

SHAW GUANG HUANG

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EMPLOYMENT:

2013-pres. DIRECTOR, LAUKIEN-PURCELL INSTRUMENTATION CENTER
Supervise operation, maintenance, research and development of high cost spectrometers in the Harvard Faculty of Arts and Science. Conduct NMR research in various fields in chemistry and biophysics. Teach special topics courses.

1982-pres. DIRECTOR, MAGNETIC RESONANCE LAB, HARVARD UNIVERSITY
Supervise operation, maintenance, research and development of departmental Nuclear Magnetic Resonance (NMR) and Electronic Paramagnetic Resonance (EPR) Laboratories. Conduct NMR research in various fields in chemistry and biophysics. Teach special topics courses.

1978-1982 DIRECTOR, NMR FACILITY, CORNELL UNIVERSITY
Supervised operation, maintenance, research and development of departmental NMR Facility. Conducted NMR research in chemistry and biophysics. Taught special topics courses.

HEAD, ELECTRONIC SHOP, CHEMISTRY DEPT., CORNELL UNIV.
Supervised the operation of Electronic Shop which had two major functions:
1. Maintenance of chemical instruments (IR, UV-VIS, RAMAN, ESP, XRD, GC, HPLC, MS, etc.); 2. Design and fabrication of electronic devices and interfaces.

1977-1978 RESEARCH ASSOCIATE, UNIVERSITY OF ILLINOIS, URBANA
Conducted high pressure NMR research of molecular dynamics and mechanism of phase transitions in some model compounds.

1973-1977 TEACHING AND RESEARCH ASSISTANT, MICHIGAN STATE UNIV.
Assisted the teaching of general chemistry, quantum chemistry, and statistical mechanics. Assisted the development of departmental NMR spectrometers.

1971-1973 ELECTRONIC MAINTENANCE OFFICER, CHINESE AIR FORCE
In charge of the maintenance of various kinds of navigation and communication equipment.

EDUCATION:

1973-1977 Ph.D. in Physical Chemistry, 1977, Michigan State University
Trained in quantum and statistical chemistry, molecular dynamics, chemical instrumentation, computer interfacing, and software programming using both FORTRAN and ASSEMBLY languages. Thesis title: Studies of Nuclear Magnetic Relaxation and Molecular Motions of Small Molecules in Dense Phases.

1967-1971 B.S. in Chemistry, 1971, National Taiwan University, Taipei, Taiwan
Entered and graduated with honors.

1964-1967 Taipei Jian-Kuo High School. Graduated with highest honor and with the privilege of

admission to National Taiwan University without taking the College Entrance Exam.

HONORS AND PROFESSIONAL ACTIVITIES:

Founding member and Steering Committee member, The Association of Managers of Magnetic Resonance Lab (AMMRL) (1993 - present)
Executive Committee Member, Experimental NMR Conference (ENC), Inc. (1994 - 1997)
Consultant, Eisai Research Institute (1988 - present)
Consultant, H3 Biomedicine (2011 – present)
Consultant, Phylos Pharmaceutical Research Company (1999 -2001)
Consultant, Department of Molecular Biology, Massachusetts General Hospital (1994 -2000)
President, Chinese American Chemical Society (1993-1994); Board Member (1995 - present)
Session Chair, Eastern Analytical Symposium, New Brunswick, NJ (1996)
Session Chair, Experimental NMR Conference (ENC), Inc. (1994 – 1996)
Session Chairman, New England LABCON, Boston (1984)
Program Chairman, New England NEACP Conference, Boston (1987, 1991, 1997)
Organizing Member, IUPAB Satellite Symposium on "Expanding Frontiers in Polypeptide and Protein Structural Research," Whistler, Canada (1990)
Fellow, the American Institute of Chemists
NSF Review Panelist (2005, 2006)
NIH BRS SIG Special Study Section (1984, 1987)
Delegate to the UNESCO Meeting, Washington, D.C. (1976)
Member, Graduate Council, Michigan State University (1975-76)
Assistantship, Michigan State University (1973-77)
Grand Merit, National Taiwan University (1971)
Excellence Scholarship, National Taiwan University (1967-68)
Honor to enter Chemistry Department, National Taiwan University with exemption from the National College Entrance Examination (1967)
Lectureship, Dalian Institute of Physical Chemistry, China (2006)
Lectureship, Shenyang Normal University, China (2006)
Lectureship, Zhejiang University, China (2005)
Lectureship, Guangxi Normal University, China (2005)
Lectureship, Taipei Fu-Jen Catholic University (2003)
Lectureship, National Chung-Yang University (2002)
Lectureship, Industrial Technology Research Institute (2000)
Lectureship, Biogen, Cambridge, Massachusetts (1998)
Lectureship, National Ching-Hwa University, Hsin-Chu, Taiwan (1997)
Lectureship, Salem College, Massachusetts (1996)
Lectureship, Tienjin Medical Research Institute, China (1993)
Lectureship, Chinese Academy, Institute of Philosophy, Beijing, China (1993)
Lectureship, Academia Sinica, Taipei, Taiwan (1992, 1997)
Lectureship, National Taiwan University (1986)

COMMUNITY ACTIVITIES:

Member, Massachusetts Asian American Commission (Governor's Advisor) (1992 - 1996)
President, Greater Boston Chinese Cultural Association (1989), Board Member (1988-1992), Music Program Director (1987-88)
President, Greater Boston Alumni Association of National Taiwan University (1990)
Trustee, Boston China Relief Fund for Tian-an-men massacre (1989-92)
Conductor, Boston Melodia Choral Society and Chinese Language School Chorus (1983-85)
Bass soloist and member of quartet, Chinese American Arts Society (1984-85)
President, National Taiwan University Chorus (1970-71), Student Conductor (1969-70)

RESEARCH AND TEACHING INTERESTS:

Studies of the molecular structures and dynamics of various sizes of molecules, especially those with biological significance, using magnetic resonance spectroscopy and other physical methods.

Development of instrumentation and methodology in the nuclear magnetic resonance spectroscopy.

Quantum computing using nuclear magnetic resonance spectroscopy.

Teaching students and younger generation scholars fundamental concepts and skills to carry out fore-front chemical and physical science research, as well as important ethics and disciplines in both ordinary and professional lives.

SELECTED TECHNICAL PUBLICATIONS (not including confidential research reports):

“Formation, Spectroscopic Characterization, and Solution Stability of an [Fe₄S₄]²⁺ Cluster Derived from β-Cyclodextrin Dithiolate” *Inorg. Chem.*, 51 (18), 9883 (2012), with Wayne Lo, Ping Zhang, Chang-Chun Ling, and R. H. Holm

“Cubane-type Fe₄S₄ clusters with chiral thiolate ligation: formation by ligand substitution, detection of intermediates by ¹H NMR, and solid state structures including spontaneous resolution upon crystallization.” *Inorganic chemistry*, 50(21), 11082 (2011), with Wayne Lo; Shao-Liang Zheng; and Richard H Holm

“Lithol Red Salts: Characterization and Deterioration”, *E-Presentation Sciences*, 7, 147, (2010), with Jen Stenger ; Eugene E. Kwan ; Katherine Eremin ; Scott Speakman ; Dan Kirby ; Heather Stewart ; Alan R. Kennedy ; Richard Newman ; Narayan Khandekar.

“Structural Elucidation with NMR Spectroscopy: Practical Strategies for Organic Chemists,” *Euro. J. Org. Chem.*, 16, 2671, (2008), with E. Kwan.

“Molecular Conformations of Dermorphin: A Unique Non-Nervous Tissue m-Agonist,” *Neuroscience Research Comm.*, 25 (1), 13 (1999), with J.A. Balschi, etc.

“On the Measurement of Sensitivity and Resolution of NMR Spectrometers,” *NMR Newsletter*, 477, 35 (1998).

"Lack of Effect of the Length of Oligoglycine- and Oligo(ethylene glycol)-Derived para-Substituents on the Affinity of Benzenesulfonamides for Carbonic Anhydrase II in Solution," *J. Am. Chem. Soc.*, 116, 5057 (1994); with Ahamindra Jain and George M. Whitesides.

"On the Measurement of B1 Homogeneity", presented in the 35th Experimental NMR Conference, Asiloma, California, April 11, 1994.

"Practical Approaches in the Structural Studies Using Multi-Dimensional NMR Spectroscopy", presented at the IUPAC Congress, Beijing, China, August 15, 1993.

"Protein, Structure, Dynamics, & Design", ESCOM, Leiden, 1991; edited with V. Renugopalakrishnan, P.R. Cary, I.C.P. Smith, and A.C. Storer.

"Solution Conformation of Neuropeptide Y: 2DNMR and molecular Dynamics Studies", presented in the IUPAB Satellite Symposium, Whistler, Canada, 1990; with A. Balasubramanian, S. Sheriff, M. Probahakaran, and V. Renugopalakrishnan.

"Rational Drug Design: The Determination of Active Site Depth in Solution by ^1H NMR Spin-Echo Spectroscopy of Carbonic Anhydrase-Sulfonamide Complexes", presented in the 200th ACS Meeting at Washington, D.C., 1990; with Ahamindra Jain, and George M. Whitesides.

" ^1H - ^1H Internuclear Distance Measurements in Carbohydrates: Proton Transient Nuclear Overhauser Enhancement and Spin-Lattice Relaxation in (^{13}C - and (^2H)-substituted Compounds", *Can. J. Chemistry*, 68, 2171 (1990); with Paul C. Kline, Michael Hayes, Robert Barker, and Anthony S. Serianni.

"Dynorphin A(1-13) Peptide NH Groups are Solvent Exposed: FTIR and 500 MHz Proton NMR Spectroscopic Evidence", *Biochem. Biophys. Res. Commun.* 151, 1220 (1988); with V. Renugopalakrishnan, R.S. Rapaka, S. Moore, and T.B. Huston.

"Rates and Mechanisms of Hydrolysis of Ester of Phosphorous Acid", *J. Am. Chem. Soc.* 110, 181 (1988); with F.H. Westheimer and F. Covitz.

"A 500 MHz NMR Spectroscopic Study of Met-5-Enkephalinamide in Aqueous Solution: Ethanol Induced Conformational Changes", *Biochem. Biophys. Res. Commun.* 143, 126 (1987); with V. Renugopalakrishnan and R.S. Rapaka.

"Nuclear relaxation and Molecular Motions of CFCl_3 in Liquid Phase", *J. Chem. Phys.* 85, 401 (1986); with Max T. Rogers.

"Synthetic DNA Oligomers Containing 5-Fluoro-Deoxy-Uridine", *Proceedings Am. Assoc. for Cancer Research*, 1985, with A. Kramer, T. Mikita, and P. Beardsley.

"Types of β -Bends by Two-Dimensional Nuclear Overhauser Spectroscopy", *Int. J. Peptide Protein Res.*, 25, 89 (1985), with E. R. Stimson, G. Nemethy, S. J. Leach, and H. A. Scheraga.

"Chain Folding Initiation Structure in Ribonuclease A: Conformational Analysis of Tran-Ac-Asn-Pro-Tyr-NHMe and Tran-Ac-Tyr-Pro-Asn-NHMe in Water and in the Solid State", *J. Am. Chem. Soc.* 106, 7946 (1984), with G. T. Montelione, E. Arnold, Y. C. Meinwald, E. R. Stimson, J. B. Denton, J. Clardy, and H. A. Scheraga.

"Anomerization of Furanose Sugars: Unidirectional Rate Constants by ^1H and ^{13}C Saturation-Transfer NMR Spectroscopy", *J. Am. Chem. Soc.* 104, 4037 (1982), with A. S. Serianni, J. Pierce, and R. Barker.

"Density Effects on Transport Properties in Liquid Cyclohexane", *J. Phys. Chem.* 84, 109 (1980), with J. Jonas and D. Hasha.

"Self-Diffusion and Viscosity of Methylcyclohexane in Dense Liquid Region", *J. Chem. Phys.* 71, 3996 (1979), with J. Jonas and D. Hasha.

"Measurement of Kinetics of Solid-Solid Phase Transformation by Pulse NMR", *J. Magn. Resonance*, 33, 211 (1979), with M. Fury and J. Jonas.

" ^{13}C and ^{19}F Nuclear Relaxation in CFBr_3 ", *J. Chem. Phys.* 68, 5601 (1978), with Max T. Rogers.

"A General Program for Computer Controlled Pulsed NMR Relaxation Studies", *Chemical Instrumentation*, 8, 17 (1977), with Max T. Rogers.

