Details of Chapter activities since last report

1. Guest lectures

We organized series invited lectures on topics of “Nano-Phtonics”. Finance supported by NTU and local companies.

Date: 04/21/2005

Speaker: Prof. Yin Yeh (University of California, Davis), Chair, Designated Emphasis in Biophotonics, UCD, Associate Director, NSF Center for Biophotonics Science and Technology

His Title is: Novel Optical Techniques for the Study of Single Molecules and Single Cells.

Abstract: Optical techniques have advanced to the point that they have become tools for examining single biological molecules during their time of functioning, either in vitro or in vivo.

I will discuss two studies currently being carried out by my group. In one single chromophore fluorescence correlation spectroscopy is used to characterize biomolecular reactive stoichiometry. In the other, optical trapping Raman spectroscopy is used to identify specific membrane structures associated with cellular functional changes.

Optical tools for cellular function and dynamics study:

- Fluorescence correlation spectroscopy
- Fluorescence resonant energy transfer (FRET)
- Optical trapping microscopy

Total internal reflection fluorescence microscopy (TIRFM)
Bio-photonics

Prof. Yin Yeh (Univ. of California, Davis)
Chair, Designated Emphasis in Biophotonics, UCD
Associate Director, NSF Center for Biophotonics Science and Technology

Novel Optical Techniques for the Study of Single Molecules and Single Cells

2005-4月20日星期六 20:00-22:00
地点: 台湾大学综合科学中心教学论坛
Room 101, Combined Science and Physics Building, NTU
**Date:** 5/31/2005  

**Speaker:** Prof. Jen-Inn Chyi, Prof., Department of Electrical Engineering, National Central University, Chair of National Central University Optical Science Center. His title is: Semiconductor Quantum dots for Classical and Quantum Light Emitters.

**Abstract:**
Application of Quantum Dots.
Overgrowth on InAs Quantum Dots.
Single photon source.
Quantum Dots photonic crystal nanocavity.

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**Date:** 6/3/2005  

**Speaker:** Dr. Peter Török, University Lecture in Photonics, Department of Physics, Imperial College of Science and Medicine. His Title is: Achieving high data densities by multiplexing in optical data storage

**Abstract:**
The possibility of increasing storage density in DVDs and BluRay (BD) systems by means of either optical super-resolution or multiplexing has been investigated and this presentation provides an overview of interim conclusions. Multiplexing in optical data storage may be regarded as one of the ultimate steps development could take to achieve the terabyte mark in storage capacity. The talk also describes a rigorous model that we have developed to characterize the optical system of DVD/(BD) systems.
Date: 6/3/2005

Speaker: Prof. Kuan-Ren Chen, Professor of Physics, National Cheng Kung University. His Title is: On enhanced transmission and directional beaming of light in sub-wavelength aperture(s).

Abstract:

Light transmission in sub-wavelength aperture(s) can be strongly enhanced due to surface plasmon resonance. This removes the fundamental size constraint in manipulating light. The diffraction limitation can be overcome by grating at the exit side for producing a directional beaming in a sub-wavelength aperture. In this report on the nano-optics monthly meeting, we will review the research in this area and present our preliminary FDTD simulation results.
2. Job Fairs: (Co-sponsored by NTU)

We had a regular job fair in National Taiwan University on 21 May. Our members showed their works to attendants and communicated with them.
3. Attendance at SPIE meetings:

Two members of our chapter attended Photonics Asia 2004 in Beijing, and presented their works in the conference.

- Tai Chi Chu had an oral presentation “Optical properties of embedded scatters in AgO\textsubscript{x} -type super-resolution near-field structures” (5643-12), at the conference.

- Yuan Hsing Fu had an poster presentation, “Nonlinear optical properties of the Au-SiO\textsubscript{2} nanocomposite thin film” (5646-102), at the conference.
4. SPIE grants and scholarships received by Chapter members:

Yuan-Hsing Fu: Travel Funding Award to SPIE’s Optics & Photonics / 50th Annual Meeting in San Diego