

CURRICULUM VITAE

Yung-fou Chen

Associate Professor
Department of Forensic Science
College of Police Technology
Central Police University
No.56, Shujen Rd., Takang Vil., Kueishan District,
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EDUCATION

The Graduate Center, City University of New York
New York, New York Ph.D. in Chemistry August 2002 – August 2007

Dissertation: **Molecular Orbital Study of Self-Assembled Peptide Nanomaterials**

Mentor: **Dr. Joseph J. Dannenberg**

We report density functional molecular orbital calculations that illustrate how coupling of the N–H and C=O of an amide through a polarizable π -system, together with cooperative H-bonding typical of amides, can combine to produce extraordinarily strong H-bonds between neutral molecules, and how the H-bond strength can vary with the addition of different functional groups.

John Jay College of Criminal Justice, City University of New York
New York, New York M.S. in Forensic Science August 1998 – August 2001

Thesis: **Airborne Mercury in New York City – An Assessment of Outdoor Fluxes and Residential Indoor Contamination (Toxicology Track)**

Mentor: **Dr. Anthony Carpi**

We conducted ambient monitoring of Hg^0 at six locations in New York City. Airborne Hg^0 averaged 3.84 ± 0.10 (ng/m^3) and 3.70 ± 0.08 (ng/m^3) in the boroughs of Manhattan and Brooklyn respectively, yet only 2.69 ± 0.03 (ng/m^3) in a more residential neighborhood in Queens. Mercury is not commonly considered a household air pollutant; however, a number of potential sources of the metal exist in residential settings. This research suggests that up to 10% of households may have levels of airborne mercury above the U.S. EPA reference concentration 300 ng/m^3 due to historic accidents with mercury containing devices. Exposure to mercury via indoor air is seen as second only to fish consumption as a source of mercury in the general population.

National Chung Cheng University
Chiayi, Taiwan, R.O.C. B.S. in Chemistry September 1994 – June 1998

PROFESSIONAL EXPERIENCE

September 2015 – Present
Forensic Science Curriculum
Soochow University, Taiwan, R.O.C.

Adjunct Associate Professor

February 2015 – Present
Central Police University, Taiwan, R.O.C.

**Associate Professor in Forensic
Science**

Currently I teach instrumental analysis I, statistics (with R language), polarized light microscopy, forensic science methodologies, and seminar. I also conduct research that explores applications of chemometrics to physical evidence (synthetic/natural fibers, questioned document analysis of stamp inks, pen inks, document/ink aging) using polarized light microscopy, Raman spectroscopy, hyperpectral imaging and microspectrophotometry..

February 2009 – January 2015
Central Police University, Taiwan, R.O.C.

**Assistant Professor in Forensic
Science**

I was employed as a assistant professor in the forensic science department, Central Police University, Taiwan, R.O.C.

August 2007 – January 2009
Lamar University, Texas

**Assistant Professor in Forensic
Science**

I was employed as a tenure-track assistant professor and the forensic science program advisor in the department of chemistry at Lamar University, Texas. My responsibilities included lectures in introductory and advanced level forensic science/criminalistics courses, as well as general chemistry course and laboratory (class size of 70 students). I also begin to build my forensic science research laboratory.

February 2004 ~ February 2007
Hunter College, City University of New York

Graduate Assistant

I investigated and design hydrogen bond interaction of peptide nanomaterials by Density Functional Theory and learn to control the strength of hydrogen bonds using different substitutions in a computational chemistry laboratory.

November 2001 ~ February 2004
Hunter College, City University of New York

**Research Assistant and Graduate
Assistant**

I worked in the Bio-Nanotechnology Laboratory. My duties are as follows: fabricate and analyze Self-Assembled Monolayers (SAMs) Peptide Nanotubes with the latest analytical methods; utilize protein nanotubes as building blocks to assemble three-dimensional nanoscale architectures at uniquely defined positions; incorporate

sequenced histidine-rich peptides on the nanotubes to develop efficient biomineralization of metal on nanotubes.

January 1999 – August 2002

**John Jay College of Criminal Justice,
City University of New York**

**Adjunct College Laboratory
Technician**

My duties are as follows: Identify and compare trace evidence using forensic methods; perform maintenance and troubleshooting of instruments (ex. List instruments here); instruct students on the operating procedures of trace analysis instruments; identify blood types and characterize physiological fluids; prepare chemicals, standards, and samples for testing.

March 2001 – August 2001

**Trace Evidence Section (Hairs and Fibers)
New York Police Department Crime
Laboratory
Forensic Identification Division**

Intern Analyst

During my internship I learned to analyze trace evidence analysis by Raman Microspectroscopy, validated and standardize UV-Vis spectrometer for casework and assisted fire debris and trace evidence analysis.

GRANTS

National Science Council (now Ministry of Science and Technology), Taiwan R.O.C.

Title: *Development of a fast saliva drug testing device and the corresponding cut-off values*
(Project: NSC102-2218-E-002-016)

Co-PI: with Chair Sheng-Meng Wang, team from National Taiwan University and team from Taipei Medical University

Project period: 2013-2016 (three year project with annual review)

Ministry of Interior, Taiwan R.O.C.

Title: *The Applications of Hyperspectral Imager to Physical Evidence*

PI: Yung-fou Chen

Project period: 2015-2018 (four year project with annual review)

Ministry of Interior, Taiwan R.O.C.

Title: *The Applications of Nanotechnology to Physical Evidence*

PI: Yung-fou Chen

Project period: 2011-2014 (four year project with annual review)

National Science Council (now Ministry of Science and Technology), Taiwan R.O.C.

Title: *Ink Dating Estimation through Color Fading Process* (Project: NSC100-2113-M-015-001-MY2)

PI: Yung-fou Chen

Project period: 2011-2013 (two years project)

National Science Council (now Ministry of Science and Technology), Taiwan R.O.C.
Title: *Every Contact Leaves a Trace (Project: NSC100-2515-S-015-001)*
PI: Yung-fou Chen
Project period: 2011-2012 (one year popular science project)

Ministry of Interior, Taiwan R.O.C.
Title: *The Application of X-ray Fluorescence to Explosion Residue*
Co-PI with Dean Hsien-Hui Meng
Project period: 2010

PUBLICATIONS

Book Chapters (published in Chinese)

陳用佛、鄒濬智、沈文聖(2013)。《破案關鍵：指紋、毛髮、血液、DNA，犯罪現場中不可不知的鑑識科學》 (the CSI You Should Know)。臺北：秀威資訊科技。ISBN: 9789868976146

陳用佛、鄒濬智(2012)。《凡接觸必留下痕跡——淺談鑑識科學》 (Every Contact Leaves A Trace)。Supported by NSC100-2515-S-015-001。臺北：秀威資訊科技。

Journal Articles

Chen, Y.-F. and Liu, J.-T., Discrimination of Fluoroamphetamine Regioisomers by Raman Spectroscopy. *Journal of the Chinese Chemical Society* 2016, accepted. **(corresponding author) 【SCI】**

Cheng, S.-Y.; Chen, Y.-F.; Huang, J. C.-C., Forensic Applications of Portable X-ray Fluorescence Spectrometer: Glass Samples. *Journal of the Chinese Chemical Society* 2015, 62 (2), 125-132. **(corresponding author) 【SCI】**

Chen, S.-Z.; Tsai, T.-L.; Chen, Y.-F., Forensic Application of Atomic Force Microscopy—Questioned Document. *Journal of the Chinese Chemical Society* 2012, 59 (3), 283-288. **(corresponding author) 【SCI】**

Chen, Y.-F., and Dannenberg, J.J., The effect of polarization on multiple hydrogen-bond formation in models of self-assembling materials. " *Journal of Computational Chemistry* 2011, 32(13), 2890-2895 **【SCI】**

Chen, Y.-F., Forensic Applications of Nanotechnology. *Journal of the Chinese Chemical Society* 2011, 58 (6), 828-835. **(corresponding author) 【SCI】**

Yu, C.-C.; Wen, C.-Y.; Lu, C.-P.; Chen, Y.-F., The Drug Tablet Image Retrieval System Based on Content-Based Image. *International Journal of Innovative Computing, Information and Control* 2012 8 (7), 4497-4508. **【SCI】**

- Shieh, C.-E.; Chen, Y.-F., The Application of Polarized Light Microscopy to Identify Minerals—A Preliminary Study of Forensic Geology. *Forensic Science Journal* 2013 12, 15-30.
- Lodhi, K. M.; Grier IV, R. L.; Lodhi, M. A.; Chen Y.-F., The use of PCR change agent model to help reduce the backlog of forensic DNA specimens. *Forensic Science Journal* 2010, 9, 53-58.
- Chen, Y.-f.; Viswanathanb, R.; Dannenberg, J.J., Through Hydrogen-Bond Vibrational Coupling in Hydrogen-Bonding Chains of 4-Pyridones with Implications for Peptide Amide I Absorptions: Density Functional Theory Compared with Transition Dipole Coupling. *Journal of Physical Chemistry B*, **2007**, 111(28); 8329. **【SCI】**
- Chen, Y.-F.; Dannenberg, J. J., Cooperative 4-pyridone H-bonds with extraordinary stability. A DFT molecular orbital study. *Journal of the American Chemical Society* **2006**, 128, (25), 8100-8101. **【SCI】**
- Chen, Y.-f., Forensic Applications of Nanotechnology, *Forensic Science (Taiwan)* **2006**, 61 (mini-review). published in Chinese by Criminal Investigation Bureau, Taiwan. (15 pages)
- Chen, Y.-f.; Pectaco, N.D.K.; Baden, C.J; Lee, C.L., An Electron Correlated Examination of the Reactivity of Fingerprint Reagent Ninhydrin, Taiwan Acedemy of Forensic Science Proceeding November, **2006**. (6 pages).
- Muniz, G.; Banerjee, I. A.; Yu, L.; Djalali, R.; Chen, Y.-f.; Matsui, H., Controlled nanocrystal growth on sequence peptide coated nanotubes to fabricate Au, Ag, and Ge nanowires. *PMSE Preprints* 2005, 92, 590-591.
- Chen, Y.-f.; Banerjee, I. A.; Yu, L.; Djalali, R.; Matsui, H., Attachment of Ferrocene Nanotubes on b-Cyclodextrin Self-Assembled Monolayers with Molecular Recognitions. *Langmuir* **2004**, 20, (20), 8409-8413. **【SCI】**
- Djalali, R.; Chen, Y.-f.; Matsui, H., Au Nanocrystal Growth on Nanotubes Controlled by Conformations and Charges of Sequenced Peptide Templates. *Journal of the American Chemical Society* **2003**, 125, (19), 5873-5879. **【SCI】**
- Djalali, R.; Chen, Y.-f.; Matsui, H., Fabrication of Au nanowires on peptide nanotubes by tuning sequenced peptide conformations. *PMSE Preprints* **2003**, 88, 29-30.
- Djalali, R.; Chen, Y.-f.; Yu, L.; Banerjee, I. A.; Matsui, H., Smart peptide nanotube: targeted immobilization via molecular recognition and size/packing density-controlled nanocrystal coating via biomineralization. *PMSE Preprints* **2003**, 89, 273.

Djalali, R.; Chen, Y.-f.; Matsui, H., Au nanowire fabrication from sequenced histidine-rich peptide. *Journal of the American Chemical Society* **2002**, 124, (46), 13660-13661. **【SCI】**

Carpi, A.; Chen, Y.-f., Gaseous Elemental Mercury Fluxes in New York City. *Water, Air, and Soil Pollution* **2002**, 140, (1-4), 371-379. **【SCI】**

Carpi, A.; Chen, Y.-f., Gaseous Elemental Mercury as an Indoor Air Pollutant. *Environmental Science and Technology* **2001**, 35, (21), 4170-4173. **【SCI】**

The following articles are published in Chinese.

蔡東霖、陳用佛(2013)。〈高光譜影像技術在鑑識科學上之應用〉。《中央警察大學警學叢刊》，第四十三卷第四期，頁 1-15。**【通訊作者】**

阮惇威、陳用佛(2011)。〈原子力顯微鏡在奈米鑑識上之展望〉。《中央警察大學警學叢刊》，第四十二卷第三期，頁 119-131。**【通訊作者】**

詹承勳、吳旭恆、陳用佛(2014)。〈文書鑑定中墨水顏色變化與書寫時間相關性之研究〉。《刑事科學》，第七十六期，頁 35-80。**【通訊作者】**

吳旭恆、陳用佛(2014)。〈顯微分光光譜法對於印文蓋印時間之初探〉。《國立臺灣博物館學刊》，第六十七卷第二期，頁 15-28。**【通訊作者】**

詹承勳、陳用佛(2013)。〈紙張鑑定分析方法與研究簡介〉。《刑事科學》，第七十五期，頁 35-48。**【通訊作者】**

吳旭恆、鄭司圓、余滋雅、陳用佛(2012)。〈顯微分光光譜儀在鑑識科學上的應用〉。《刑事科學》，第七十二期，頁 109-122。**【通訊作者】**

陳躍翔、陳用佛(2011)。〈偏光顯微鏡分析技術於纖維鑑定之應用〉。《刑事科學》，第七十一期，頁 23-39。**【通訊作者】**

鄭司圓、陳用佛(2011)。〈攜帶式 X 射線螢光光譜儀在鑑識科學上的應用〉。《刑事科學》，第七十一期，頁 59-72。**【通訊作者】**

PRESENTATIONS

November 13, 2015

The Applications of Polarized light microscopy in Art Conservation
National Taiwan Normal University

November 12, 2015

Forensic Applications of Vibrational Spectroscopy
Bureau of Standards, Metrology and Inspection

October 02, 2015

The Real CSI
Linkuo Senior High School

July 15, 2015

The Real CSI
National Taiwan University His Chu Campus

May 25, 2015

Forensic Science 101
National Chung Hsin University

December 26, 2014

Criminalistics
National Chung Hsin University

November 5, 2014

What You Should Know about Forensic Science
Pei Hwa Juinor High School

October 17, 2014

My John Jay Journey
New Taipei City Police Department

June 8, 2014

The Real CSI
Taipei City Library Jiu Zhuang Branch

May 27, 2014

The Real CSI
National Chung Cheng University

November 12 and 19, 2013

The Application of Forensic Science to Art Conservation
National Taiwan Normal University

December 11, 2012

Forensic Science 101
Taipei First Girls High School

December 21, 2010
Cutting Edge Forensic Science
National Chung Cheng University

December, 2009
Trace Evidence Analysis
National Central University

June 12, 2009
Forensic Applications of Nanotechnology
Institute of Chemistry, Academia Sinica

AWARD

- November, 2015 Outstanding Research Award, Central Police University
- In recognition of exceptional research performance.
- October, 2015 Outstanding Thesis Mentor, Central Police University
- In recognition of outstanding mentorship of the thesis "The evaluation of drug-testing device for ketamine and its metabolites in bodily fluids" by Tung-Jun Wu.
- August, 2001 Outstanding Performance by an Intern Student,
New York Police Department
- August, 2000 Millennium Graduate Student Award,
NYS-Society for Applied Spectroscopy

CERTIFICATIONS

- November 2013 "Handwriting Examination". No.:650
- November 2013 "Human Subject Research". No.:13111621
- November 2012 "Questioned Document Examination and Laboratory Management"
- November 2010 "Automobile Lighting and Seatbelt Examination". No.: 0465
- May 2009 "Document Security and Authentication Technology". No.: 245
- August, 2001 Asbestos Identification by Polarized Light Microscopy
(by Dr. Thomas Kubic)
- May, 2001 Forensic Analysis of Paints (by Dr. Scott Ryland)

SERVICE

University Administrative Service

- Central Police University Website Contents Committee 2012 – present
- Toxic Chemicals Management Committee 2012 – present

Student Service

- Advisor for Master and Ph.D. students in forensic science program 2009 – present

Professional Service

- Provide Forensic Science Examination for Police Agencies, District Attorney's Office, District Court and High Court 2009 – present
- Taiwan Academy of Forensic Science 2004 – present
 - Supervisor 2012 – 2014
 - Council member 2015 – present
- American Society of Trace Evidence Examiners 2012 – present
 - Mentoring Committee member 2014 – present