



*Photonics Society of Chinese-Americans*

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# *The Photonics Society of Chinese-Americans*

## I. Objectives

The Objectives of PSC are to promote friendships and collaborations among Chinese-American engineers and scientists in the field of photonics so that they can enhance their professional and business contributions for better quality of life in this fast changing world.

## II. Tasks

1. Expand memberships to all individuals interested to promote profession and business in the field of photonics.
2. Enhancing communication within the society by organizing technical seminars and publishing newsletters and membership directory.
3. Conducting technical and dinner meetings during major international conferences including SPIE, OPTCON, and CLEO/IQEC, for reporting and reviewing new photonics technologies and business/product developments in different parts of the world and for establishing business contacts and technical exchanges.
4. Organizing annual conferences to promote photonics education, report new progress in photonics, address future photonics marketing directions, and present Achievement Awards to key individuals in the field of photonics.

### **20045PSC Executive Office**

**President**

*Dr. Owen Wu* Global Communication Semiconductors, CA [okwu@gcsincorp.com](mailto:okwu@gcsincorp.com)

**First Vice President**

*Dr. Yung S. Liu* ITRI, Taiwan [liuys@itri.org.tw](mailto:liuys@itri.org.tw)

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**Executive Secretary**

*Jane Xiao* [janeyxiao@aol.com](mailto:janeyxiao@aol.com)

**Corresponding Secretary**

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<i>Gordon Li</i>	<i>Dr. R. S. Liu</i>	<i>Dr. Peter Shih</i>	<i>Ms. Pamela Hsiao</i>	

## *President's Message*

Dear Fellow PSC Members and Colleagues,

I wish you a very health and prosperous year of Rooster in 2005.

The PSC Annual Meeting Organizing Committee has put together an excellent program this year for you prior to OFC Conference in Southern California. Please set aside March 6 for an afternoon and evening networking meeting.

Theme: Hot Business Opportunities in Today's OFC Industry

Location: McDonald-Douglas Auditorium, UC-Irvine

Time: March 6, 2005 (Sunday) 13:00pm – 21:00pm

Welcome to the PSC's 2005 annual meeting.

Sincerely yours,

Owen Wu

President, PSC

[okwu@gcsincorp.com](mailto:okwu@gcsincorp.com)

# 2005 PSC Annual Conference

(<http://www.psc-a.org>)

**Theme:** Hot Business Opportunities in Today's OFC Industry

**Location:** McDonald-Douglas Auditorium, UC-Irvine

**Time:** March 6, 2005 (Sunday) 13:00pm – 21:00pm

**Dinner Meeting: 6:30-9:00pm at China Town Restaurant (Near UC-Irvine)**

The organizing committee will arrange for those companies who register in advance to introduce them to the audience

## Agenda & Invited Speakers:

12:30 ~ 13:00 Registration

13:00 ~ 13:15 Introduction of the Annual Meeting & Newly Elected Officers (Owen Wu, GCS)

13:15 ~ 14:30

The 20 Years of Taiwan's Success in Photonics Industry (Peter Shih, NSC, Taiwan)

Broadband Access and FTTH (Jin Hong, Oplink)

Learning from Deployment of FTTH in Japan and a Comparison with the US (Shoichi Hanatani, Hitachi)

Challenges and Opportunities of Fiber Optic Industry in Building Broadband Networks

(Hong Hou, Emcore)

Recent Trend in Metro-Optical Networks (Winston Way, Opvista)

Panel Discussion

14:30 ~ 14:45 Break

14:45 ~ 16:00

Optical Transceivers for Storage Market (Lee Xu, Intel)

Optoelectronics Components and Packaging for Fiber Optics Transceiver (Hongyu Deng, Finisar)

From Survival to Prosperity (Rang-Chen Yu, Fiberxon)

New Optoelectronic Components for the Current Market (Dick Chen, Archcom Technology)

Transceiver Market (ZY Huang, Photon Technology, China)

Panel Discussion

16:00 ~ 16:15 Break

16:15 ~ 17:30

What are the VC perspectives of Fiber Optics Industry Recovery? (Shoa-Kai Liu, Rustic Canyon Ventures)

Build Value for your Company (HC Lee, JDSU)

What's next for us? (Yan Sun, Onetta)

Contract Manufacturing in China (Bernard Leung, Photonic Manufacturing Services)

Ultra Long Haul Optical Network Technology Development and Deployment (David Chen, MCI)

Panel Discussion

17:30 ~ 18:00 PSC Scholarship Award and Presentation (C.C. Shih)

Award Recipients: Mr. Hsu-Feng Chou UCSB, CA

Mr. Chao-Yuan Chen NCTU, Taiwan

## Registration Fee:

Conference Only: \$30 per person (Student \$15)

Dinner Only: \$30 per person

Conference and Dinner: \$50 per person for conference and dinner (Student \$30)

**For registration, please contact Secretary General before March 3:**

**Jane Xiao [janeyxiao@aol.com]**

## Organizing Committee:

**Owen Wu, Norman Kwong, Chin C. Lee, Allen Fann, Shikay Yao, Janice Shen, Yang Yang, Jane Yang, C. C. Shih, Peter Shih, Pamela Hsiao, Y. S. Liu, HK Liu, Jane Xiao**

# 2005 PSC Annual Conference

(March 6, Sunday, McDonald-Douglas Auditorium, UC-Irvine, CA.)

## Directions to UC-Irvine, CA

### From North:

- b. Take I405 south or I5 south
- c. Exit at Jamboree road
- d. Right on Jamboree
- e. Left on Campus Drive (few miles).
- f. Right on East or west Peltason/Berkeley drive
- g. Reach Los Trancos Drive. Turn right into parking lot 18A.  
Meeting will be held in building 311.

### From South:

- b. Take I405 or I5 north
  - c. Exit at Culver Drive
  - d. Left on Culver Drive
  - e. Right on Campus Drive
  - f. Left on East or west Peltason Drive
  - g. Reach Los Trancos Drive. Turn right into parking lot 18A.  
Meeting will be held in building 311.
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# 2005 PSC Annual Conference

## Registration Form

(Attendants are required to register in advance. Please send registration form before March 3.)

Company	
Name	
Title	
Tel	
E-mail	

Please fill out the form and send to PSC (in USA) Jane Xiao by E-mail: [janeyxiao@aol.com](mailto:janeyxiao@aol.com),  
Or contact PIDA (in Taipei), Ms. Pamela Hsiao, Tel: 886-2-23514026 ext.805, Fax: 886-2-23968513,  
E-mail: [Pamela@mail.pida.org.tw](mailto:Pamela@mail.pida.org.tw).



## *The Photonics Society of Chinese-Americans*

### *The Bor-Uei Chen Memorial Scholarship Award*

*Chun-Ching Shih, Committee Chair*

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**.

- 1. The first scholarships were awarded in the 1995 PSC Annual Meeting at Baltimore, Maryland. A scholarship committee, appointed by the PSC Board of Directors, is responsible for making announcements, conducting fund drive, and overseeing the selection process.**
- Each year, the Committee issues a call for nomination in the October issue of *Photonics Link* and on PSC websites. The Committee determines and oversees the review process of applications and makes recommendations to the PSC Board of Directors for final approval. The winner or winners are announced on a latter issue of *Photonics Link*.
- The selection of scholarship winners is 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 recommendations from the candidate's sponsor and advisor.
- 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 scholarships are awarded annually and presented at the PSC Annual Meeting. The winners are also invited to give a short presentation about his/her research. 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)	
2000: (No Recipients)		
2001: Xiaomin Jin (UIUC)	Sheng-Kwang Hwang (UCLA)	
2002: Shuo Tang (UCLA)		
2003: How-Foo Chen (UCLA)	Chih-Hao Chang (UC Berkeley)	
2004: Fan-Yi Lin (UCLA)	Shun-Der Wu (Georgia Tech)	

In 2005, the Committee has selected two outstanding students, **Hsu-Feng Chou** of UCSB and **Chao-Yuan Chen** of National Chiao-Tung University, Taiwan, to receive the Bor-Uei Chen Memorial Scholarship.

# Hsu-Feng Chou

6671 Berkshire Terrace #2, Goleta, CA 93117 • Hsu-Feng.Chou@ieee.org • (805)968-1266, (626)688-3895

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**Education**     **Ph.D. Candidate in Electrical and Computer Engineering**  
University of California, Santa Barbara. Estimated Graduation: June 2005  
Thesis Advisor: Prof. John E. Bowers  
**Master of Science in Electro-Optical Engineering**  
National Taiwan University, Taipei, Taiwan. June 1998  
**Bachelor of Science in Physics**  
National Taiwan University, Taipei, Taiwan. June 1996

## Research Experience

### Optical Time-Division Multiplexing (OTDM)

- Designed and implemented compact optoelectronic sub-systems based on traveling-wave electroabsorption modulators (TW-EAMs) for 160-Gb/s+ OTDM systems with a 40-Gb/s or 10-Gb/s ETDM base rate
- Proposed and analyzed a *standing-wave enhanced mode* of TW-EAM as an electrically- driven optical gate with improved E-O response
- First demonstration of a 160-Gb/s add-drop multiplexer (ADM) with a 40-Gb/s base rate using standing-wave enhanced TW-EAMs in a compact and integrable configuration
- First demonstration of a single-stage EAM-based 160- to 10-Gb/s optical demultiplexer

### Optical Clock Recovery

- Proposed and demonstrated simultaneous clock recovery and demultiplexing in a 160-Gb/s OTDM receiver by utilizing microwave harmonic frequencies in a TW-EAM
- Modeling of pre-scaled clock recovery based on an optoelectronic phase-locked loop, which is the most adopted technique for OTDM clock recovery
- Analyzed a novel TW-EAM-based microwave ring oscillator and demonstrated optical clock recovery from 40-Gb/s continuous and packet data using this innovative technique

### Wavelength Conversion and Optical 3R regeneration

- Invented a *photocurrent-assisted wavelength converter* (PAW-Converter) using a TW-EAM with additional electrical monitoring capability for advanced WDM networks
- Demonstrated an RF-driven PAW-Converter to increase the conversion speed for RZ data format, which also provided effective re-shaping and re-timing functionalities
- Proposed and demonstrated a *compact optical 3R regenerator* (PAW-Regenerator) based on the concepts of RF-driven PAW-Converter and the TW-EAM-based ring oscillator
- Also proposed and demonstrated is a *simplified optoelectronic 3R regenerator*, utilizing the nonlinear electro-optical transfer function of a TW-EAM to eliminate electrical signal processing circuits in conventional optoelectronic regenerators

### Quasi-Phase-Matched Second-Order Nonlinear Effects (M.S. research)

- Proposed and evaluated an iterative finite-difference beam propagation method (IFD-BPM) for modeling second-order nonlinear effects such as DFG and SHG
- Designed and fabricated periodically-poled lithium niobate (PPLN) for diode-pumped quasi-phase-matched tunable infrared generation

**Lab Skills**     Design of sub-systems for optical fiber communications. Optical and microwave characterizations of optoelectronic devices. Transmission and bit-error-rate evaluations of components and sub-systems. Optical alignment and microwave packaging of optoelectronic devices. Jitter measurement of optical signals. Design of optoelectronic phase-locked loops for clock extraction. Standard photolithography techniques.

**Publications**     Authored and co-authored *twenty-one* peer-reviewed international publications and *twenty-two* presentations at international conferences, including a first-author post-deadline paper on ADM in OFC'04 and an invited talk on OTDM in ECOC'04. Contributed one article in *Encyclopedia of Modern Optics*.

# Chao-Yuan Chen

Department of Photonics & Institute of Electro-Optical Engineering  
National Chiao Tung University, Hsinchu, Taiwan, R.O.C.

Phone: 886-3-5131560; Fax: 886-3-5725230; E-mail: cychen.eo89g@nctu.edu.tw

## Education

- 9/2001 – present      **Ph.D. Candidate** in Institute of Electro-Optical Engineering, National Chiao Tung University, Hsinchu, Taiwan, R.O.C.
- 9/2000 – 6/2001      **M.S.** in Institute of Electro-Optical Engineering, National Chiao Tung University, Hsinchu, Taiwan, R.O.C.
- 9/1996 – 6/2000      **B.S.** in Department of Electrophysics, National Chiao Tung University, Hsinchu, Taiwan, R.O.C.

## Honor and Award

- 2005    ✓ Winner of the National Science Council Scholarship Competition to pursue advanced research in the U.C. Berkeley Physics Department
- 2004    ✓ ZyXEL Communications Corporation, Scholarship of S.Y. Zhu
- 2003    ✓ Best Paper Award in Optics and Photonics Taiwan
- 2000 – 2003 ✓ Dean's List & Graduate Assistantship, Inst. of Electro-Optical Engineering, National Chiao Tung University

## Publications

1. R.P. Pan, C.Y. Chen, T.R. Tsai, and C.L. Pan, *Terahertz Phase Shifter with Nematic Liquid Crystal in a Magnetic Field*, Mol. Cryst. Liq. Cryst., **421**, 157, 2004.
2. C.Y. Chen, C.F. Hsieh, Y.F. Lin, R.P. Pan, and C.L. Pan, *Magnetically Tunable Room-Temperature  $2\pi$  Liquid Crystal Terahertz Phase Shifter.*, <http://www.opticsexpress.org/abstract.cfm?URI=OPEX-12-12-2625>, Optics Express, **12**, 2630, 2004. (Selected by the *Virtual Journal of Ultrafast Science*, September 2004, <http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=VIRT05000003000009000085000001&idtype=cvips&gifs=Yes>)
3. R.P. Pan, Y.P. Lan, C.Y. Chen, and C.L. Pan, *Liquid Crystal Element for Fine Tuning of Laser Wavelength*, Mol. Cryst. Liq. Cryst., **413**, 499, 2004.
4. R.P. Pan, T.R. Tsai, C.Y. Chen, C.H. Wang, and C.L. Pan, *The Refractive Indices Nematic Liquid Crystal 4, 4'-n-pentylcyanobiphenyl in the THz Frequency range*. Mol. Cryst. Liq. Cryst., **409**, 137, 2004.
5. C.Y. Chen, T.R. Tsai, C.L. Pan, and R.P. Pan, *Room Temperature THz Phase Shifter Based on Magnetically Controlled Birefringence in Liquid Crystals*. Appl. Phys. Lett. **83**, 4497, Dec. 2003.
6. Y.P. Lan, C.Y. Chen, R.P. Pan, and C.L. Pan, *Fine Tuning of a Diode Laser Wavelength with a Liquid Crystal Intracavity Element*. Opt. Eng. **43**, 234, Jan. 2004.
7. T.R. Tsai, C.Y. Chen, R.P. Pan, C.L. Pan, and X.-C. Zhang, *Room Temperature Electrically Controlled Terahertz Phase Shifter*. IEEE Microwave Wireless Comp. Lett. **14**, 77, Feb. 2004.
8. R.P. Pan, T.R. Tsai, C.Y. Chen, and C.L. Pan, *Optical Constants of Two Typical Liquid Crystals 5CB and PCH5 in the THz Frequency Range*, J. Bio. Phys., **29**, 335, 2003.
9. T.R. Tsai, C.Y. Chen, C.L. Pan, R.P. Pan, and X.-C. Zhang, *THz Time-Domain Spectroscopy Studies of the Optical Constants of the Nematic Liquid Crystal 5CB*. Appl. Opt. **42**, 2372, May 2003.

## Patent

- Ci-Ling Pan, Ru-Pin Chao and Chao-Yuan Chen, *Terahertz Phase Shifter or Retarder Based on Magnetically Controlled Birefringence in Liquid Crystals*, R.O.C. patents filed (July 29, 2003), No. 92120650; US patents filed (November 2003), No. 10-706,097.

# *PSC-EOA December 2004 Seminar*

*Yalan Mao*

**Title:** H.264 Video Coding Standard Introduction - With Arithmetic Coding Overview  
**Time:** 10:00 am, Saturday, 12/11/04  
**Location:** Stanford University CIS Building (Center for Integrated Systems), # 101 (Cypress auditorium)  
**Speaker:** Dr. Joe-Ming Cheng and His Team  
**Fee:** Member free, \$10 for non-member, \$5 for student

## **Abstract:**

The H.264/AVC (Advance Video Coding) is the latest video-coding standard established by the joint ITU-T and ISO/IEC MPEG groups. The goals of this new standardization were ambitious: (1) to develop a simpler and straightforward video coding platform; (2) to offer enhanced compression performance at improved visual quality, and (3) more "network-friendly" video representation. H.264/AVC has achieved significant improvement in the rate-distortion efficiency, and provides, typically, factor of two in bit-rate savings when compared with existing MPEG-2 Video.

This short course reviews the H.264 major sub-functional units, and discusses the use of integer transform, motion-compensation, deblocking filter, and binary arithmetic coding with its use of adaptive contexts. Life demonstration of video encoding will be given. The software execution workload call-graph analyses will be reviewed for possible efficient SW/HW implementations. Arithmetic coding, contrasting to Huffman coding, is an extremely powerful and yet largely unknown coding method. This class will review and discuss the base of Arithmetic coding in depth. Coding efficiency of Arithmetic coding and Huffman coding will be discussed. The use of adaptive context and approximated-counting state machine will be outlined.

## **Speaker Bio:**

Pi Sheng Chang, Ph.D. (IEEE S'88-M'98-SM'04) received the B.S. degree from Federal University of Rio de Janeiro, Rio de Janeiro, Brazil, in 1988, the M.S. degree from Pontifical Catholic University, Rio de Janeiro, in 1990, and the Ph.D. degree from University of California, Los Angeles, in 1998, all in electrical engineering.

From 1994 to 1996, he was Research Assistant with the Department of Neurology, UCLA, where he worked on eye movement studies. From 1996 to 2000, he was with VTEL Corporation, Sunnyvale, CA, working on acoustic echo cancellation and talker localization using microphone arrays. Since 2000, he has been with Cisco Systems working on VoIP. He is also Adjunct Professor of the Department of Computer Engineering at Santa Clara University and Vice-Chair of IEEE Signal Processing Society, Santa Clara Valley Chapter.

His current interests include audio and video processing and coding, VoIP, FoIP, adaptive signal processing and array processing with applications to acoustics, echo cancellation, microphone arrays and spectral and DOA estimation.

Joe-Ming Cheng is a member of performance analysis team at Hitachi Global Storage Technology and is also a part-time faculty member of San Jose State University. He has worked at IBM Research and Development laboratories for 25 years on data compression algorithm and high-performance IC engine developments. He also worked on SOC, storage system, embedded system, and design automation tool developments. He received an Outstanding Innovation Award and an Outstanding Achievement Award from IBM. He also worked on guidance system and air-borne CPU developments. Dr. Cheng received an M.S. in Scientific (Biomedical Electronics) Instrumentation, UC Santa Barbara, 1975; and a Ph.D. in Computer Engineering, UC Santa Cruz, 1996. He holds eight issued U.S. Patents.

# ***PSC-EOA January 2005 Seminar***

*Yalan Mao*

**Title:** Applications of Fiber Optics for Test and Measurement  
**Time:** 10:00 am, Saturday, 1/8/05  
**Location:** Stanford University CIS Building (Center for Integrated Systems), # 101 (Cypress auditorium)  
**Speaker:** Dr. Yan Yin  
**Fee:** Member free, \$10 for non-member, \$5 for student

## **Abstract:**

Fiber Optics not only can be used for communications, but also can be used for measuring various parameters in many fields. This talk summarizes those applications and will also give detail descriptions to some of the applications.

## **Speaker Bio:**

Dr. Yan Yin is formerly Associate Professor of Accelerator Physics for the National Synchrotron Radiation Laboratory at the University of Science and Technology of China, Hefei, P.R.China. Was working at Stanford Synchrotron Radiation Laboratory and Stanford Linear Accelerator laboratory, at the Synchrotron Radiation Center at Wisconsin University at Madison, Wisconsin, and at TRIUMF, the University of British Columbia, Vancouver, Canada.

She is the founder of YY Labs, Inc. She has received SBIR (small business innovation research) Phase I award from the US Department of Energy in YY Labs. After successfully completed the Phase I project by doing a bench test to prove the principle, she received Phase II award. She was the principal investigator of the project. She co-founded Pine Photonics Communications, Inc. She was also VP Technology of Pine Photonics.

# *PSC-EOA February 2005 Seminar*

*Yalan Mao*

**Title:** Highlights of recent progress in GaN-based light emitting devices  
**Time:** 10:00 am, Saturday, 2/12/05  
**Location:** Stanford University CIS Building (Center for Integrated Systems), # 101 (Cypress auditorium)  
**Speaker:** Prof. S. C. Wang 王興宗教授  
**Fee:** Member free, \$10 for non-member, \$5 for student

## **Abstract:**

This talk will present the recent progress in GaN-based light emitting devices and materials. Topics to be discussed includes GaN-LED on Cu substrate, large area high power GaN LED, GaN vertical cavity light emitters, GaN quantum dots, GaN MQW quantum confined structures and future prospect of GaN-based light emitting devices and its potential applications.

## **Speaker Bio:**

Professor S.C. Wang received the B.S. degree from National Taiwan University, Taiwan, in 1957, the M.S. degree from National Tohoku University, Sendai Japan in 1965, and the Ph.D. from Stanford University in 1971, all in Electrical Engineering.

He has an extensive professional career both in the academic and industrial research institutions for over thirty years. He was a faculty member of Institute of Electronics of National Chiao Tung University (NCTU), Hsinchu, Taiwan from 1965-67 where he established the first university laser laboratory and fabricated the first homemade He-Ne laser in Taiwan. From 1967 to 1971 he conducted the Ph.D thesis research on frequency stabilization of rare gas lasers at Stanford University From 1971-74 he served as a Research Associate with Professor A. E. Siegman of Stanford University and demonstrated the first white light laser that simultaneously emits three prime color in red, green and blue from a single hollow cathode laser. From 1974 to 1985, he was a senior research scientist at Xerox Corporation developing white light laser and blue laser for color and high-speed imaging processing applications, and investigation of GaAs diode lasers for compact diode laser printers, and has received numerous awards from Xerox for his technical accomplishments.

From 1985 to 1995, he joined Lockheed-Martin Palo Alto Research Laboratories as Senior Research Scientist and later Consulting Scientist conducting research on GaAs vertical cavity surface emitting lasers (VCSELs) and diode-pumped solid-state lasers. He developed the low threshold current GaAs VCSEL and demonstrated first monolithic integration of GaAs VCSEL with MSFET. He also engaged in the research on diode-pumped self-frequency doubling blue and green solid-state lasers. Since 1995 he rejoined National Chiao Tung University as a Visiting Professor of Institute of Electro-Optical Engineering. He served as the Principal Investigator of two National Projects on Photonics and Nanotechnology and has made numerous scientific accomplishments.

Professor Wang was elected a Fellow of the Optical Society of America for his pioneering development of white light gas lasers and low threshold surface emitting semiconductor lasers in 1997. He was awarded the Outstanding Scholar Award from the Foundation for the Advancement of Outstanding Scholarship in 2000. He received 2003 Micro-Optics award for his distinguished works and contributions to develop and to promote Microoptics technologies. He has published over 200 technical papers and has been awarded twenty patents internationally on the laser devices.