



Photonics Society of Chinese-Americans

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Special Note:

*Due date for Fellowship nomination is **February 28, 2000**

*Due date for Scholarship application is **February 28, 2000**

President's Message

Dear PSC Members,

Photonic technologies are at the forefront of many major changes that are sweeping the hi-tech industries, especially in communication and its applications. At the Photonics Society of Chinese-Americans, we had predicted more than a decade ago that optical communication would dominate the way information being transmitted. I am proud to say that our members have played a pivotal role in this revolution.

To keep up with the fast changing technologies, interacting with other experts in the field is essential. This year's annual meeting will provide a great opportunity for doing this. It will be held on May 7, the Sunday of the week of the CLEO meeting. The preliminary location is Techmart, next to the Santa Clara Convention Center. It is easy to get to from both San Francisco and San Jose airports and is conveniently located near the Caltrain and light rail stations. Milton Chang, chairman of New Focus, will give a talk. Many other Silicon Valley hi-tech leaders are also invited as speakers. I am sure you will find the day to be worthwhile. We will let you know as soon as our schedule is finalized. Also, you can check our web site at <http://www.psc-a.org/> and the next *Photonics Link* newsletter for updates.

Finances have always been a challenge, and finding financial resources has been a major effort. We made a big step forward last quarter. Ren-Sue Wong, Recording Secretary of PSC, and Gordon Li, Chairman of the Northern California Chapter, have enlisted four companies to advertise in our directory, which will generate three thousand dollars. Even though it is not a lot of money, it is a major milestone and it relieves our financial strain. On behalf of PSC, I would like to thank Ren-Sue and Gordon, and I hope other chapters can do the same.

PSC still faces the challenge of effectively communicating with our members, who are spread across the whole continent. Some of you have suggested having one person in each chapter to coordinate communication with the other chapters and headquarters. The person could be the chapter president, or a person appointed by each chapter or by PSC headquarters. I think it is worth discussing. The main issue here is how to enhance communication so that the whole organization can benefit from the strength of each chapter.

I welcome any suggestions on the above and anything else that would make PSC more useful to you. I can be reached by e-mail: blin@hplabsz.hpl.hp.com or by phone: 650-857-7218 (O), 408-253-7388 (H).

The opto-electronics era has finally arrived. I hope each of us will take advantage of the opportunity.

Enjoy the Year of the Dragon!

Sincerely,
Bob Lin
President of PSC

1999 PSC Officers:

Board of Directors	Dr. Chi. H. Lee (Chair) Dr. Hsing Kung Dr. Shi-Kay Yao	(310) 405-3739 (510) 683-5900x126 (714) 572-6075	chlee@eng.umd.edu hkung@aol.com shikay@aol.com
President	Dr. Bob Lin	(415) 857-7218	blin@spica.hpl.hp.com
First Vice President	Dr. Y.J. Ray Chen	(410) 455-3507	ychen@umbc.edu
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Treasurer	Dr. Yanhua Shih	(410) 455-2558	shih@research.umbc.edu
Corresponding Secretary	Dr. Li Yan	(410) 455-3558	liyang@research.umbc.edu
Recording Secretary	Mr. Ren-Sue Wong	(415) 493-6100x210	ren-sue_wang@hp.com

Special Committees:

Fellowship Committee	Dr. Pochi Yeh	(805) 893-3981	pochi@ece.ucsb.edu
Scholarship Committee	Dr. Chun-Ching Shih	(310) 814-0318	cc.shih@trw.com
Publication Committee	Dr. Chun-Ching Shih Dr. Su-Miau Wu Shih	(310) 814-0318	<u>cc.shih@trw.com</u>

Revised PSC Fellowship Policy

Pochi Yeh

PSC Fellow Policy addendum (revised at PSC'99, Baltimore, MD, 5-23-99)

1. Any regular PSC member, with a minimum of two years of active membership, who has served with distinction in the advancement of optics and photonics is eligible for transfer to the class of Fellow.
2. Only PSC Fellows can submit a Fellow nomination. The nominator is responsible for identifying the candidate's outstanding achievements, the Fellows best qualified to judge the candidate's work to serve as references.
3. The total number of Fellows is limited to 10% of the total membership. The number of Fellows elected each year shall not exceed 1% of the total membership.
4. Any nominee not selected in the first year will automatically be considered in the next two years. Nominators are encouraged to update or augment the nomination materials, if appropriate, prior to the next year's deadline (February 28).
5. Candidates may come from any field, including academia, government and industry. Whatever their careers, candidates must have made an outstanding contribution to the optics and photonics profession. The PSC Fellow Committee and the PSC Board of Directors also seek to recognize practitioners whose work cannot be published because of its proprietary nature, but has tangible results in the form of products, systems and their applications, facilities or services created.
6. Upon completing the nomination form, the nominator must contact at least two references capable of assessing the candidate's contributions. The references must be PSC Fellows. The references cannot be members of the PSC's Board of Directors, the Fellow Committee.
7. Fellow Committee members are appointed by the PSC Board of Directors. The term of appointment is one year, with each member normally serving three successive terms. The main task of the Fellow Committee is to recommend candidates to the Board of Directors, in accordance with the following criteria:
 - * Individual contributions as engineer-scientist, technical leader or educator.
 - * Evidence of technical accomplishment, such as publications, patents and peer recognition.
 - * Confidential opinions of references.
 - * Service to PSC and other professional engineering societies.
 - * Total years in the profession.

Each candidate is rated numerically on the basis of these criteria. The review process can be done via mail or email. The numerical scores are normalized, and candidates are then ranked. Using these rankings, and subject to bylaw limitations on the number of members that may be elected Fellows in any one year, the Committee prepares its final list of candidates for submission to the Board of Directors. The Board acts upon those recommendations at its annual meeting.

Fellow Nomination Form

1. Candidate's Name:
- 2a. Current Position:
- 2b. Employer:
3. PSC Membership since (date):
4. Education:

5. Professional experiences (list employer, position, and dates):

6. Area of Professional Specialization:

7. Professional Accomplishments and Contributions meriting election to Fellowship:

8. Other noteworthy pertinent accomplishments and service:

9. Publications and patents (Attach separate sheet if necessary):

10. Proposed citation (No more than 20 words):

11. Awards and Honors:

Nominated by: _____
signature Date

Name:

Address:

Telephone:

Fax:

E-mail address:

Instruction for sponsor: The primary sponsor must complete the Fellow Nomination Form and arrange with at least two additional individuals for completion of Fellow Reference Forms. You may copy the forms or use your own version of the form with the same format. Please send completed forms before February 28 to: Dr. Pochi Yeh, 405 Camino De Celeste, Thousand Oaks, California 91360. Fax: (805) 493-2255, Email: Pochi@ece.ucsb.edu



The Photonics Society of Chinese-Americans

Announcement

The Sixth Bor-Uei Chen Memorial Scholarship Award by *Chun Ching Shih*, Chair

On behalf of the Bor-Uei Chen Memorial Scholarship Committee, I am pleased to announce that the sixth scholarship will be awarded in the 2000 PSC Annual Meeting in the Bay Area, California. This year, the committee would like to move up the announcement date, so that the prospect candidates have more time to prepare their application. The Committee is now accepting nominations of qualified candidates from any **sponsoring PSC members**. You can copy the nomination form on the next page for your own use and attach any supporting document to demonstrate candidate's achievements in academics and research. Form is also available on PSC web sites: (www.psc-a.org) (www.psc-sc.org) or (www.psc-eoa.org) or send your request directly to me at **cc.shih@trw.com**. The nomination deadline is **February 28, 2000**. Any nominations received after this date will not be considered. Here are some highlights about this memorial scholarship:

1. The purpose of this scholarship is 1) to honor Dr. Bor-Uei Chen for his contributions in photonics and his services to the photonics community; 2) to recognize outstanding graduate students in the field of **optical communications** and **photonic devices**.

2. A scholarship committee, appointed by the PSC Board of Directors, is responsible for making announcements, conducting fund drive, and overseeing the selection process. The members of the first Scholarship Committee include

Chun-Ching Shih (Chair)
Tingye Li
Pochi Yeh

Chinlon Lin
J.Y. Ray Chen
Bob Lin

Hsing Kung
Arthur Chiou
Shui-Lin Chao

3. Each year, the Committee will issue a call for nomination on the October or January issue of *Photonics Link*. The committee will oversee the review process of applications and make recommendations to the PSC Board of Directors for final approval. The winner or winners will be announced on the April issue of *Photonics Link*.

4. The selection of scholarship winners will be based on the merit of candidate's research work, which must be documented by publications on technical journals or conference

presentations and supported by strong recommendation from the candidate's sponsor or advisor.

5. The scholarship award consists of an award certificate and a check of \$1,000. The amount of scholarship and the number of winners may vary, and the Committee reserves the right to make any changes as necessary. The winners in past years include:

1995: Lih-Yuan Lin (UCLA) Jerry Chen (MIT) Yan Sun (Stanford)
1996: Li-Ping Chen (UCLA) Yongan Wu (Stanford) Wei-Chiao Fang (UIUC)
1997: Wenhua Lin (UMBC)
1998: Xiaonong Shen (UCSB) Jianhua Zhao (UCSB)
1999: Ming Li (Rensselaer) Alan Yuan-Chun Hsu (UIUC)

In 2000, the Committee plans to select one or two award winners.

6. The scholarship will be awarded annually and presented at the PSC Annual Meeting. The winners will be invited to give a short presentation about his/her research. They should make every effort to attend the Annual Meeting.

7. Key dates:	December 1, 1999	Announcement on <i>Photonics Link</i> and web sites
	February 28, 2000	Deadline for receiving nomination materials
	March 21, 2000	Review by the PSC Scholarship Committee
	April 1, 2000	Announcement of winner on <i>Photonics Link</i>
	May 7, 2000	Scholarship awarded at the Annual Meeting

The Photonics Society of Chinese-Americans

Dr. Bor-Uei Chen Memorial Scholarship Award Nomination Form

(Attaching a brief resume to this form is recommended)

Full name of nominee _____

Date of birth _____ Place of birth _____

Address _____

Tel _____ Fax _____ e-mail _____

School attending _____

Department _____

Major research areas _____

Degree program _____ Year expected to receive the degree _____

Thesis title (if any) _____

Thesis advisor (if applicable) _____

School of undergraduate _____

Major in undergraduate _____ Graduation year _____

Papers & Patents* _____

Honors & Awards* _____

* Attach a separate sheet if necessary

Other comment (such as special projects, outstanding research achievements, etc.)

Sponsor's name _____ Tel _____

Address _____

Sponsor's signature _____ Date _____

Return this nomination form, together with supporting information, no later than February 28, 2000,
to: Chun-Ching Shih, PSC, 1517 Via Fernandez, Palos Verdes Estates, CA 90274, USA

Photonics Laboratory File

We are pleased to present to you an inside view of a distinguished photonics laboratory under the supervision of Prof. Chi H. Lee in University of Maryland, College Park

Professor Lee's research interest has been in the area of femtosecond lasers and ultrafast optoelectronics. Most of the researches are conducted at the Ultrafast Optoelectronics Laboratory and Laboratory for Atomic, Molecular and Optical Science and Engineering (LAMOSE). The facilities in these two labs include Coherent femtosecond Ti:Sapphire laser oscillator and regenerative amplifier, optical parametric amplifier and all kind of high speed/high bandwidth oscilloscopes and test instruments.

One great advance in science and technology that we have witnessed in the past two decades has been the merging of optics and electronics. One of the most astonishing developments has been the rapid advance in ultrafast optics. As the capacity of information increases, the ability to handle information has to increase as well, creating a demand for high-speed technology. The objective of Professor Lee's research is to use femtosecond optics to generate, control, manipulate, and characterize high-speed/high-frequency electronic signals, devices, circuits and systems. The physical mechanisms through which these tasks can be performed are (1) ultrafast photoconductivity in semiconductors, (2) ultrafast photo-impedance in high-temperature superconductors (HTS); and (3) electro-optics effect in semiconductors and dielectric's. The first two effects allow conversion of ultrafast optical signals into electrical signals; and third, optical probing of materials.

Using photoconductors and short optical pulses, Dr. Lee's group has demonstrated an on-wafer optoelectronic characterization of millimeter-wave circuits (MMICs), with 150 GHz bandwidth in the time-domain, by inventing a near "real-time" (with data acquisition in microseconds) technique with optical-microwave phase-locking. The time resolution surpasses that of the best Tektronix sampling scope (18 ps), and is only limited by the laser pulse duration. With femtosecond laser pulses we can push the bandwidth to terahertz. His group has also demonstrated a new way to generate ultra wide-band millimeter (mm) waves by feeding a laser generated delta-function electrical input to a broad band MMIC amplifier, and optical control of true-time-delay (TTD) phase shifter, which are important for wireless communications using mm waves and sub-terahertz radiations. To construct a broad band mm-wave phased array system, one can activate each element with the fan-out of a high-power fs optical pulse. Using these techniques, spread-spectrum communications, jam-resistance transceiver and TTD beam steering have been demonstrated. Using photoconductive switches as correlator, Lee's group has demonstrated ultrawide-band impulse radio wireless communications in code division format. This will lead to secured wireless communications link with multi-gigabits/s information data rate.

Dr. Lee's group has also studied ultrafast optoelectronic devices with high-temperature superconductors (HTS), using sudden increase in impedance when photons are absorbed and Cooper pairs are broken. The impedance jump is instantaneous. This HTS device is essentially an opening switch, controlled by short laser pulses. With the device integrated as a part of HTS transmission line, square electrical pulses can be formed by laser switching technique. The ultrafast switch has also led to ultra-wideband radiation. In addition to engineering applications, the ultrafast interaction investigation can facilitate the studies of non-equilibrium physics in HTS.

In all these applications, optical drivers (lasers) always set the technology path. To reduce the size and cost of lasers, a research effort has been concentrated in developing compact, ultrafast laser sources, which include semiconductor MQW lasers and diode pumped solid-state lasers. To have a complete research capability in ultrafast optoelectronics and electronics, a new research effort in making high speed MSM photo detector has been added.

With the advent of near field scanning optical microscopy (NSOM) one now can have imaging capability that combines the nanometer spatial resolution of NSOM with the femtosecond temporal resolution. Second harmonic NSOM images are studied using femtosecond laser source.

Dr.Lee's research has been funded by NSF, ARL, NSA, ONR, DARPA and industrial laboratories. You can contact him at chlee@eng.umd.edu or visit his group's web site: <http://www.cec.umd.edu/~chlee>

PSC Member File

A. Y. Cho Honored at Snowbird Quantum Electronics Conference

By Pochi Yeh

Dr. Alfred Y. Cho, a Fellow of our Society, was honored for his outstanding contributions in the area of Molecular Beam Epitaxy (MBE) and its application in Quantum Cascade Lasers at the 30-th Annual Conference on Physics of Quantum Electronics at Snowbird, Utah during January 9-12, 2000. At an elevation of about 10,000 feet, Snowbird and its surrounding areas are known for some of the best snow conditions in the world for skiing. Dr. Cho, also known as Mr. MBE, and Dr. Federico Capasso of Lucent Technologies were the co-recipients of the Lamb Medal for the Year 2000. Dr. Cho pioneered the development of Molecular Beam Epitaxy in 1970's. The technique of crystal growth plays an essential role in the development of semiconductor lasers, including the vertical surface emitting lasers (VCSELs). Currently, 75% of all CD, DVD players are equipped with GaAs lasers grown by MBE. Dr. Cho is a member of the National Academy of Science, National Academy of Engineering, and Academia Sinica. In addition, Dr. Cho is also a recipient of the National Medal of Science.