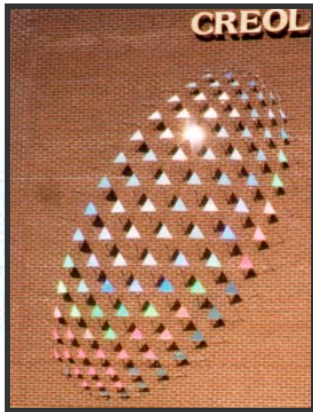




# School of Optics / CREOL

## HIGHLIGHTS



Summer/Fall 2002

[www.creol.ucf.edu](http://www.creol.ucf.edu)

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**Mark your Calendars:**

**Industrial Affiliates' Day**

**Friday  
April 25, 2003**

### Professor Demetri Christodoulides

The School of Optics/CREOL is pleased to announce the arrival of new a faculty member, Dr. Demetri Christodoulides. Professor Christodoulides was formerly with the Department of Electrical Engineering Lehigh University (1987-02). His outstanding achievements and important contributions to the fields of optics and nonlinear science have lead to his appointment here as a “Provost’s Distinguished Research Professor of Optics.”

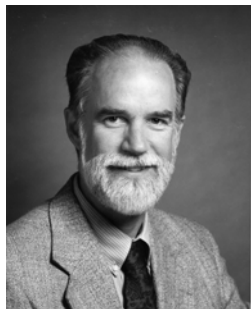


Professor Christodoulides received his doctoral degree in Electrical Engineering from Johns Hopkins University in 1986; and was a post-doctoral fellow at Bell-Communications Research Labs in Murray Hill, before joining the faculty at Lehigh. His main areas of research have been in nonlinear optics, nonlinear fiber optics, lightwave technology and quantum electronics. He is particularly known for his insightful theoretical predictions, and indeed breakthroughs, in the study of solitons. In the words of the soliton researcher, Professor Mordechai Segev:

**“Demetri is a direct example of a theoretician who has had a major impact on the scientific community, by single-handedly starting several new areas of research and making milestone contributions in other areas.”**

In 1988 alone, Dr. Christodoulides predicted vector solitons in fibers; the possibility of generating bright-dark soliton pairs; and the existence of bi-modal solitons. He linked vector solitons to incoherently coupled soliton pairs in 1996; and was the first to suggest using coherence as a means of generating multi-component vector solitons. He is also credited with the discovery of slow Bragg or Gap Solitons in fiber gratings; and the prediction of Discrete Solitons in nonlinear waveguide arrays and photonic crystals. In addition, he is the person who formulated the first theory of incoherent solitons. He used his new theory to predict dark incoherent solitons in 1998, and these were observed within a few months. Most recently Professor Christodoulides has worked on the theory of partially incoherent self-trapped beams in inertial nonlinear media and on fiber Raman amplifiers.

Dr. Christodoulides has authored or co-authored more than 100 articles in refereed journals. He was recently an associate editor for the IEEE Journal of Quantum Electronics, and is currently a topical editor for the Journal of the Optical Society of America B. He has also participated on many conference committees and he is the recipient of the Spira Teaching Award. He is a fellow of the Optical Society of America, a member of IEEE and the American Physical Society, and a member of the American Association for the Advancement of Science.



*Dr. Eric Van Stryland*

I have recently finished writing the School of Optics/CREOL 2002 annual report, where I noted that in last year's report I wrote "Our future still looks excellent." I underestimated the faculty. This year has been simply outstanding. During the 2001-2002 academic year, our faculty published 17 book chapters, 81 refereed articles, and 79 other articles, while giving 50 invited talks, 70 other presentations and 27 patent disclosures. We passed the milestone of \$10 Million in external research funding (\$10.7, actually) and we received a very prestigious NSF IGERT grant (see last issue of Highlights).

These impressive statistics are a result of the extreme hard work and dedication that I see here every day from the SO/CREOL students, faculty and staff. I should specially commend the hard work of our students, who have made us very proud with all the many prizes and honors that they won this year. Among these were the Newport award recently presented to Peter Delfyett's student, Mike Mielke; and the \$10,000 New Focus award given to George Stegeman's student, Sergey Polyakov, for research presented at the CLEO/QELS 2002 meeting in May. (Watch for more on Sergey's prize research in the next issue of Highlights.)

The fundamental and applied research currently being pursued at the School of Optics/CREOL will create technologies which enable broad-ranging advances, across areas as diverse as entertainment, computing, data storage, telecommunications, medicine, and military defense, to name a few. Education might also be included on that list: we have recently submitted a

## Director's Corner

grant proposal to the National Science Foundation for a long-range project that could ultimately allow construction of a real-life version of Star Trek's "Holodeck".

During the past several months we have hosted alumni reunions at both the Optical Fiber Conference (OFC) and CLEO/QELS; and we had great turnouts at both meetings, with over 50 at OFC. We invite our Industrial Affiliates to these reunions to meet our alumni and students.

We also held a very successful annual Industrial Affiliates' Day on April 5 this year, with 270 participants attending. Check out photos and an article by Martin Richardson later in this issue. It seems a good percentage of those 270 were also at our annual "Spring Thing" picnic, hosted by M. J. Soileau, the next day, where we managed to consume 200 lbs. of turkey, 50 lbs. of sausage, 30 lbs. of alligator (Uh huh.) and 100 bananas for the dessert!

We were very pleased to honor Dr. Arthur Guenther on Affiliates Day with a Life Membership in our Industrial Affiliates program. Dr. Guenther is a long-time friend and supporter of CREOL. (Look for the article by M.J. Soileau later in this issue.)

### Comings and Goings

I am very happy to announce the addition of Professor Demetri Christodoulides to our faculty. See our cover article. He joins us from Lehigh; and has been a collaborator with several of our faculty on a Multidisciplinary University Research Initiative (MURI) program involving spatial solitons.

We currently have ads out to hire faculty in the area of nanophotonics as part of UCF's thrust in nano-technology. Our plans are to hire multiple faculty members in this area. We are also working closely with UCF's Advanced Materials Processing and Analysis Center (AMPAC) and the Center for Drug Discovery and Development on potential new multidisciplinary hiring.

Finally, we are proud to congratulate Michael Bass on becoming an Emeritus Professor of Optics. Even our retirees keep busy and Dr. Bass continues to work actively at CREOL. During this year alone he brought in \$312k in research funds. Well done, Mike.



### School of Optics/CREOL Seeks Nanophotonics Faculty

The University of Central Florida (UCF) in Orlando is making a major expansion into the burgeoning field of nanoscience and technology. The School of Optics/CREOL (Center for Research and Education in Optics and Lasers) will be adding tenure and tenure track faculty in the nanophotonics area involving nano devices/materials/structures in optics. Additional information on the School is available at [www.creol.ucf.edu](http://www.creol.ucf.edu). Candidates should send a curriculum vitae and a list of three references to: Chair of the Nanophotonics Search Committee, School of Optics/CREOL, University of Central Florida, 4000 Central Florida Blvd, Orlando, FL 32816-2700, or via e-mail to: [nanophotonics@creol.ucf.edu](mailto:nanophotonics@creol.ucf.edu). UCF is an equal opportunity/affirmative action employer.

School of Optics/CREOL

### Highlights

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School of Optics/CREOL  
P. O. Box 162700  
Orlando, FL 32816-2700  
(407) 823-6800  
FAX (407) 823-6880  
<http://www.creol.ucf.edu>

# Optics Ph.D. Curriculum Changes

David J. Hagan

Associate Director for Academic Programs

During the past 18 months, School of Optics faculty have been working to evaluate, revise and update the curriculum of the Optics PhD degree program. This process is now complete, and changes will be implemented for the fall incoming class of students. This is the first major revision to the Optics PhD since its inception. The bulk of these changes involve the core material upon which the PhD qualifying exam is based. The new core is shorter, (5 courses as opposed to 8) and we believe that it more accurately represents the research activities in the School of Optics/CREOL, as well as the field of optics and photonics in general. The faculty also wanted to have a shorter core so that students could be done with the qualifying exam at the end of the first year. This should allow students to transition more gently from coursework to research in the second year. Additionally, with a shorter core, those few students who do not progress past the PhD qualifying exam will be able to graduate with a masters degree in a more reasonable time.

In structuring the core, the faculty broadly agreed that there should be two courses that form the foundations of optics, - i.e. those which are funda-

mental to all disciplines in optics. These courses are: Optical Wave Propagation, which covers the electromagnetic foundations of optics, and Interference, Diffraction and Coherence, which is



Venn diagram illustrating structure of new PhD core

self explanatory. Both courses existed in our previous core, and needed only minor modifications. Finding, and agreeing upon, the other areas that ought to form the core was a more difficult task, so the faculty agreed that it was best to start from scratch with the other courses. Recognizing that our optics faculty fall under three general areas, namely Applied Optics, Optical Science and Photonics, it was decided to develop three courses covering the fundamentals of these areas. The curriculum for each was developed by groups of faculty in each area. Each

of these “fundamentals”, courses is designed to provide an early starting point for students who plan to specialize in that area, while providing the function of broadening the education of those who will specialize in another area. The total number of courses in the PhD program has not been reduced, so students will inevitably take courses outside their chosen specialty area. The new PhD qualifying exam will be a written only exam based on the material in the 5 core courses, normally taken at the end of the first year of the program and will be offered two times per year. At the end of the second year, the student will take the PhD candidacy exam, in which the student’s research progress is evaluated and a general optics oral exam is given. This exam is given by the student’s PhD dissertation advisory committee.

Starting this coming academic year, all core courses will be offered two times per year. This makes scheduling easier for part time students and students who start their studies in the spring instead of the fall. For more information on our academic programs, visit our web site at <http://www.creol.ucf.edu/Academic/academic.html> or send email to [hagan@creol.ucf.edu](mailto:hagan@creol.ucf.edu).

## Recent School of Optics Graduates

Name	Degree	Advisor
Gabriel Popescu	Ph.D. Optics	Dogariu
Georgios Siganakis	MS Optics	Moharam
Ladislav Jankovic	MS Optics	Stegeman
Muzamil Arain	MS Optics	Riza
Rania Abd El-Maksoud	MS Optics	Stegeman
Mahesh Pitchumani	MS Optics	Johnson
Fang Du	MS Optics	Harvey
Sajjad Khan	MS Optics	Riza
Daniel May-Arrioja	MS Optics	Li Kam Wa
Wangkuen Lee	MS Optics	Delfyett
Ion Cohanoschi	MS Optics	Hagan/Van Stryland
Jie Fu	MS Optics	Hagan/Van Stryland
Martina Atanassova	MS Optics	Harvey
Dijana Bogunovic	MS Optics	Harvey

## Dr. Arthur Guenther

by MJ Soileau, UCF Office of Research

In recognition of his importance to the School of Optics/CREOL, Dr. Art Guenther was made a Life Member of the Industrial Affiliates Program on Affiliates' Day, April 5, 2002. Dr. Guenther's service on the CREOL Industrial Affiliates Board began soon after the establishment of the Center, in 1987. In addition, he chaired the External Review Committee, whose recommendation led to the establishment of the School of Optics in 1999. Dr. Guenther's contributions to SO/CREOL mirror his leadership role in the international optics community. He



Eric Van Stryland, MJ Soileau and Art Guenther

has garnered many honors, too numerous to list here; and his service includes membership on the Boards of the OSA, SPIE, IEEE-LEOS and the LIA, of which he was co-founder, and President. He is the current President of the International Commission on Optics. Art joins The Cobb Family Foundation (endowers of the Cobb Family Chair in Optics) and the late Dr. Bill Schwartz (the founder of Florida's laser industry and co-founder of CREOL) as Life Members of SO/CREOL's Industrial Affiliates.

On a personal note, Art has been a friend and mentor since 1969. It was a great privilege for me to make the Life Member presentation to him at the Affiliates' Day 2002.

## Graduate Student Recruitment Weekend

By Courtney Lewis

In the fall of 2001, the School of Optics/CREOL Student Recruitment Committee convened to begin plans for an inaugural student recruitment weekend. The weekend was designed to invite the top applicant prospects for the 2002 academic year to visit SO/



Prospective students, Frank Quinlan and Jason O'Daniel meet alumnus Gary Sweezy.

CREOL. During this visit, prospective students were involved in information sessions that included academic procedures, fellowships and assistantships, as well as participated in the Industrial Affiliates' Day activities.

Out of the top prospects, 12 U.S. students accepted the invitation to visit CREOL during the scheduled weekend. Activities included a campus tour, lunch with prominent alumni, local area tours, "Spring Thing" picnic, and a night out at Uni-

versal Studios City Walk.

Eight of the 12 will attend UCF this fall semester. In addition to those students who visited for the recruitment event, several students visited individually. Overall, the 2002/2003 incoming class consists of 25 students, 20 of



Alumnus Jason Eichenholz, and Associate Director David Hagan chat with prospective student Tarik McMillan.

whom will be on fellowships.

With excellent academic statistics, the incoming class ranks among the highest at UCF. This is reflected in the number of university fellowships awarded to Optics students. School of Optics students will be recipients of five university fellowships, one Board of Trustees, two Presidential, and two Provost. This, in addition to average GRE scores of 1230 and GPAs averaging 3.6, is a sign of a productive recruiting program.

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## Affiliates' Day 2002

by Martin Richardson

The School of Optics/CREOL annual Industrial Affiliates' Day on April 5, 2002 was a memorable event. The day began with a continental breakfast in the Cape Florida Ballroom of the UCF Student Union. UCF President John Hitt, and School of Optics/CREOL, Director Eric Van Stryland, welcomed the audience of 170 to the morning plenary session. MJ Soileau, UCF Vice President for Research, gave a brief overview presentation related to the Day's theme.

The theme this year seemed an obvious and appropriate choice given the events on Sept. 11, 2001: *The Role Of Optics And Laser Technology In National Defense & Homeland Security*

A program of talks by speakers from national government agencies was focused on various aspects of the important role played by optical and laser technologies in many areas of national defense; and illustrated how the new national focus on homeland security creates fresh challenges for those involved in the laser and electro-optics industries. The first talk was by Dr. David Honey from the DoD Defense Advanced Research Projects Agency (DARPA). DARPA has provided strong support for many research programs at CREOL over the years. Dr. Honey highlighted the many ways optics research is entwined in the high-risk future technologies needed for national defense.

In the second talk, Ed Pogue, Director of the relatively new DoD Joint Technology Office -- High Energy Lasers (JTO-HEL) focused on the increasingly important role played by laser technology in missile defense. He also showed the audience impressive visuals of some of the latest tests of missile destruction by high energy lasers. Several SO/CREOL faculty are developing technologies in this area.

Our third speaker, Dr. Filbert Bartoli, is the Program Director of Electrical & Communications Systems at NSF's Engineering Directorate. He summarized the many NSF programs in optics and lasers, and highlighted



National Speakers with Eric Van Stryland and Martin Richardson: Drs. Laurence Clarke, Filbert Bartoli, & Ed Pogue (Missing: Dr. David Honey)

new opportunities for research funding in this area.

The final speaker of the morning was from the National Institutes of Health. Dr. Laurence Clarke is former Director of Medical Imaging Research at the Univ. of South Florida's Moffat Cancer Center in Tampa, and a specialist in advanced medical imaging. He described new opportunities for the development of advanced in-vivo and in-vitro imaging technologies in medical and clinical research; including those soon to be available at NIH's newest institute: the National Institute for Biomedical Imaging and Biotechnology (NIBIB).

### Afternoon Session -- CREOL

The second half of our day began with lunch and some mingling back in the CREOL building. Participants also got their first opportunity to view the corporate exhibits set up in our lobby. **Coherent, Inc.** of Auburn, CA, very generously sponsored lunch for all participants. They were one of several corporate sponsors/exhibitors who helped to make the day successful for all. We are very grateful for both their participation and support. (Check out page 7 for lists of their names.)

Following lunch, Director Eric Van Stryland gave an overview of SO/CREOL's current research activities. This was followed by brief research presentations from the co-winners of the 2002 "Student of the Year Award."

The program then changed to focus

on the local central Florida electro-optics industry. This began with a review by Ray Mott of the activities of the Florida Photonics Cluster. (Formerly: Florida Electro-Optics Industry Association.) This was followed by a number of short presentations by representatives of local companies, each of which has a collaborative research partnership with SO/CREOL: H. N. Burns Engineering; Northrop-Grumman Laser Systems; Infinite Photonics, and VLOC.

Later, everyone had an opportunity to view the 20+ poster presentations created by our graduate students. They could also view some special optics exhibits/demos assembled by our CREOL Association of Optics Students for use in their outreach activities among community and high school groups. (Look for a related article in our next issue of Highlights) Finally came the highlight of the day for many folks: tours and demos in a number of faculty research laboratories.

This very full day of activities ended with the customary "wine & cheese" reception; eagerly awaited by some, and supplemented this year with an array of delicious hot hor d'oeuvres, provided courtesy of another generous sponsor: **Digital Lightwave** of Clearwater, FL.

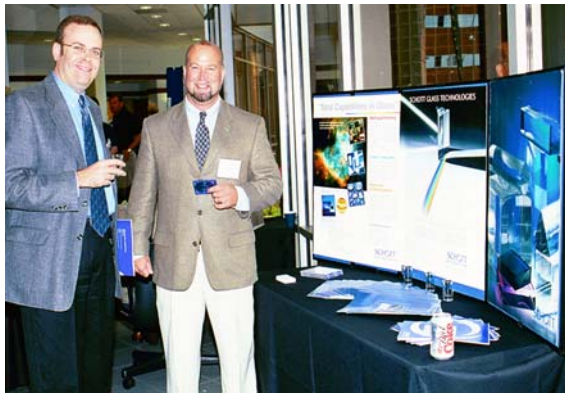
To those of our friends and colleagues who could not attend this year, we think you missed a fantastic event. Hope to see you next year.

For more detail see [www.creol.ucf.edu](http://www.creol.ucf.edu)

# Industrial Affiliates' Day 2002 Photos



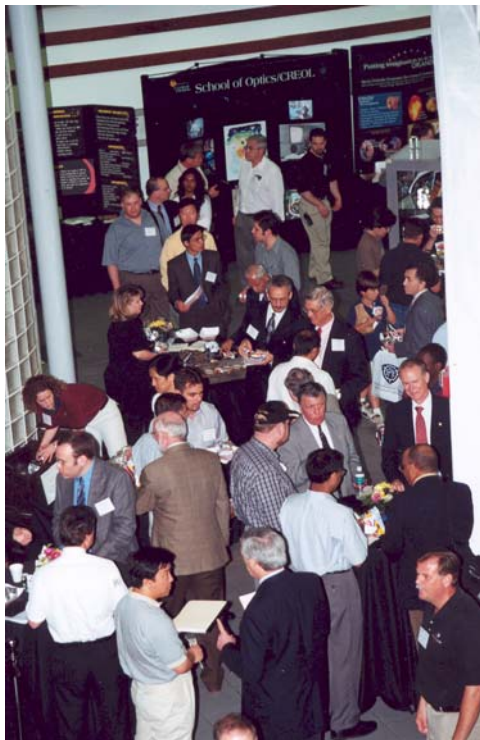
*Morning Session in UCF's Cape Florida Ballroom.*



*Professor Craig Siders with David Vanderpool, of Schott Glass Technologies.*



*Affiliates' Day 2002 Reception*



*Afternoon Session in the CREOL Lobby*



*Professor Aravinda Kar, with UCF Asst. V.P. Vaidy Vaidyanathan, and Dr. Nat Quick, CEO of AppliCote Associates*

# Industrial Affiliates' Day 2002



*Ray Mott, Florida Photonics Cluster and Peter Baker, Laser Institute of America*



*Dr. Anthony Siegman, Stanford University, and Professor Peter Delfyett with Greg Schuckman.*



*Arnaud Zoubir explains his poster presentation to an interested guest.*



*Gary Washam, of Cubic Applications, awards a \$100 cash prize to Te-Yuan Chung for Best Poster.*



*Eric Van Stryland, with CREOL "Students of the Year": Gabriel Popescu and Sergey Polyakov.*



*Eric Van Stryland gives the 2002 Gramm Travel Award to Mircea Mujat*

## *Affiliates' Day 2002 Exhibits*

Applied Photonics  
 Coherent, Inc.  
 EDC Metro Orlando  
 Florida Photonics Cluster  
 Laser Institute of America  
 Ocean Optics  
 Optimax Systems  
 Photonics Spectra  
 Schott Glass Technologies  
 ThermoOriel



*Afternoon Speaker: Jeff Bullington, President of Infinite Photonics, Inc.*

## *Affiliates' Day 2002 Sponsors*

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 EDC Metro Orlando  
 Mr. Charles F. Gramm  
 Noah Industries, Inc  
 Schott Glass Technologies  
 SPIE  
 Telcordia Technologies  
 Varian Vacuum Instruments  
 Zygo Corporation

## Newport Exceptional Graduate Student Award

by *Mircea Mujat, CAOS President*

Newport was recently pleased to announce their sponsorship of the Newport Exceptional Graduate Student Award Program. It's designed to recognize those outstanding scientific achievements of the graduate students in the School of Optics/CREOL based on innovative use of Newport equipment. The winner of the award receives a check in the amount of \$500 provided by Newport, and a plaque. The award process was organized by CAOS, who formed an evaluation committee, consisting of the CAOS advisor and four students. This committee selects three finalists and Newport chooses the winner based on the committee's recommendation. Newport intends to present this award twice a year.

Mike Flores, the Newport Regional Sales Manager, approached me suggesting this award. Newport already has a good relationship with the School of Optics/CREOL in general, Mike intends to strengthen his contact with the students, the real end users of Newport equipment in the laboratory. He wants to make sure that the students are offered the best information and technical support on Newport equipment. After Mike and I agreed on some basic criteria for this award, I put together drafts of the program announcement and the application form. These were reviewed by CAOS officers and Dr. Moharam (our CAOS advisor). The announcement was made after we received Newport's final acceptance.

This program stimulates the students to be leaders in the community among their peers, to use Newport equipment in their research; and to be positive supporters of the School of Optics/CREOL, and of science/engineering in general. Newport does not intend to reward students that stay hidden in their laboratory/office without any involvement in student/community activities, or do their research without any enthusiasm. Outstanding scientific achievements are desired, but not enough. In

addition, the program targets volunteers that spend a great deal of effort and time for the benefit of: their peers through CAOS initiatives, the school in general, as well as the local, non-scientific community through outreach activities.

On the other hand, Newport gets very efficient and cost effective exposure. Direct testimonials on Newport equipment and pictures of laboratory settings including Newport equipment (to be used in Newport's advertising or public relations material) represent just one part of the "deal". By stimulating people to use their equipment while in graduate school, Newport gets a direct advantage over the competition when the students have to recommend equipment at their new jobs, since the students were already familiar with Newport equipment.



*Graduate Student Mike Mielke with Mike Flores of Newport*

We applaud these activities, from which everybody benefits. The first winner of this award was Peter Delfyett's student, Mike Mielke.

In addition to these awards, CAOS programs also include group student visits to local industry, or presentations of the company at CREOL when tours are not possible (offering you the pleasure of sponsoring a pizza lunch for students). In our outreach activities we use some portable display projects (built by students) that present fundamental physical phenomena in a spectacular manner. Any donation for these projects is appreciated.

## Student News CAOS

by *Mircea Mujat*

CAOS is trying to increase CREOL's representation at conferences by helping more students to attend even if they do not have presentations. We obtained \$4600 from the Student Government and \$1000 from the School of Optics as partial support for 11 students to attend CLEO 2002, and about the same amount to help 7 students to attend the Nonlinear Optics Conference in Hawaii - July 2002.

Professor Anthony Siegman was our guest this Spring, as a traveling lecturer for OSA Student Chapters. After attending the Affiliates' Day, Professor Siegman lectured at CREOL on Monday April 8, 2002 on "Normal Modes, and Not So Normal Modes".

### Student Awards

**Te-Yuan Chung**  
Best Poster Presentation

**Tolga Yilmaz**  
**Joel Hales**  
**Clara Rivero**  
**Zahid Yaqoob**  
SPIE Scholarships

**Tolga Yilmaz**  
**Mike Mielke**  
LEOS Travel Awards

**Mircea Mujat**  
Gramm Travel Award  
UCF's Who's Who in Leadership

**Ceyhun Akcay**  
IEEE Outstanding Graduate Student

**Gabriel Popescu**  
**Sergey Polyakov**  
CREOL Students Of The Year

**Christopher Fuhrman**  
President's Leadership Council Member

**Sergey Polyakov**  
UCF's Order of Pegasus - Class of 2002  
\$10,000 New Focus Award

**Yonggang Li**  
ICALEO 2001 Student Paper Award

**Yi-Pai "Bounds" Huang**  
Society for Information Display  
Meeting - Best Paper



# Updates

## Patents

- W. K. Choi** and **S. T. Wu**, "High brightness twisted nematic transfective liquid crystal display", Provisional patent filed (May, 2002).
- W. K. Choi** and **S. T. Wu**, "Transflective liquid crystal display with partial switching", Provisional patent filed (May, 2002).
- C. DePriest, T. Yilmaz & P. Delfyett**, Timing jitter stabilizer for harmonic modelocked lasers (2002).
- Y. P. Huang, X. Y. Zhu, S. T. Wu** and **H. P. Shieh**, "Single cell gap transfective liquid crystal display with slanted reflector above transmissive pixels," Provisional patent filed (May, 2002).
- M. Mielke & P. Delfyett**, Noise suppressor for multiwavelength modelocked lasers (2002).
- E. Park & P. Delfyett**, Programmable multi-wavelength laser.
- N. R. Quick, A. Kar, Y. Li** and **R. R. McNeice**, Apparatus and Method for Drawing Continuous Fiber, (US patent pending, also accepted for international patent).
- H. W. Ren** and **S. T. Wu**, "Tunable electronic lens and prisms using inhomogeneous nano scale liquid crystal droplets", Utility patent filed (May, 2002).
- S. T. Wu**, "Reflective and transfective liquid crystal display using a wire grid polarizer," Provisional patent filed (May, 2002).
- T. Yilmaz & P. Delfyett**, Photonic arbitrary waveform generator (2002).

## Publications and Presentations

### Book Chapters:

- P. J. Delfyett**, "Optical Time-Division Multiplexed Communication Networks," 'Fiber Optics Handbook', Chapter 12, pp 1-42, McGraw Hill, 2002.
- L.B. Glebov**, "Photochromic and photo-thermorefractive (PTR) glasses" chapter in Encyclopedia of Smart Materials. John Wiley & Sons, NY, 2002.
- C.W. Siders** and **A.J. Taylor**, "Multi-pulse Interferometric FROG," chapter in Frequency-Resolved Optical Gating: The Measurement of Ultrashort Laser Pulses by Rick Trebino, Kluwer Publishing, 2002.
- E. W. Van Stryland** and **D. J. Hagan**, "Nonlinear Absorption," chapter in "Encyclopedia Optical Engineering", Marcel Dekker, 2002.

### Papers Published:

- B. T. Amaechi, A. G. Podoleanu, C. Mujat, A. Dogariu, S. M. Higham, D. A. Jackson**, Optical Coherence Tomography correlated with a functional fluorescence imaging for detection and quantification of dental caries. Proc. SPIE Vol. 4619, 253 (2002).
- A. Apostol, A. Dogariu, J. Biggerstaff**, and **K. Olvey**, Near-field fluorescence imaging of A375 human melanoma cells, in Biomedical Topical Meeting, OSA Technical Digest, 427 (2002).
- K. D. Belfield, M. V. Bondar, O. V. Prshonska, K. J. Schafer, W. Mourad**, "Spectral Properties of Several Fluorene Derivatives with Potential as Two-Photon Fluorescent Dyes," Journal of Luminescence 2002, 97, 141-146.
- K. D. Belfield, A. R. Morales, S. A. Andrasik, K. J. Schafer, O. Yavuz, V. M. Chapela, J. Percino**, "Novel Two-Photon Absorbing Polymers," In Functional Condensation Polymers; Carraher, C., Ed.; Kluwer: London, 2002, Ch. 11.
- K. D. Belfield, K. J. Schafer, S. Andrasik, O. Yavuz, E. W. Van Stryland, D. J. Hagan, J. M. Hales**, "Three-Dimensional Two-Photon Imaging in Polymeric Materials," Proc. SPIE - Int. Soc. Opt. Eng., 2002, 4459B, 281-289.
- K. D. Belfield, K. J. Schafer**, "Deep Curing via Near-IR Two-Photon Induced Thiol-Ene Polymerization," Polymer Preprints 2002, 43(1), 83-84.
- K. D. Belfield, K. J. Schafer, S. J. Andrasik**, "Three-Dimensional Two-Photon Fluorescence Lithographic Imaging in a New Photoresponsive Polymer," Polymer Preprints 2002, 43(1), 405-406.
- K. D. Belfield, K. J. Schafer**, "Modulation of Optical Properties in New Photosensitive Polymers 3-D Optical Data Storage Media," Polymer Preprints 2002, 43(1), 161-162.
- K. D. Belfield, A. R. Morales, V. M. Chapela, J. Percino**, "Synthesis and Characterization of a Two-Photon Absorbing and Luminescent Aminofluorenyl Polymer," Polymer Preprints 2002, 43(1), 104-105.
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- A. Zoubir, L. Shah, K. Richardson and M. Richardson**, "Technology developments towards the practical use of femtosecond laser micro-materials processing," Proc. SPIE vol. 4760-52 High Power Laser Ablation in Materials, April 2002 (Taos NM).

#### Seminar Presentations:

- P. J. Delfyett**, "Novel Hybrid WDM-OTDM technologies for networking, instrumentation, & signal processing," Frontiers of Photonics, in honor of the 60th Birthday of Prof. Robert R. Alfano, CUNY, New York, NY, November 2001. (INVITED)
- P. J. Delfyett**, "Single & multiwavelength lasers for applications in networking, instrumentation & signal processing," International Semiconductor Device Research Symposium, (ISDRS), (INVITED).
- P. J. Delfyett**, "Demonstration of multiwavelength comb technology for dense WDM applications using Essex Hyperfine Filter technology," Optical Fiber Communication Conference - Technology Forum (2002) (INVITED).
- P. J. Delfyett**, "Semiconductor optoelectronic technologies - a tutorial," for SEO, Orlando, FL February 2002. (INVITED).
- P. J. Delfyett**, "Applications of single and multiwavelength ultrafast diode lasers for commercial applications," SPIE - Photonics West, San Jose, CA, Jan 2002. (INVITED)
- P. J. Delfyett**, "Semiconductor modelocked diode lasers - a tutorial", for DARPA, Orlando, FL April 2002. (INVITED).
- P. J. Delfyett**, "Motivate, Organize & Empower," NSBE Banquet Orlando, FL April (2002)- Key Note Speaker (INVITED).
- S. T. Wu**, "High speed refractive index change," DARPA Molecular Photonics Workshop, (March 6-7, 2002 at Washington DC).
- C.W. Siders**, "Time-Resolved X-ray Diffraction of Ultrafast Melting," Invited Talk, Max-Planck Society Symposium on Future Trends in X-Ray Physics, Max-Planck-Institut für Metallforschung, Stuttgart Germany, February 21<sup>st</sup>, 2002.
- C.W. Siders**, "Femtosecond X-Ray Diffraction Studies of Ultrafast Phase Transitions," Invited Talk, SUNY Stony Brook Department of Physics AMO Seminar, April 30, 2002.
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- C.W. Siders**, "Short Pulse Laser Applications in Ultrafast X-Ray Generation," Invited Talk, Workshop on the Science and Applications of Ultraintense, Ultrashort Lasers (SAUUL), Washington DC, June 17, 2002.



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Lightpath Technologies (Geltech)  
Mr. Charles Gramm  
Infinite Photonics  
Laser Institute of America  
Laser Science Inc.  
Lawrence Livermore National Laboratory  
Microvision Inc.  
Optical Research Associates  
Optium Corp.  
Photonics Spectra  
Solution Technology Inc. / Rodel  
SurgiLight Inc.  
Thermo-Oriel  
Twin-Star Optics, Coatings & Crystals