-emitting diode (OLED) display, liquid crystal display (LCD; both transmissive and reflective modes), and micro-LED display. In this short course, I will introduce the optical system including field-of-view and foveated imaging, analyze the pros and cons of each display technology, review the latest progress, and discuss the future development directions.

**9:00-10:30AM, Harris Engineering, Room 125**

**Title: Fundamentals of Ultrafast Photonics -Techniques and Applications in Optical Communication and Signal Processing**

**Instructor: Peter Delfyett**

The development of high-speed communication, interconnects, and signal processing are critical for an information based economy. This short course will cover basic concepts in the generation of ultrafast optical signals, and in developing approaches for modulating, transmitting and detecting these signals. We then show how these technologies can be applied in several optical communication and signal processing applications.

**10:45-12:15PM Harris Engineering, Room 125**

**Title: Mechanical Action of Light and Applications**

**Instructor: Aristide Dogariu**

The idea that light can affect the position of small objects goes back hundreds of years and has its origin in the corpuscular theory of light. Controlling the transfer of momentum from light to matter has led to unique possibilities to cool and trap atoms or to manipulate small objects such as microparticles, cells, molecular motors, etc. For instance, tiny forces in live biological entities are now commonly measured with “laser tweezers”. We will review the basic concepts behind the mechanical action of light and we will survey applications where harnessing light at scales comparable with the wavelength offers distinctive capabilities for sensing, guiding, and controlling material systems.

### Student Talks 1:30PM-2:30PM (Harris Engineering, Room 125)

1:30	TBD	Student of the Year- TBD
	TBD	TBD
	TBD	TBD
	TBD	TBD

### Poster Session, Reception, Lab Tours & Exhibits 2:30PM-4:30PM (CREOL lobby and balcony)

2:30	Student Poster Session	CREOL lobby & balcony
	Lab Tours	Tours start from CREOL lobby
4:30	Tribute to Boris Zeldovich	Nelson Tabirian (HEC 125)