



November 2004 Newsletter

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Chair's Message, October 2004

It has been nearly a year since I took over from Win Smith as Chair of the Division of Laser Science, so this big thank you to the entire DLS team for a job well done comes a bit late, but it is sincere nonetheless. I especially would like to thank Dan Elliott for his hard work as Secretary-Treasurer, Mark Raizen who has done a great job as Chair-Elect, and Marjatta Lyyra, for all her work on communications. Marjatta was also elected last year as one of the two new members of the Executive Committee. That election also resulted in Hal Metcalf becoming our new Vice-Chair, and Alexander Gaeta becoming a member of the Executive Committee. I'd also like to thank all the folks who helped put together such a great program for this year's LS-XX meeting: program co-chairs Dave Chandler, Carlos Stroud, and Nick Bigelow, Hal Metcalf for the very successful undergraduate symposium, and Kurt Gible and Bob Jones for the New Laser Scientists symposium. As always, the DLS has been very well served by the many committee members and other volunteers, and I thank all of them for their hard work.

There are a few deadlines coming on us fast:

- Nominations for Fellowships are due April 1, 2005
- The Abstract & Summary deadline is November 23, 2004, 12.00 p.m. EST, for CLEO/IQEC meeting which will be held at the Baltimore Convention Center, May 23-27, 2005.
- Call for papers for LS XXI, will open in January 2005. This Conference is scheduled for October 16-20, 2005 in Tucson, Arizona.

DLS will not be organizing a New Laser Scientist (NLS) Symposium in Tucson, since these meetings are going to be every other year. Harold Metcalf of Stony Brook will organize the undergraduate symposium again for the Tucson meeting. These meetings have provided unique opportunities for laser scientists and intending laser scientists to present their results and meet with others in their peer group. The DLS feels that these initiatives are an important part of our mandate to serve the laser science community.

Details about the Tucson LS-XXI meeting are available at www.frontiersinoptics.org. I would urge all of you to come to this important annual meeting for our division, and would especially urge student members to attend. Student members of the DLS have their registration fees paid, and there is a travel grant program available for students. The DLS also plans to extend the travel grants program to postdoctoral fellows. More details about this will be available later. You can also contact the Secretary Treasurer Dan Elliott by email for further information.

Details of the many activities of the division are available on our website. The objective of the APS Division of Laser Science is the advancement and dissemination of knowledge in the broad interdisciplinary area of science related to the use of lasers in research, the technical applications of lasers, and the development and characterization of new laser systems. A quick look at the website should convince you that your division is working hard to fulfill its mandate, but we are always more than happy to hear from the members about ways in which we do this better. In addition to this feedback we would also appreciate your help in recruiting appropriate new members for the Division.

John Hepburn, DLS Chair 2003-2004

2004 APS Award Winners

Congratulations to our DLS colleagues, who were the recipients of 2004 APS awards or prizes for their research in Laser Science.



Arthur L. Schawlow Prize in Laser Science

Federico Capasso
Robert L. Wallace Professor of Applied Physics
Harvard University

Citation:

For seminal contributions to the invention and demonstration of the quantum cascade laser and the elucidation of its Physics, which bridges Quantum Electronics, solid-state Physics, and Materials Science.

Background:

Federico Capasso is the Robert L. Wallace Professor of Applied Physics at Harvard University, which he joined in 2003 after 26 years at Bell Labs, where he rose from postdoc to Vice President of Physical Research. He holds a Ph.D. degree from the University of Rome, Italy. His research on band structure engineering of artificial materials and novel devices has opened up new directions in Photonics, Electronics, mesoscopic Physics and Nanotechnology. His current research interests include Quantum Cascade Lasers, spintronics and the investigation of Casimir forces using nanomechanics.

He is a member of the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences and a Fellow of OSA, APS, IEEE, SPIE and AAAS. His awards include the IEEE Edison Medal, the Wetherill Medal of the Franklin Institute, the Wood prize of OSA, the Rank Prize in Optoelectronics (UK), the IEEE David Sarnoff Award in Electronics, the IEEE LEOS W. Streifer Award, the Duddell Medal of the Institute of Physics (UK), the Materials Research Society Medal, the Willis Lamb Medal for Laser Science and Quantum Optics, the "Vinci of Excellence" Prize (France), the Welker Memorial Medal (Germany), the New York Academy of Sciences Award, the Newcomb Cleveland Prize of AAAS.

APS Fellows 2003 from DLS**Campbell, Joe Charles**

The University of Texas at Austin

Citation: For leading contributions to the development of high-speed, low-noise, long-wavelength avalanche photodiodes.

Christodoulides, Demetrios N.

Lehigh University

Citation: For the theoretical discoveries of discrete solitons and of Bragg (gap) solitons, and for important contributions on vector, composite and incoherent solitons.

Chuang, Shun Lien

University of Illinois at Urbana-Champaign

Citation: For his development of the fundamental theories for strained quantum-well lasers and terahertz generation from semiconductors.

Dapkus, P. Daniel

University of Southern California

Citation: For important contributions to the development of metalorganic chemical vapor deposition and its application to quantum well laser devices.

Liu, Jia-ming

UCLA

Citation: For contributions to ultrafast nonlinear optical processes and nonlinear dynamics of lasers

Shapiro, Jeffrey H

Massachusetts Institute of Technology

Citation: For pioneering contributions to the theory of the generation, detection, and applications of novel quantum states of light, particularly the squeezed states of light

Singh, Surendra P.

University of Arkansas

Citation: For his original theoretical and experimental contributions to the understanding of quantum noise in lasers and nonlinear optical processes.

Calendar

APS fellowship nominations: Deadline for 2004 is April 1, 2005. All nominations should be sent to:

Executive Officer
The American Physical Society
One Physics Ellipse
College Park, MD 20740
ATTN: Fellowship Program

CLEO/QELS Conference: Baltimore Convention Center, Baltimore, Maryland, May 23-27, 2005.

Abstract & Summary Deadline: November 23, 2004, 12.00pm EST.

Frontiers in Optics 2005 /Laser Science XXI Meeting

October 16-20, 2005

Hilton Tucson El Conquistador Golf and Tennis Resort, Tucson, Arizona

Call for papers will open January 2005.

Distinguished Traveling Lecturer (DTL) Program

This program is very successful with the number of college applications for speakers in balance with the number of speakers available. We have nine volunteers as Distinguished Travelling Lecturers leading to enough flexibility with respect to accommodating the colleges' first choices for speakers.

The list of current DTLs include:

Jim Kafka, Spectra Physics

Carlos Stroud, The Institute of Optics, University of Rochester

Lee W. Casperson, Dept. of Electrical Engineering, Portland State University

Eric Cornell, JILA, University of Colorado

Robert Byer, Department of Applied Physics, Stanford University

Marsha Lester, Department of Chemistry, University of Pennsylvania

Ron Walsworth, Harvard Smithsonian Center for Astrophysics, Harvard University

Luis A. Orozco, Physics Department, University of Maryland

Christopher Monroe, Department of Physics, University of Michigan

The DTL Committee members are:

Rainer Grobe (chair)

Margaret Murnane

Ian Walmsley

Matt Anderson

Elizabeth McCormack

Mark Beck

New Laser Scientist Symposium

The third New Laser Scientist Symposium was held in Rochester, New York, October 15, 2004 in conjunction with the OSA Annual meeting and the Laser Science Conference. The event Chair was Kurt Gibble and the Vice-Chair was Bob Jones. The NLSC was attended by recently appointed faculty in all areas of Laser Science including Physics, Chemistry, Biophysics, and Engineering. Each participant presented a 20 minute invited talk on their

work, with ample time for discussion. The NLSC provides a network for new faculty, who are often isolated as they start their careers in academia. The response from the participants was overwhelmingly positive, and DLS will continue this event in the future every other year.

Undergraduate Research Symposium

The Symposium on Undergraduate Research that was held at our annual meeting in Rochester in October 2004 was incredibly successful. The talks given by these emerging young scientists were fantastic. The students were all poised, prepared, informed, articulate, and otherwise superb. The morning and afternoon sessions were presided by Carl Grossman of Swarthmore and Kiko Galvez of Colgate. They featured 14 talks from students at 11 institutions, small and large, from all over the country. Some did their research projects in various European laboratories under a program run by Martin Richardson of CREOL.

Perhaps even more significant was the overflow. We had 22 presentations in all, but only 14 could be oral because of the time slots we were allowed. Consequently, there was a poster session during the lunch period (DLS provided lunch for the students) presided by John Noé of Stony Brook that featured 8 posters from an additional 7 institutions. Because of the convention setup, the posters had to be mounted out in the hallway that connected the meeting rooms. They were therefore exposed to a wide range of the conference participants (remember, this was a large meeting because DLS meets jointly with the OSA annual meeting). The students were swamped with curious participants and there was highly animated discussion all around the foyer/hallway area. So even though most of those poster presenters initially expressed a preference for talks, in the end they were thrilled with the level of interest in their work and the exposure they gained. Many wrote back saying they were glad that their presentations turned out to be posters after all.

Harold Metcalf
Distinguished Teaching Professor - SUNY
Stony Brook, NY 11794-3800
Vice Chair, DLS Executive Committee

Student Travel Grant Program

DLS has reinstated the Student Travel Grant program. Through this program, DLS will provide partial funding (up to \$500) for a limited number of graduate students to attend and participate in one of the Division's two conferences, QELS or Laser Science. To be eligible, an applicant must be a full-time graduate student, a member of the Division of Laser Science, and the first author and presenter of an oral or poster paper at the QELS or LS meetings. To make these funds as widely available as possible, only one student per

institution is entitled to such support. Applicants should submit a letter stating their estimated need for travel funds, including a commitment of institutional support, if any, attached to a copy of the submitted abstract on which they are the first author, and a letter of nomination from a member of the DLS. This nomination letter must certify that the applicant is a full time graduate student and that the student's visa (for international students) is valid through the meeting dates. Please list daytime phone number, FAX number, e-mail address, and social security number. Applicants are required to FAX or email their acceptance letter or attach it to the application upon receiving the official notice. Only one award will be given per research group. Checks will be issued at the meetings. Hotel accommodations will be covered at up to half the conference rate for a double room. Submit your requests to Dan Elliott, DLS Secretary/Treasurer, Electrical Engineering Bldg., 465 Northwestern Ave., Purdue University, West Lafayette, IN 47907-2035.

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Other committees

DLS Nomination Committee:

Chair Thad Walker, Department of Physics, University of Wisconsin.

DLS Fellowship Committee,

Chair, DLS Executive Committee Vice Chair, to be elected.

The Schawlow Prize Committee

Chair, William C Lineberger, JILA, University of Colorado

APS/DLS Representatives on the Joint Council for Quantum Electronics (JCQE)

Robert W. Boyd, Institute of Optics, University of Rochester
Winthrop W. Smith, University of Connecticut

Henry M. van Driel, University of Toronto

Election:

There will be an on-line update and mass email to all DLS members about the election as soon as the nominations are completed.

Newsletter Editor

[Prof. A. M. Lyra](#), Temple University