



A Look Ahead to CLEO/QELS and *PhAST* 2005

Individuals who are attending the 2005 Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science conference (CLEO/ QELS) and the Photonic Applications Systems and Technologies (*PhAST*) conference will have to perform a balancing act to fit in all the noteworthy sessions. The five-day agenda is packed with relevant topics, including optical sensors, solid-state lighting, optical imaging, organic LEDs and much more. Both conferences will take place in Baltimore between May 22 and 27, 2005.

All of the presentations and speakers reflect the cutting edge of research and development, but two sessions deserve highlighting: the plenary session—a joint event between CLEO/QELS and *PhAST*—and a joint symposium on gravitational wave detection.

Plenary Session

Always a central focus, the plenary will showcase four renowned speakers and an awards ceremony. At the awards ceremony, honors will be bestowed on several recipients, including the Charles H. Townes Award winner and several OSA and IEEE Fellows.

LEDs, organic LEDs and solid state lighting are emerging markets in the industry. Consequently, they are growing topics of interest at CLEO/QELS. One of the keynote speakers is Shuji Nakamura, a professor at the University of California who is responsible for researching and developing the blue LED. His talk, titled “Future Prospects for Solid-State

Lighting,” will focus on potential new devices and LEDs.

In a second talk, Christopher Contag, director of Stanford’s Center for Innovation in *In Vivo* Imaging and co-director of the Molecular Imaging Program at Stanford, will deliver *Optical Imaging of Stem Cell Fates and Function*, a timely discussion of how optical imaging can be used to understand why stem cells differentiate. Contag is a leading scientist in the field of in vivo cellular and molecular imaging.

JILA Fellow and professor at the University of Colorado, Deborah Jin will deliver a third keynote address, “Fermionic Condensates,” which will cover the burgeoning field of ultra-cold trapped atoms in their lowest energy state.

To provide an analysis of industry applications, the *PhAST* plenary address will feature Optoelectronics Industry Development Association President Arpad Bergh, who will provide information on key market developments for the industry.

Joint Symposium

In celebration of the World Year of Physics, the centennial anniversary of some of Einstein’s greatest theories, CLEO/QELS will hold a joint symposium on gravitational wave detection that will include a tutorial and six invited talks by speakers from the United States, France, Japan and Germany. The speakers will cover how lasers are being used in current large-scale gravitational wave projects and the technologies behind gravitational wave detectors.

According to conference subcommittees, some of the most exciting and up-and-coming topics that will be presented are LEDs and OLEDs, nanoprobes and optical wireless technology. Areas that are generating new applications and advancing techniques include nanoparticle-based contrast agents for diagnostics, applications for the optical frequency comb and advances in techniques for the optical diagnosis of cancer.

Photonics Applications Systems Technologies

The 2005 Photonic Applications Systems Technologies (*PhAST*), in its second year, will feature four, one-day symposia and two extended tracks, as well as a number of invited talks. One of the symposia, devoted to the topic of active remote sensing, will be held in conjunction with CLEO. Business programming will also continue to be an integral portion of *PhAST*.

One of the extended tracks featured at *PhAST* this year is on the very timely topic of photonics in homeland and national security. A number of topics will be a part of this track, including optical countermeasures, directed energy systems, optics for biometrics and optics for aircraft protection.

“Homeland and national security is a current topic that has very urgent requirements for optoelectronic solutions to some very pressing security applications challenges,” said George Simonis, *PhAST* conference chair. “CLEO and QELS provide some exciting technology and science that point the way to optoelectronics applications solutions, and *PhAST* will deliver detailed talks on these applications in its sessions.”

PhAST’s business programming will feature various market overviews, funding opportunities and perspectives from business and management leaders. Milton Chang, managing director of Incubic, LLC, will also be hosting *PhAST*’s Power Lunch with guests ranging from CEOs to Nobel laureates to venture capitalists.

For more information or to register for CLEO/QELS and *PhAST*, visit www.cleoconference.org and www.phastconference.org.

Who's Who on OSA's Board of Directors

When did you first become interested in optics?

As a kid I was always interested in model electric trains and photography, and these two hobbies encouraged me to study electrical engineering, particularly image processing. In graduate school I realized that I could combine aspects from all of these interests by learning about optics and photonics.

What were your biggest challenges and achievements as the director of SIPI?

The Signal and Image Processing Institute (SIPI) at the University of Southern California was organized more than 30 years ago as a center for research collaboration in image and video compression, transmission and processing. Since then, research interests of the faculty and staff have expanded to include pattern recognition, optical information processing, optical computing, computer vision, medical and computational imaging and speech processing.

The Integrated Media Systems Center (IMSC) is an outgrowth of SIPI that was established with support from the National Science Foundation (NSF) in 1996 as the only NSF Engineering Research Center focusing on research in multimedia and immersive technologies. One of IMSC's visions is to create an aural and visual "immersive" environment that enables people in different locations to communicate with one another with fidelity and a sense of presence that approaches reality.

We perform basic research on the components and

integration of immersive technology. There are applications in all aspects of interpersonal communication. In both of these centers, the challenge is to get independent research people from a variety of backgrounds to collaborate and share ideas, lab facilities and resources. At first, this took some diplomacy, but more recently, the research faculty and staff have realized that an interdisciplinary approach is rewarding.

How would you describe your approach to teaching?

The main tenet of my teaching philosophy is to respect students. I share with them a desire to learn and recognize that, although we are at different points in our education, we are all involved in the same process. I view my role as a guide and a model who helps students to discover new principles on their own rather than presenting a collection of facts to be memorized. Subjects such as optics, photonics and image processing lend themselves to many visual aids, including videos, Web material and tabletop demonstrations. When possible, I try to relate the course material to everyday experiences (vision, photography, games, human perception, entertainment) through example and experiment.

Has your advice to students changed over the years?

Not much. I always advise students to take a broad range of subjects in addition to the specialized courses they need for their degree or research program. I tell them



Alexander (Sandy) Sawchuk
Director-at-large

Lives: Los Angeles

Works: University of Southern California

Education: Bachelor's degree in electrical engineering, Massachusetts Institute of Technology; Master's and doctoral degrees in electrical engineering, Stanford University.

that every course they take will be valuable at some point in their career. I advise them that science and technology evolve much more rapidly now than they have in the past and that this broad background will help them be flexible as they move into new areas of work. I also emphasize the importance of writing and speaking as part of their professional development.

What drives your involvement with the OSA Foundation?

In many countries there is a decline in interest in math, science and technology among pre-college students, particularly among minorities and women. In developing nations there are few resources to support these educational programs at all. One of the OSA Foundation's goals is to advance educational and outreach activities among these students. I hope that the Foundation can step in to fill the gaps in support from government and other educational and charitable groups. These young students are the future of optical science and technology and the constituency from which new OSA members and volunteers will come.

What opportunities and challenges will non-profits such as OSA likely encounter in the coming years?

I think a big challenge is the rapidly changing scientific

publishing and conference environment brought on by communication advances such as e-mail and the Internet. OSA must move quickly to respond to these challenges and invent new ways to continue its mission of disseminating and archiving knowledge. Another challenge is the declining government and industry research support in some traditional areas of optics and photonics. On the other hand, optical principles are being applied in many new fields. OSA is attracting interest from people from very diverse new applications. I see this as a natural evolution of the role that optics has always had in enabling scientific and technological advances.

What will be the biggest areas of innovation over the next 10 years?

A few of the areas in which I think optics and photonics have an important role are biophotonics, health care, nanotechnology, data storage, communications and immersive technology.

What do you like to do in your free time?

I enjoy music, including concerts and opera, and if I ever get any more free time I might pick up electric model trains and photography again!

—Grace Klonoski