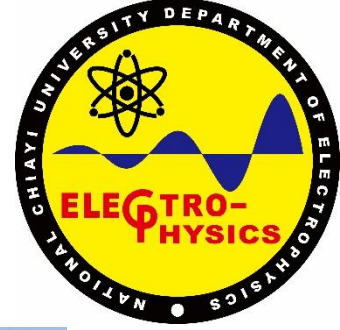




National Chiayi University

Department of Electrophysics



Department of Electrophysics at NCYU

- faculty members: 13
Professor: 11
Associate Professor: 2
Assistant Professor: 1
- students: under: 173
master: 13,



Building 1



Building 2

Facilities & Instruments



SEM



**Semiconductor measurement
system**



Mask Aligner



Photoluminescence



**Thin film
X-Ray Diffractometer**



Clean room

Optoelectronics Science Faculty 光電領域師資



黃俊達特聘教授
Distinguished Professor
Jun-Dar Hwang
Photodetector, Solar cell
Semiconductor materials
and ULSI technology



蔡明善教授
Professor Ming-Shan Tsai
Liquid Crystal Device
Colloidal Crystal
Microcontroller Unit



陳思翰教授
Professor Sy-Hann Chen
Scanning Probe
Microscopy ; Polymer
Light-Emitting Diode



許芳文教授
Professor Fang-Wen Sheu
Laser Physics, Ultrafast
Optics, Optoelectronics,
Nonlinear Optics, Optical
Solitons, Optical Tweezers



陳慶緒教授
Professor Ching-Hsu Chen
Laser Physics, Quantum
information



高柏青教授
Professor Po-Ching Kao
Organic Semiconductors,
Optoelectronic Material
Processing, Nanoimprint
Technology



陳挺煒助理教授
Assistant Professor Ting-Wei Chen
Polariton physics, laser dynamics



黃俊達 教授 Professor **Jun-Dar Hwang**, PhD.

Research Area: Optoelectronic semiconductor devices

Photodetector, Solar cell

Semiconductor materials and ULSI technology

Tel: [+886-5-271-7958](tel:+886-5-271-7958), E-mail: jundar@mail.ncyu.edu.tw

- (1) Optoelectronic semiconductor devices, including photodetector and solar cell
- (2) Semiconductor materials, including Si, ZnO, MgZnO, NiO, and MgO
- (3) Electronic semiconductor devices, including p-n diode, Schottky diode, and MOS capacitor





蔡明善 教授 Professor **Ming-Shan Tsai**, PhD.

Research Area: Liquid Crystal Device

Colloidal Crystal

Microcontroller Unit

Tel: +886-5-271-7955, E-mail: mstsai@mail.ncyu.edu.tw

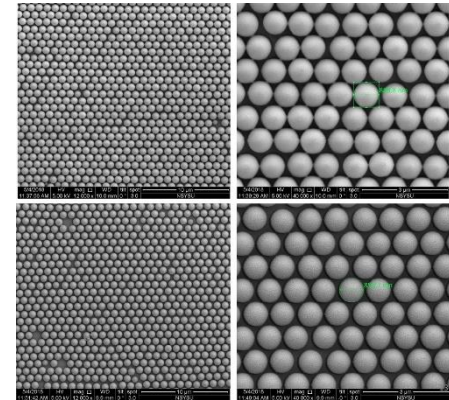
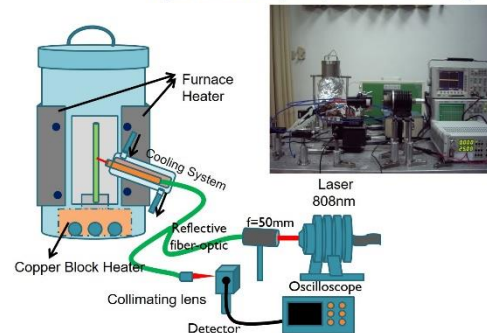
Research Interests:

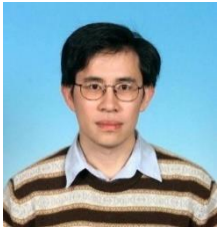
- (1) Liquid crystal display, Grating, Retarders and other optical devices.
- (2) Nanosphere lithography, Templates for epitaxial growth, and optical devices
- (3) Measurement for automatic control



◆ Experiment Setup

Experimental setup of dynamic reflection signals





陳思翰 教授 Professor **Sy-Hann Chen**, Ph.D.

Research Area: Scanning Probe Microscopy ; Polymer Light-Emitting Diode

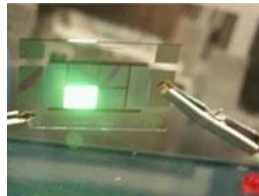
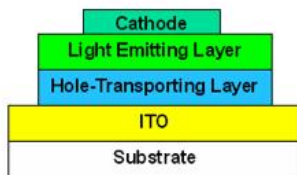
Tel: +886-5-271-7992 , E-mail: shchen@mail.ncyu.edu.tw

Research Interests :

◆ Scanning Probe Microscopy



◆ Polymer Light-Emitting Diode



Publications :

- Langmuir 35(47), pp. 15114-15120. diodes,”
3. **S.-H. Chen***, Y.-H. Shih, Y.-R. Li, P.-K. Wei, C.-F. Yu, C.-Y. Huang, 2019, Sep., “Polymer LEDs with improved efficacy via periodic nanostructure-based aluminum,” *Opt. Lett.* 44(17), pp. 4327-4330.
4. **S.-H. Chen***, C.-L. Huang, B.-H. Cheng, H.-J. Ku, H.-I. Hsiao, P.-C. Kao, 2019, Feb., “Enhanced device performances of blue-emitting PLEDs coupled with silver-nanoicosahedrons,” *Part. Part. Syst. Char.* 36(2), 1800376.
5. **S.-H. Chen***, C.-L. Huang, C.-F. Yu, G.-F. Wu, Y.-C. Kuan, B.-H. Cheng, Y.-R. Li, 2017, Sep., “Efficacy improvement in polymer LEDs via silver-nanoparticle doping in the emissive layer,” *Opt. Lett.* 42(17), pp. 3411-3414.
6. **S.-H. Chen***, C.-W. Su, L.-H. Chang, T.-H. Tsai, 2017, Jul., “Differences in the nanoscale electrical properties of GaN films grown on sapphire and ZnO substrates by molecular beam epitaxy,” *Microsc. Res. Techniq.* 80(7), pp. 731-736.
7. **S.-H. Chen***, C.-F. Yu, C.-S. Chien, 2017, Jul., “Nanoscale electrical properties of ZnO nanorods grown by chemical bath deposition,” *Microsc. Res. Techniq.* 80(7), pp. 671-679.
8. **S.-H. Chen***, C.-F. Yu, C.-J. Wang, S.-H. Chen, Y.-D. Chen, T.-C. Chen, C.-F. Lin, 2016, Nov., “Light enhancement of plasmonic nano-structure for PLEDs at RGB wavelengths,” *Org. Electron.* 38(11), pp. 337-343.

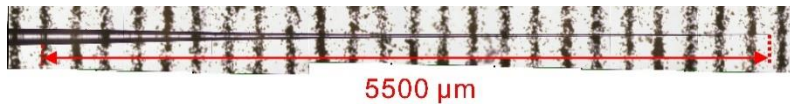
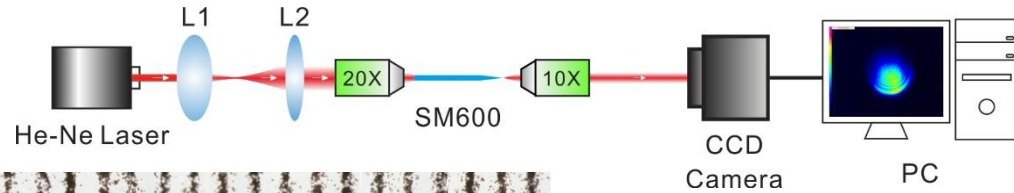


許芳文 教授 Professor **Fang-Wen Sheu**, PhD.

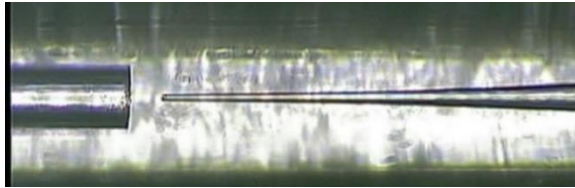
Research Area: Laser Physics, Ultrafast Optics, Optoelectronics, Nonlinear Optics, Optical Solitons, Optical Tweezers

Tel: +886-5-271-7993, E-mail: fwsheu@mail.ncyu.edu.tw

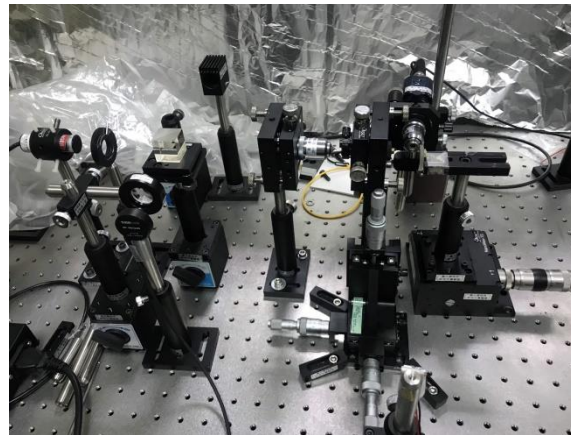
Research Interests:



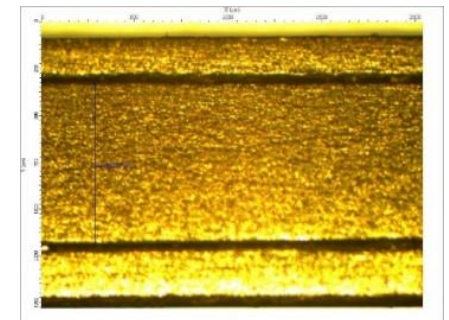
The Diffraction Patterns of the Output Light from the Tapered Fiber Tips



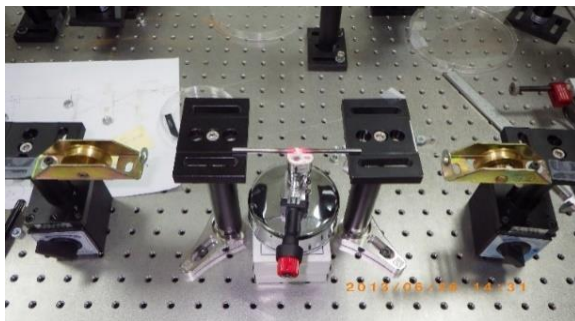
The Making of a Fiber Tip Vibration Sensing Device



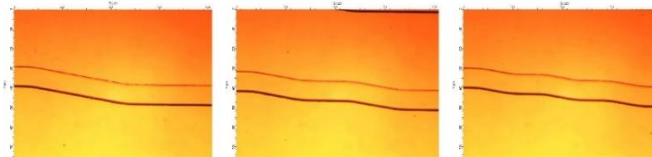
Fabrication and Analysis of Polymer Optical Fiber Lenses



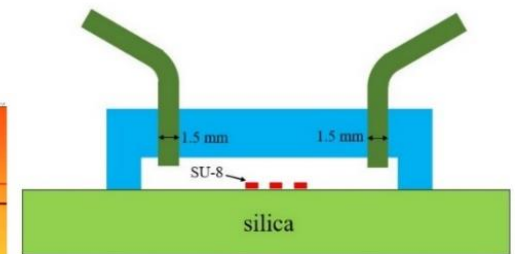
Surface Plasmon Resonance Fiber-Optic Sensors



Tapered Fiber Probe Fusion-Stretching System



Fabrication of Bent-Shaped Photoresist Waveguide Biosensors



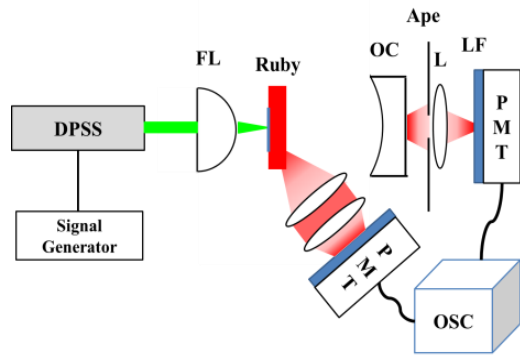


陳慶緒 教授 Professor **Ching-Hsu Chen**, PhD.

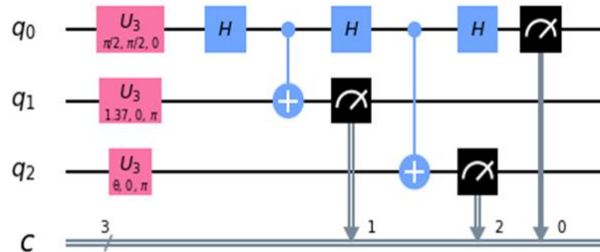
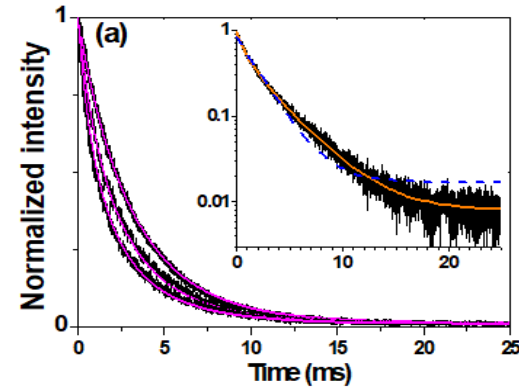
Research Area: Laser Physics, Quantum information

Tel: +886-5-271-7412, E-mail: chchen@mail.ncyu.edu.tw

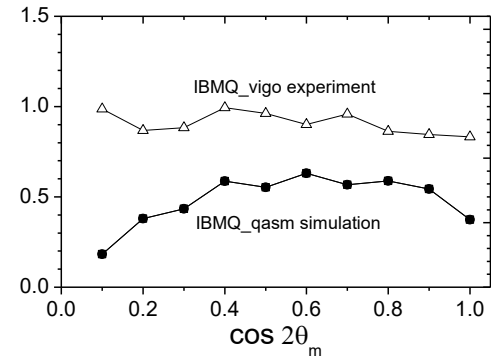
Research Interests: Laser dynamics, Quantum entanglement, Uncertainty relations



The apparatus for observing the cavity-sensitive ASE.



The quantum circuit for studying uncertainty relation.





•高柏青教授 Professor **Po-Ching Kao**, PhD.

Research Area: Organic Semiconductors, Optoelectronic Material Processing, Nanoimprint Technology

Tel: +886-5-271-7416, E-mail: pckao@mail.ncyu.edu.tw

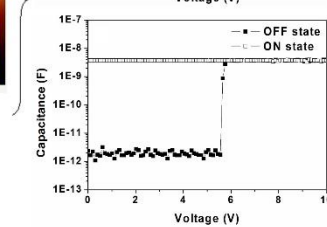
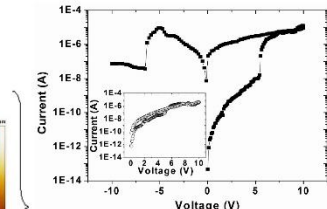
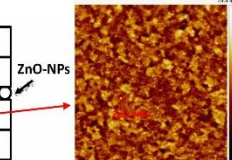
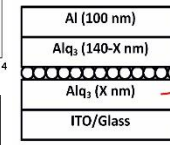
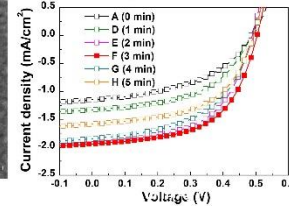
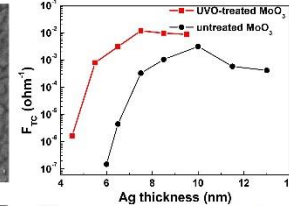
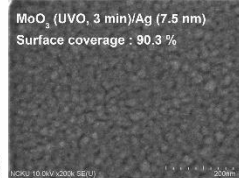
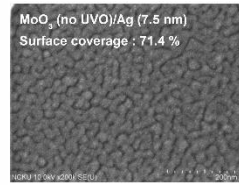
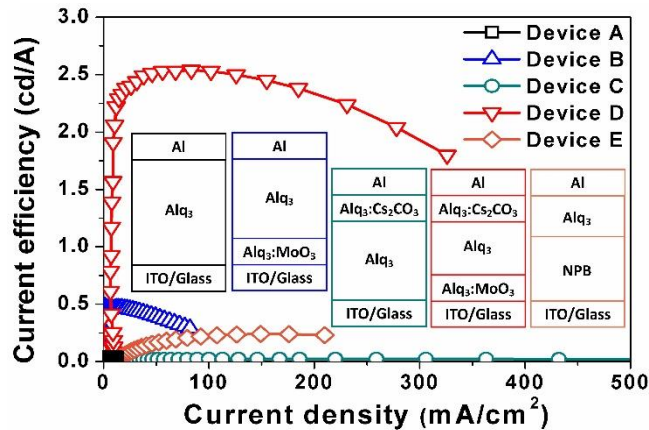
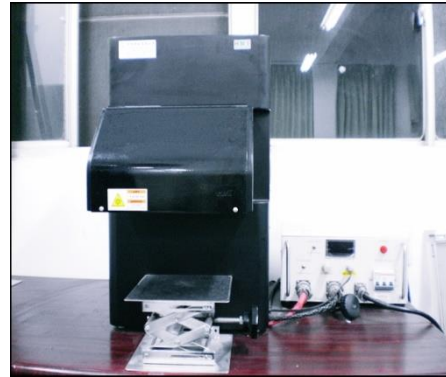


Research Interests:

1. Organic light-emitting diodes

2. Organic solar cells

3. Organic memories



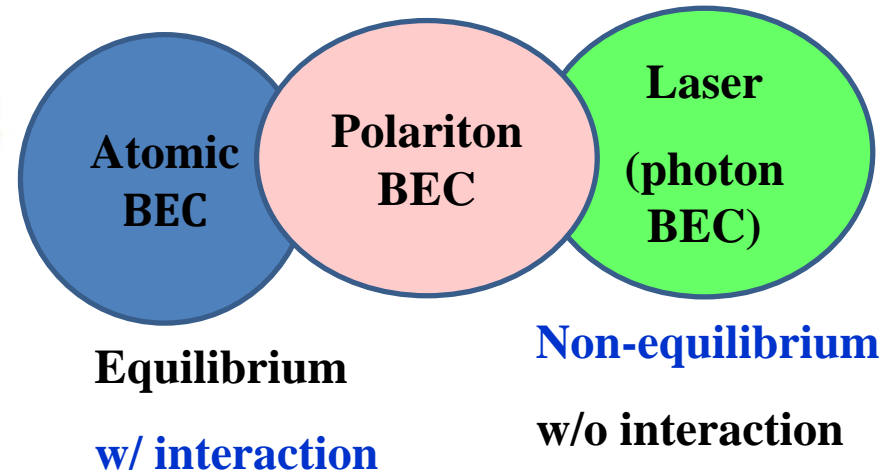
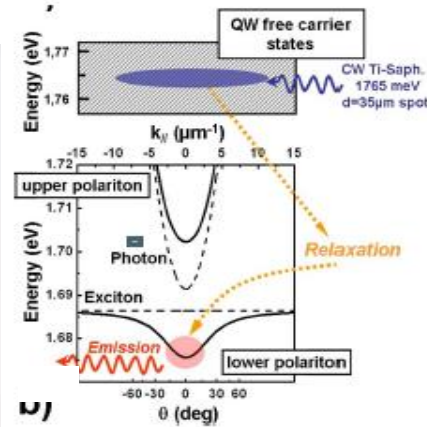
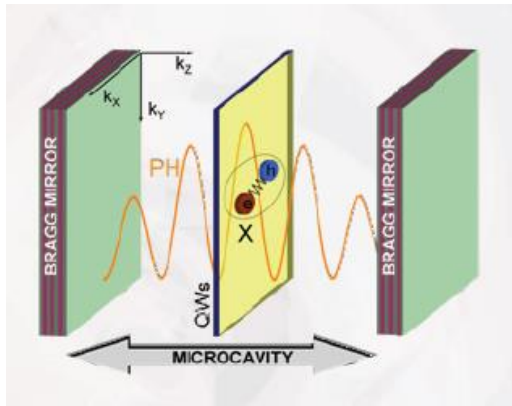


陳挺煒 專案助理教授 Project Assistant Professor **Ting Wei Chen, Ph.D**

Research Area: Polariton physics, laser dynamics

Tel: +886-5-271-7906, E-mail: twchen@mail.ncyu.edu.tw

Polariton BEC



Research Interests:

- ① Non-equilibrium exciton-polariton condensates and polariton BEC.
- ② Physical phenomena of spinor exciton-polariton condensates.
- ③ Optical manipulation of polaritonic topological structures.
- ④ Polaritonic compact gap solitons and edge states in flat bands.
- ⑤ Half vortices and half solitons.

Semiconductor Faculty 半導體領域師資



李宗隆 教授
Professor Tsung-Lung Li
Computational physics



鄭秋平 教授
Professor Chiu-Ping Cheng
Synchrotron-Radiation
Photoemission, Surface
Physics, Condensed State
Physics



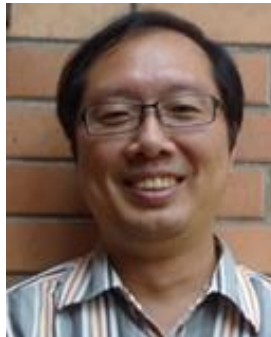
洪一弘 教授
Professor Ie-Hong Hong
Nanomaterials
Nanofabrication
Molecular Electronics



蘇炯武 教授
Professor Chiung-Wu Su
Magneto-optics
Ultrathin Film Material
STEAM Education



余昌峰 教授
Professor Chang-Feng Yu
Pulsed laser deposition
Electronic ceramic



林立弘 副教授
Associate Professor Li-Hung Lin
The magnetoelectrical and optical
properties of semiconductor
quantum structures



陳穗斌 副教授
Associate Professor Sui-Pin Chen
Spintronics



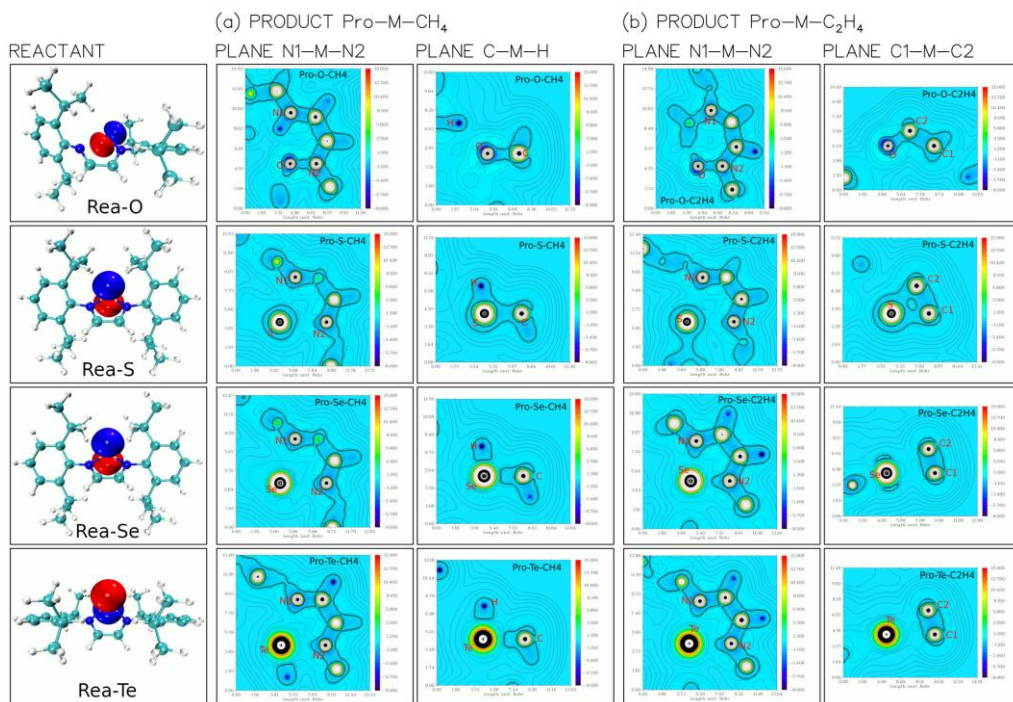
李宗隆 教授 Professor Tsung-Lung Li, Ph.D

Research Area: Computational physics.

Tel: +886-5-271-7904, E-mail: quantum@mail.ncyu.edu.tw

Research Interests:

First-principle computations of molecules and solids.





鄭秋平 教授 Professor **Chiu-Ping Cheng**, PhD.

Research Area:

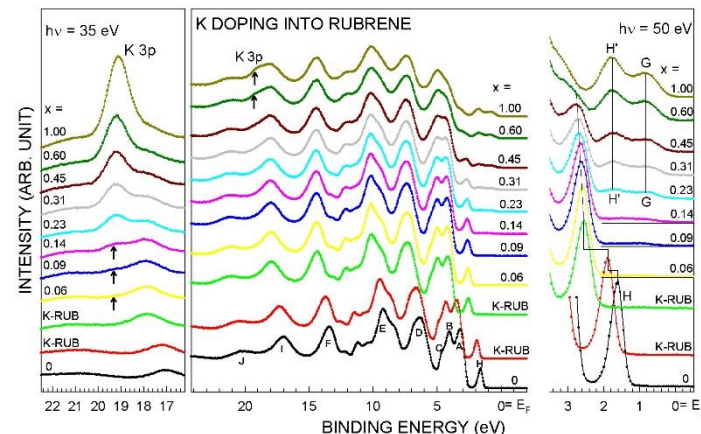
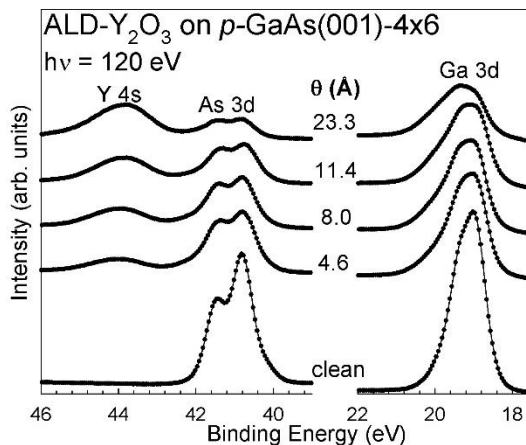
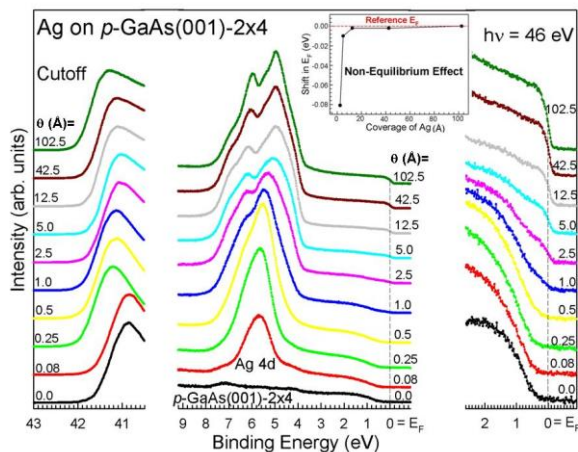
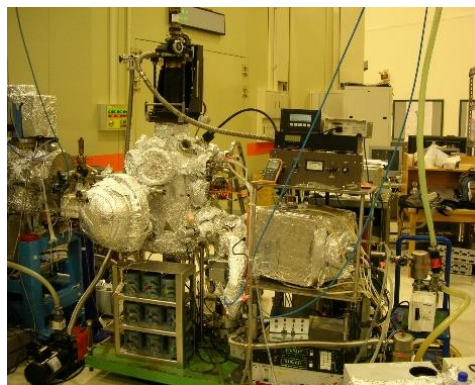
Synchrotron-Radiation Photoemission, Surface Physics, Condensed State Physics

Tel: +886-5-271-7903

E-mail: cpcheng@mail.ncyu.edu.tw

Research Interests:

- (1) Metal-Semiconductor Interfaces
- (2) High- κ Oxides-Semiconductor Interfaces
- (3) Organic-Inorganic Interfaces
- (4) Schottky Barrier Heights





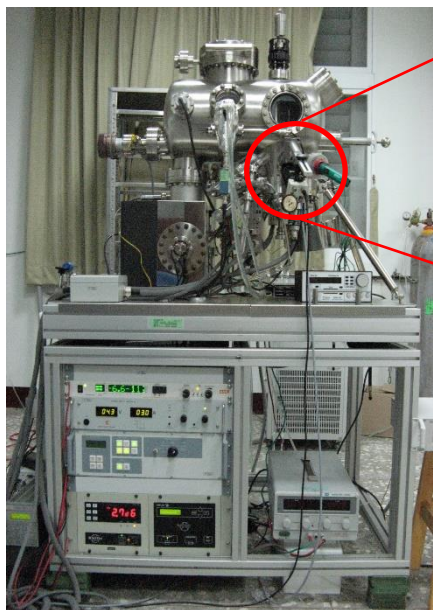
洪一弘 教授 Professor **Ie-Hong Hong**, Ph.D.

Research Area: Nanomaterials; Nanofabrication; Molecular Electronics, Surface Physics.

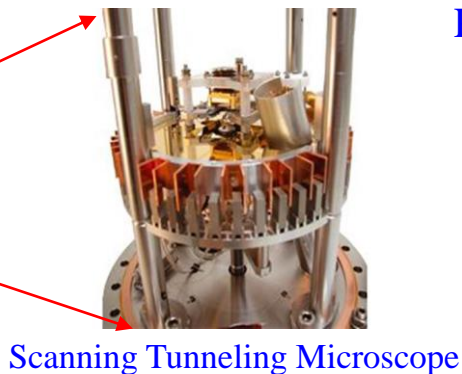
Tel: +886-5-271-7954, E-mail: ihong@mail.ncyu.edu.tw

Research Interests:

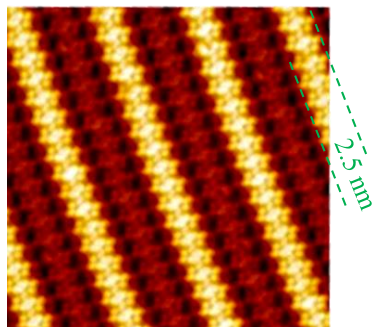
Self-Organization; Scanning Tunneling Microscopy; Photoelectron spectroscopy, Si(110)-based Molecular Spintronics.



UHV Chamber
($P < 2 \times 10^{-11}$ mbar)

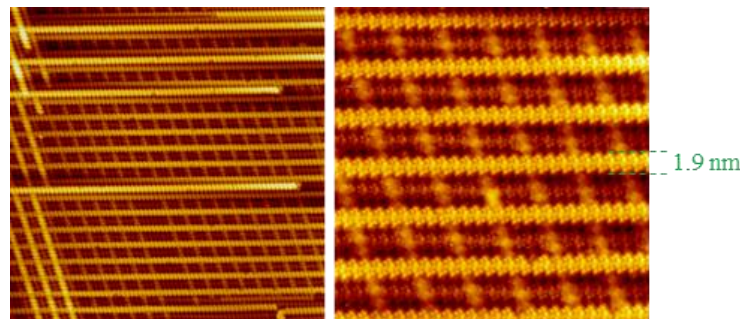
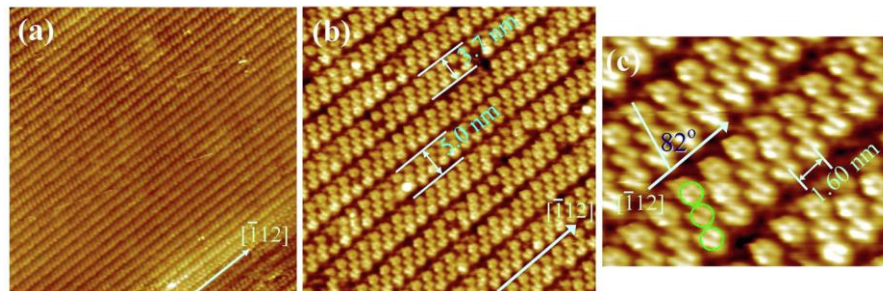


Scanning Tunneling Microscope



Si(110)-16x2 surface

Parallel C_{60} -triplet nanowire array on Si(110) surface



Gd-silicide nanomesh



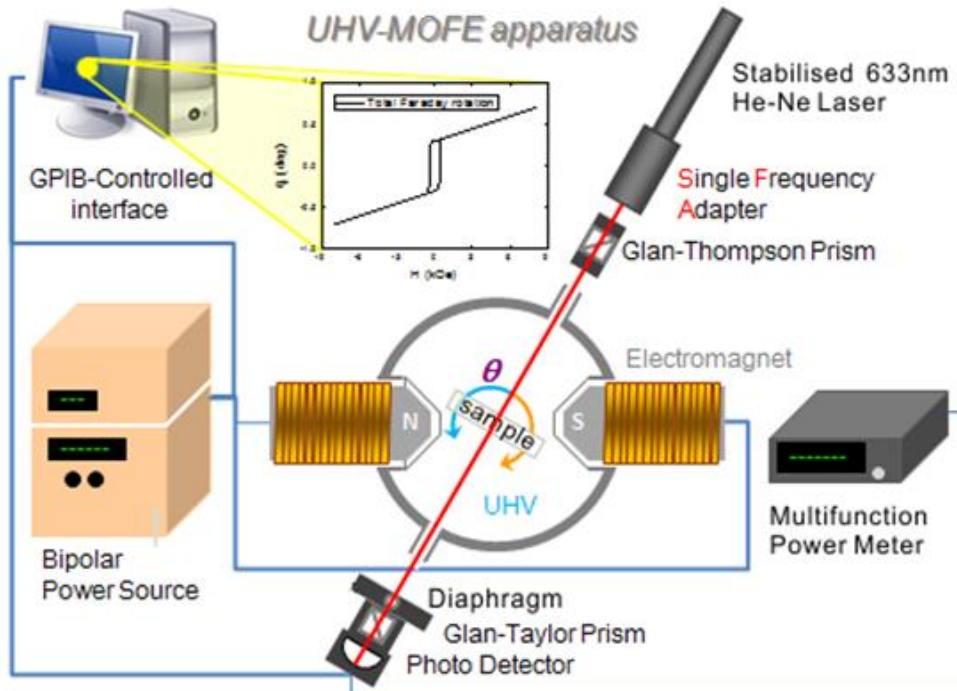
蘇炯武 教授 Professor **Chiung-Wu Su**, PhD.

Research Area: Surface/Interface Magnetism, Ultrahigh Vacuum Technique (Auger Electron Spectroscopy, Electron Diffraction (Low-energy), Surface Magneto-optical Faraday/Kerr Effect), STEAM Education

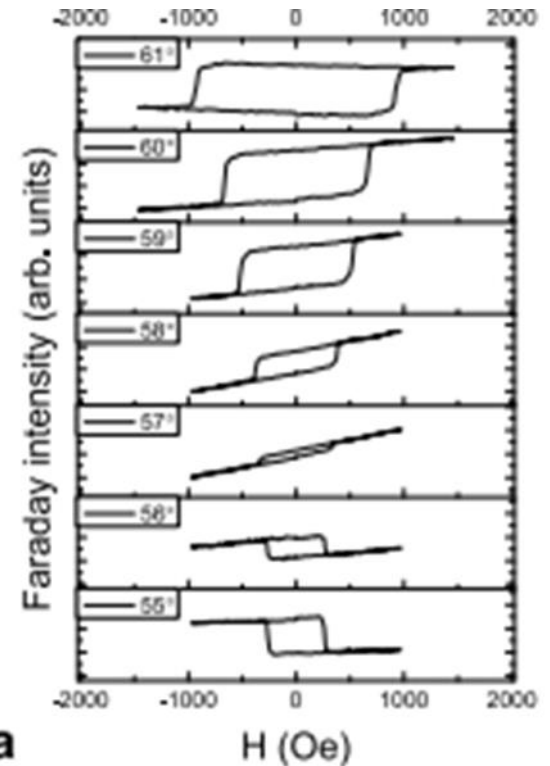
Tel: +886-5-271-7990, E-mail: cwsu@mail.ncyu.edu.tw

Research Interests:

Magneto-optical Faraday effect for surfaces and interfaces of 2D materials



Flipping behavior of hysteresis loops for magnetic/optical crystals





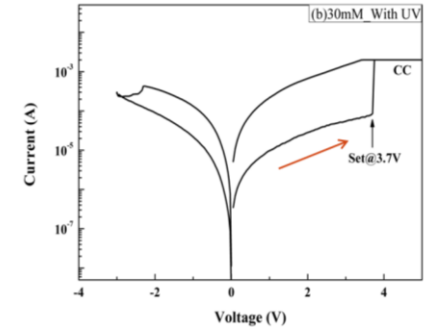
余昌峰 教授 Professor **Chang-Feng Yu**, PhD.

Research Area: Design of Integrated Circuits, VLSI Technology, Pulsed laser deposition, Electronic ceramic thin film

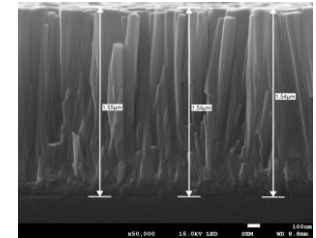
Tel: +886-5-271-7953, E-mail: cfyu@mail.ncyu.edu.tw

Research Interests:

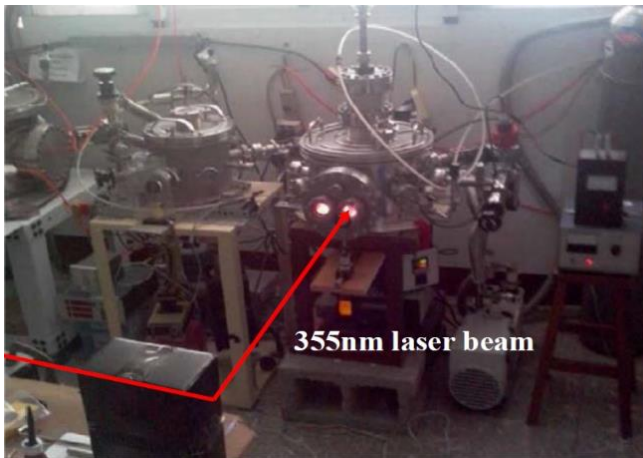
- (1) Resistive Switching Characteristics of oxide thin film (TiO_2 , HfO_2 , ZnO)
- (2) Photocatalysis of ZnO nanorods
- (3) Transparent conducting film (GZO, AZO, AGZO)



ZnO nanorods



Pulsed laser deposition

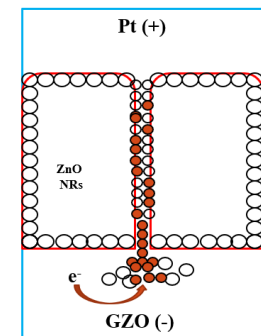


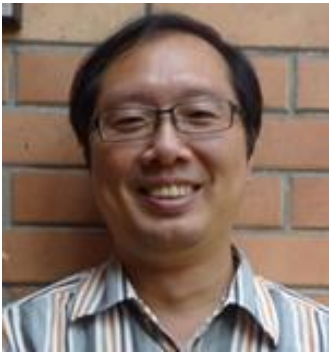
Thermal Evaporation Deposition



● electron
○ vacancy

(4)HRS





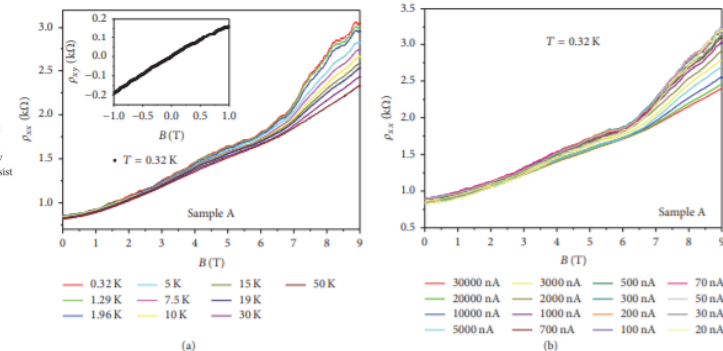
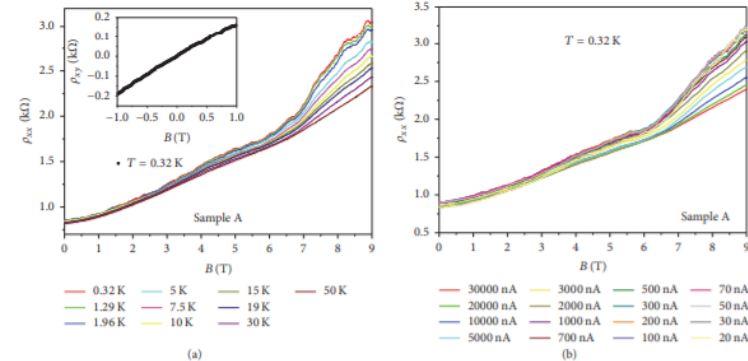
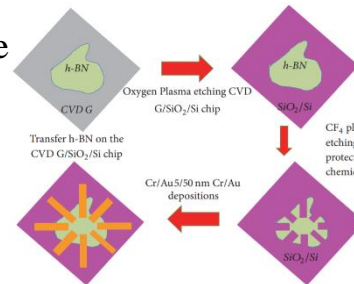
林立弘副教授 Associate Professor **Li-Hung Lin**, PhD.

Research Area: The magnetoelectrical and optical properties of semiconductor quantum structures

Tel: +886-5-271-7410, E-mail: lihung@mail.ncyu.edu.tw

Research Interests:

1. Low-dimensional structures and few-layer materials, including GaAs/AlGaAs, GaN/AlGaN heterostructures, graphene, MoS₂, BN, and their combinations.
2. Magneto-conductivity of low-dimensional structures, optical characteristics, and other quantum phenomena.
3. Production of few-layer graphene and graphite related materials.





陳穗斌 副教授 Associate Professor **Sui-Pin Chen**, Ph.D

Research Area: Spintronics

Tel: +886-5-271-7908, E-mail: spchen@mail.ncyu.edu.tw

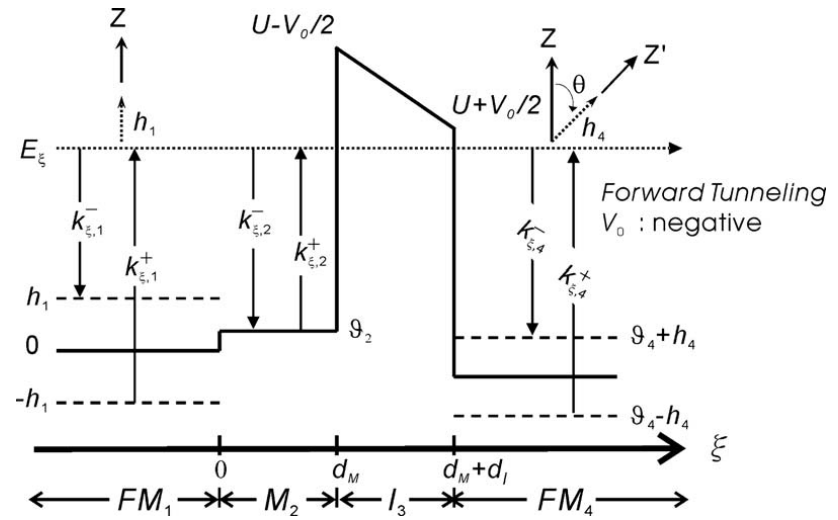
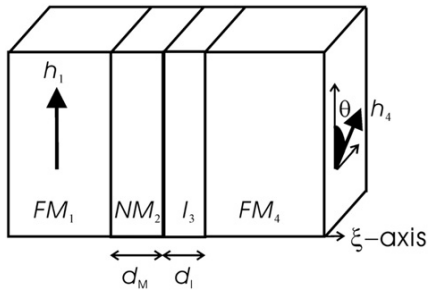
Research Interests:

Spin-dependent electron tunneling

Spin-dependent electron transport

Spin accumulation

Spin Hall effect





College of Science & Engineering



Electrophysics Building I



Electrophysics Building II

WELCOME to NCYU!!