faculty highlights
DEPARTMENT OF CHEMISTRY
CORE FACULTY MEMBERS

Assoc Professor Ang Siau Gek
Research Fellow Dr Ang Wee Han
Instructor Dr Chanbasha Basheer
Asst Professor Ryan PA Bettens
Instructor Dr Chan Sau Han Edith
Professor Chan Sze On Hardy
Asst Professor Chan Yin Thai
Assoc Professor Chang Young-Tae  
(joint with Biomedical Science Institute)
Asst Professor Chen Ping  
(joint with Physics, NUS)
Research Fellow Dr Chi Chunyan
Assoc Professor Chin Wee Shong
Assoc Professor Chuah Gaik Khuan
Asst Professor Fan Wai Yip
Professor Goh Suat Hong
Professor Hor Tzi Sum Andy (Head)
Asst Professor Huang Dejian
Asst Professor Huang Kuo-Wei
Asst Professor Huynh Han Vinh
Assoc Professor Stephan Jaenicke
Assoc Professor Kang Hway Chuan
Assoc Professor Stephan Kasapis
Assoc Professor Khor Eugene
Assoc Professor Lai Yee Hing
Assoc Professor Lam Yulin (Assistant Head)
Asst Professor Martin J Lear
Lecturer Dr Adrian M Lee
Professor Lee Hian Kee (Deputy Head)
Lecturer Dr Leong Lai Peng
Assoc Professor Leong Weng Kee
Professor Li Fong You Sam
Assoc Professor Li Tianhu

Asst Professor Liu Xiaogang
Assoc Professor Loh Kian Ping (Deputy Head)
Asst Professor Lu Yixin
Lecturer Dr Mak Ka Wai Karen
Research Fellow Dr Maung Maung Saw  
(joint with Diagnostic Radiology, NUS)
Instructor Ms Prabhavathy Janardhana
Asst Professor David G Popovich
Lecturer Dr Ship Chee Peng
Asst Professor Sim Wee Sun
Instructor Dr Bellam Sreenivasulu
Asst Professor Tan Choon Hong
Instructor Dr Tan Sue Qing Emelyn
Asst Professor Toh Chee Seng
Assoc Professor Valiyaveettil Suresh
Assoc Professor Jagadese J Vittal
Assoc Professor Thomas Walczyk  
(joint with Biochemistry, NUS)
Research Fellow Dr Weng Zhiqiang
Asst Professor Thorsten Wohland
Assoc Professor Wong Ming Wah Richard  
(Deputy Head)
Professor Xu Guo Qin
Asst Professor Wu Jishan
Asst Professor Xu Qing-Hua
Asst Professor Xue Feng
Assoc Professor Yao Shao Qin (Assistant Head)  
(joint with Biological Sciences, NUS)
Assoc Professor Yip Hon Kay John (Assistant Head)
Asst Professor Zeng Huaqiang
Research Fellow Dr Zhao Jin
Assoc Professor Zhou Weibiao (Director, Food  
Science and Technology Programme)
EMERITUS FACULTY

Emeritus Professor Ang How Ghee
Emeritus Professor Huang Hsing Hua
Emeritus Professor Kiang Ai Kim

ADJUNCT FACULTY

Adjunct Professor Bosco Bloodworth (Health Sciences Authority)
Adjunct Asst Professor Anthony Buss (Merlion Pharmaceuticals)
Adjunct Asst Professor Mark S Butler (Merlion Pharmaceuticals)
Adjunct Asst Professor Chan Ping Kwong Peter (Polymer Coating Technologies)
Adjunct Asst Professor Thomas Keller (Novartis Institute of Tropical Diseases)
Adjunct Professor Wolfgang Knoll (Max Planck Institute for Polymer Research)
Adjunct Assoc Professor Lan Weiguang (Sinomem Technology Ltd)
Adjunct Asst Professor Ong Kheng Chuan Peter (OBS Ingredients Pte Ltd/OBS Consulting Pte Ltd)
Adjunct Assoc Professor Joseph I Rasiah
Adjunct Assoc Professor Sun Tak On Eric (S*Bio)
Adjunct Professor Tay Ming Kiong Michael (Health Sciences Authority)
Adjunct Asst Professor Andrew Wan (Institute of Bioengineering and Nanotechnology)

VISITING FACULTY

Visiting Professor Steven Bernasek (Princeton University)
Visiting Professor Cheng Xuan (Xiamen University)
Visiting Professor Stuart Edelstein (University of Geneva)
Visiting Professor Robert Huber (Max-Planck-Institut fhr Biochemie)
Visiting Professor Jin Guoxin (Fudan University)
Visiting Professor Udo Kragl (Rostock University)
Visiting Professor Teoh Siang Guan (Universiti Sains Malaysia)
Visiting Professor Christian Wandrey (Forschungszentrum Julich GmbH)
Visiting Fellow Dr Xiao Jijun (Nanjing University of Science and Technology)
Visiting Senior Fellow Dr Christofora Hanny Wijaya (Bogor Agriculture University)
Visiting Assoc Professor David Young (Griffith University)
Assoc Professor ANG Siau Gek

Ph.D., Cambridge Univ., 1987; M.Sc., National Univ. of Singapore, 1984; B.Sc., National Univ. of Singapore, 1981

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MAJOR RECOGNITION

• Chevalier in the Order of the Palmes Academiques, French Ministry of Youth, Education and Research, 2004

RESEARCH INTERESTS

We study structures of organic and organometallic compounds using a variety of spectroscopic techniques and other physical techniques including X-ray diffraction methods. Specific foci are:

• Osmium and ruthenium cluster compounds containing Group 15 ligands
• Fabrication of organometallic nanostructures

RECENT HIGHLIGHT


The title compound, \{Os(C_{12}F_{10}N)_{2}(CO)_{3}\} has been synthesized by the reaction of C_{6}F_{6}N=NNHC_{6}F_{3} with H_{2}(Os)_{2}(CO)_{10}. The OsC_{3}N_{3} coordination is octahedral around the Os center. Two bonding modes, chelating and monodentate, are observed for the triazenyl groups.

PREMIUM PUBLICATIONS

• B-W Sun, M-S Zhang, G-Y Yang, SG Ang and HG Ang, Decacarbonyl-1,1\(^\alpha\)C2\(\alpha\)C3\(\alpha\)C4\(\alpha\)C5\(\alpha\)-pentfluorophenyldihydrazine-1\(\kappa\)C2\(\kappa\)C3\(\kappa\)C4\(\kappa\)C5\(\kappa\)-triangular-triosmium: a hydrazine-edge-bridged triangular triosmium cluster, Acta Crystallographica, E61, m2419-m2420 (2005)
• HG Huang, CL Xiang, YS Ning, JY Huang, SG Ang and GQ Xu, Dry synthesis of triple cumulative double bonds (C=C=C=N) on Si(111)-7x7 surfaces, J. Phys. Chem. B, 109(41), 19296-19300 (2005)
• SG Ang and B-W Sun, Crystal structure and characterization of organic-inorganic hybridized molecules with molecular zipper structures and two-dimensional grid networks, Crystal Growth & Design, 5, 383-386 (2005)
Dr ANG Wee Han

Postdoc., Massachusetts Inst. of Technology, in progress; Ph.D., Ecole Poly-technique Federale de Lausanne, 2007; B.Sc. (Hons), Imperial College of Science, Technology and Medicine, 1995

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RESEARCH INTERESTS
Our interest is on the study and development of metallopharmaceuticals for cancer therapy and techniques to investigate the interactions of transition metal-based anticancer drugs with their biological targets. Specific foci are:

• Development of metallopharmaceuticals based on platinum and ruthenium metal centres for targeted cancer therapy
• Development of analytical techniques to probe the binding of transition metal-based drugs with biological entities

RECENT HIGHLIGHT

Novel organometallic glutathione-S-transferase inhibitors were prepared by conjugating ruthenium-arene complexes to ethacrylic acid which exhibit alternate modes of activity via the organometallic fragment. Not only are they good enzyme inhibitors, they also exhibit high cytotoxicity against human carcinoma cell lines.

PREMIUM PUBLICATIONS

Dr CHANBASHA Basheer

Ph.D., National Univ. of Singapore, 2005; M.Sc., Baharathidasan Univ., 1994; B.Sc., Madras Univ., 1992

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/cb.htm
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RESEARCH INTERESTS

Analytical Chemistry and Novel Materials are important in many emerging and existing scientific fields and technologies. My research area is motivated by an interest in micro analytical techniques in combination with novel materials for environmental applications and reaction engineering based on microfluidic (Lab-on-a-Chip) approaches. Specific foci are:

- Analytical chemistry/environmental chemistry
- Reaction engineering in microfluidics

RECENT HIGHLIGHT


We have developed a novel analytical technique to detect the wide range of persisting organic pollutants in human ovarian benign and malignant tumor samples.

PREMIUM PUBLICATIONS

Asst Professor Ryan P A BETTENS

Postdoc., Australian National Univ., 1999; Postdoc., Ohio State Univ., 1996; Postdoc., ETH, 1994; Ph.D., Monash Univ., 1992; B.Sc., Univ. of Queensland, 1986

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RESEARCH INTERESTS

My research area is in the understanding and accurate description, via computational chemistry, of inter- and intra-molecular interactions. Ultimately the understanding and description will be applied to the dynamics of large systems like proteins and nucleic acids. Specific foci are:

• Accurately describe and predict enzyme-substrate interactions
• Performance of first-principle molecular dynamics of an enzyme and substrate

RECENT HIGHLIGHT


The nuclear magnetic shielding tensor is a molecular property that can be computed from first principles. In this paper we show that by utilizing the fragmentation approach, one is able to accurately compute this property for a large class of molecules. This is of great significance because the computational expense required in the evaluation of the shielding tensor for all nuclei in a large molecule is now subject to near linear scaling.

PREMIUM PUBLICATIONS

Dr CHAN Sau Han Edith

Ph.D., Univ. of Hong Kong, 2007; M.Phil., Chinese Univ. of Hong Kong, 2001; B.Sc.(Hons), Chinese Univ. of Hong Kong, 1999

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RESEARCH INTERESTS

My research area is to elucidate the structure-activity relationships via the design and synthesis of potential anti-tumor drugs and the study of in vitro bioassays. Specific foci are:

- Bioinorganic chemistry/chemical biology
- Coordination chemistry

PREMIUM PUBLICATIONS

- YL Wong, Y Yan, ESH Chan, Q Ying, TCW Mak and DKP Ng, cis-Dioxo-tungsten(VI) and molydenum(VI) complexes with N3O3 tetradentate ligands: Synthesis, structure, electrochemistry and oxo-transfer properties, *J. Chem. Soc., Dalton Trans.*, 3057-3064 (1998)
Professor CHAN Sze On Hardy

Ph.D., Univ. of Manchester Inst. of Science & Technology, 1975; B.Sc., Southbank Polytechnic, 1972

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**RESEARCH INTERESTS**

My specific foci are:

- Functional polymers
- Organic electronics
- Nanomaterials

**RECENT HIGHLIGHT**

Our research focuses on the preparation of nanostructured conducting polymers and polymer-metal composites. We prepared the first Y-shape polyaniline nanorods and nanotubes which can be used as building blocks in molecular electronics. We have recently developed a facile route to produce fibrous polyaniline rod-gold nanocomposites. These nanocomposite materials exhibit interesting electrical bistability for use as logic memory devices.

**PREMIUM PUBLICATIONS**

Asst Professor CHAN Yin Thai

Postdoc, Stanford Univ., in progress; Ph.D., Massachusetts Inst. of Technology, 2006; B.Sc., Univ. of California at Berkeley, 2001

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Email: Not due for allocation

RESEARCH INTERESTS

Our research interests primarily lie in: (i) nanoliter-scale multilayer microfluidics and (ii) developing novel nanomaterials and investigating their physical properties using various microscopy and spectroscopy techniques. Specific foci are:

  • Synthesizing colloidal nanoparticles and engineering their surface chemistry for biological applications such as cellular imaging
  • Automation of chemical and biological processes using multilayer microfluidics

RECENT HIGHLIGHT


A solvent-stable optically pumped nanocrystal (NC)-based laser was achieved by incorporating highly fluorescent semiconductor nanocrystals into a sol-gel derived silica matrix. These NC-silica composite lasers can potentially be integrated into a microfluidic device, providing the first steps toward a miniaturized nonlinear optical chemosensor.

PREMIUM PUBLICATIONS

  • Y Chan, JS Steckel, PT Sne, J-M Caruge, JM Hodgkiss, DG Nocera and MG Bawendi, Blue semiconductor nanocrystal laser, Appl. Phys. Lett. 86, 073102 (2005)
Assoc Professor CHANG Young-Tae

*Post-doc., Univ. of California at Berkeley/Scripps Research Inst., 1997-2000; Ph.D., POSTECH, 1996; M.Sc., POSTECH, 1994; B.Sc., POSTECH, 1991*

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**MAJOR RECOGNITION**

- Career Award, National Science Foundation, USA, 2005
- Editorial Board Member, *Current Chemical Biology*, 2006-present
- Advisory Board Member, *QSAR & Combinatorial Science*, 2003-present
- Editor for special issue of *Chemical Genetics/Genomics, Current Topics in Medicinal Chemistry*, 2003

**RESEARCH INTERESTS**

Our research goal is to develop live cell imaging probes & sensors by Diversity Oriented Fluorescence Library Approach (DOFLA) and chemical genetics empowered by molecular evolution & artificial tongue. Specific foci are:

- Stem cell specific optical probe & regulator development
- Protein target identification by tagged small molecule library

**RECENT HIGHLIGHT**


A mutant of *C. elegans* was used as diabetic patient model to identify novel therapeutic target enzyme GAPDH. This work not only exemplifies the value of the chemical genetics approach to identify the target protein, but also could lead to a new class of diabetes medications.

**PREMIUM PUBLICATIONS**

Asst Professor CHEN Ping  
Ph.D., Xiamen Univ., 1997; M.Sc., Xiamen Univ., 1994; B.Sc., Xiamen Univ., 1991  
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MAJOR RECOGNITION
- Temasek Young Investigator Award, Defence Science and Technology Agency, Singapore, 2007
- Young Researcher Award, National University of Singapore, 2007
- Best Service Awards, Materials Research Society, 2003

RESEARCH INTERESTS
Main areas of interests include hydrogen storage materials, inorganic synthesis, catalysis, and nano-materials, with specific foci on:
- High capacity hydrogen storage materials
- Synthesis of novel inorganic imides and amides

RECENT HIGHLIGHT
We investigated the interaction between LiAlH₄ and LiNH₂ and found that more than 9 wt% of hydrogen can be desorbed at mild temperatures.

\[ \text{LiAlH}_4 + 2 \text{LiNH}_2 \rightarrow \text{Li}_3\text{AlN}_2 + 4\text{H}_2 \]

PREMIUM PUBLICATIONS
Dr CHI Chunyan


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RESEARCH INTERESTS
We primarily study the structural design, synthesis and physical properties of the new organic materials with their applications on organic electronic/optoelectronic devices, chemosensors and biosensors, with specific focus as follows:

- Design and synthesis of high-performance n-type organic semiconductors for electronic devices

RECENT HIGHLIGHT

The cationic π-conjugated polyelectrolytes contain a phenylene-fluorene segments copolymerized with 2,1,3-benzothiadiazole (BT) units were synthesized. Addition of dsDNA into the polymer in water or buffer results in a change in the color of emission from blue to green. It can be used to generate a calibration curve that indicates DNA concentration.

PREMIUM PUBLICATIONS

- C Chi, J Wu, X Wang, X Zhao, J Li and F Wang, Redoxactive phenylacetylene monodendrons: Rapid solid-phase synthesis and their electrochemical properties, Macromolecules, 34, 3812-3814, (2001)
Assoc Professor CHIN Wee Shong
Postdoc., Univ. of Bristol, 1994; Ph.D., National Univ. of Singapore, 1993; B.Sc., National Univ. of Singapore, 1987
http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/chinws.htm
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RESEARCH INTERESTS
Our research focus on the field of nanostructures and their assemblies. The targets include finding good methodologies to synthesize size-, shape- and phase-controllable nanocrystals, understanding their properties and developing methods to assemble them into novel nanostructures for applications. Specific focuses are:
• Nanostructural materials and their assembly
• Surface and spectroscopy

RECENT HIGHLIGHT
An unprecedented preparation of Ag₂S nanocrystals, with predictable sizes and shapes, using chemical method starting from an easily prepared silver precursor is reported. Through a careful tuning of several critical thermodynamic and kinetic parameters, well-defined shapes of Ag₂S nanocrystals, from nanocubes, faceted or spherical nanocrystals, to nanorods, can be readily produced.

PREMIUM PUBLICATIONS
• WP Lim, Z Zhang, HY Low and WS Chin, A neat preparation of Ag₂S nanocrystals with predictable shapes and sizes, Angew. Chem. Int. Edn, 43, 5685 (2004)
RESEARCH INTERESTS
Our main research area is on heterogeneous catalysis, with specific foci as follows:
• Applications of zeolites in fine chemicals synthesis
• Synthesis and applications of materials with tunable textural properties

RECENT HIGHLIGHT

The hydrogenation of 4-tert-butylphenol and p-cresol was investigated over Zr-beta-supported rhodium catalysts. By designing a suitable bifunctional catalyst, the intermediate, 4-alkylcyclohexanone, formed by metal-catalysed hydrogenation of 4-alkylphenol, could be reduced via the highly stereoselective Meerwein-Ponndorf-Verley reduction over zirconium Lewis acid sites. Hence, in the presence of 2-propanol as solvent and MPV reductant, a high stereoselectivity to cis-4-alkylcyclohexanol was observed. Over 0.5 \% Rh/Zr-beta, 4-tert-butylphenol and p-cresol were hydrogenated to the cis-alcohols with 95 \% and 89 \% stereoselectivity, respectively.

PREMIUM PUBLICATIONS
Asst Professor FAN Wai Yip

Postdoc., Univ. of California at Berkeley, 2000; Ph.D., Univ. of Cambridge, 1998; M.Sc., Univ. of Toronto, 1996; B.Sc., Univ. of London, 1994

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RESEARCH INTERESTS
Emphasis of the research is on the organometallic reactions and homogeneous catalysis using transition metal carbonyl complexes and the preparation and functionalization of nanomaterials. Specific foci are:
• Nanomaterial functionalization for photochemical and biological applications
• Ruthenium and rhenium-based homogeneous catalysis and mechanism studies

RECENT HIGHLIGHT

We report the facile synthesis of uniform single-crystalline γ-Cul nanotetrahedrons from the reaction between CuSO₄ and KI under ambient conditions. Nanotetrahedrons grow from single-crystalline seeds whose growth has been promoted by iodide-induced oxidative etching of twinned seeds. Removal of excess free I⁻ in solution initiates the dissolution of Cul nano-tetrahedrons and its simultaneous oxidation to CuO nanocages.

PREMIUM PUBLICATIONS
• E Ye, B Liu and WY Fan, Preparation of graphite-coated iron nanoparticles using pulsed laser decomposition of Fe₆(CO)₁₆ and PPh₃ in hexane, Chem. of Mater., 19, 3845 (2007)
• CH Ng and WY Fan, Facile synthesis of novel, single-crystalline γ-Cul nano-tetrahedrons and their induced transformation to tetrahedral CuO nanocages, J. Phys. Chem. C, 111, 9166 (2007)
• CH Ng and WY Fan, Controlled synthesis of β-Agl nanoplatelets from selective nucleation of twinned Ag seeds in a tandem reaction, J. Phys. Chem. C, 111, 2953 (2007)
Professor GOH Suat Hong

**D.Sc., National Univ. of Singapore, 1993; Ph.D., Univ. of Akron, 1971; M.Sc., Univ. of Akron, 1966; B.Sc., Nanyang Univ., 1964**

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**MAJOR RECOGNITION**

- National Science Award, National Science and Technology Board, Singapore, 1997
- Staff Achievement Award, National University of Singapore, Singapore, 1998
- Achievement Award, ASEAN Committee of Science and Technology, 1998
- FACS Citation Award, Federation of Asian Chemical Societies, 2003
- Outstanding Alumni Award, University of Akron, 2007

**RESEARCH INTERESTS**

My interests lie on polymer/materials science with specific foci as follows:

- Polymer/carbon nanotube nanocomposites
- Fullerene-end-capped polymers

**RECENT HIGHLIGHT**

Reference: Nanotechnology, 18, 125606 (2007)

The stiffness, strength, ductility and toughness of poly(ethylene oxide) (PEO) were significantly improved by the addition of phenoxy-grafted multwall carbon nanotubes. Curve 1: PEO; curves 2-6: PEO/phenoxy-grafted MWNTs composites; curve 7: PEO/pristine MWNTs composite.

**PREMIUM PUBLICATIONS**

Professor HOR Tzi Sum Andy

Postdoc., Yale Univ., 1984; D.Phil., Univ. of Oxford, 1983; B.Sc.(Hons), Imperial College of Science and Technology, 1979

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/hor.htm

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MAJOR RECOGNITION

- D.Sc., University of London, 1999
- ASEAN Achievement Award (Sciences), ASEAN Business Forum, 1994
- Member, International Advisory Board, Chemistry: An Asian Journal, VCH/Wiley, 2006-present
- Member, International Advisory Board, Inorganica Chimica Acta (Elsevier), 2003-present
- Jackson Memorial Fellow, Griffith University, 2007
- Wilsom Fellow, University of Melbourne, 2004
- Inorganic Foundation Professor & Frances Lion Memorial Lecturer, University of Sydney, 2003
- Anthony Mason Fellow, University of New South Wales, 1999
- Chair-Designate, 41st International Conference on Coordination Chemistry, 2014

RESEARCH INTERESTS

We apply synthetic organometallic chemistry methodologies to design new catalysts, functional materials and molecular imaging systems. In catalysis, we focus on ethylene oligomerization, C-C cross-coupling and environmental detoxification. Our materials research encompasses supramolecular assembly and heteromultinuclear syntheses. Specific foci are:

- Homogeneous and environmental catalysis
- Heterometallic syntheses and applications

RECENT HIGHLIGHT


The combinative use of Au(I), a skeletally flexible diphosphine and a bifunctional spacer with tunable and directional donor properties has resulted in a series of structurally distinctive ensembles and Au₂ metalloligands. This work was featured on the front cover of the Chemical Communications in its 14 June 2007 issue. A cascade of Au₃ triangle with Jurong Island as the background symbolizes the advancement of basic chemical science research amidst the rapid growth of the chemical industry in Singapore.

PREMIUM PUBLICATIONS

- QZ Weng, SH Teo, ZP Liu and TSA Hor, A strange Ni(II)-Ni(0) binuclear complex and its unexpected ethylene oligomerization, Organometallics, 26, 2950-2952 (2007)
- PL Teo, LL Koh and TSA Hor, General formation of trigonal-prismatic [Ag₂X₃(dppf)₄]⁺ (X = Cl, Br, I) through an unusual ligand migration from NiX₂(dppf) to AgOTf, Chem. Commun., in press (2007) (advanced article 20 June 07)
- SH Chong, W Henderson and TSA Hor, Stable diplatinum complexes with functional thioliato bridges from dialkylaluminum of [Pt₂(μ-S)(P-P)₂], Dalton Trans., 4008-4016 (2007)
- KE Neo, YY Ong, HV Huynh and TS Hor, A single-molecular pathway from heterometallic MM’ (M = Ba-II, Mn-II; M’ = Cr-III) oxalato complexes to intermetallic composite oxides, J. Mat. Chem., 17, 1002-1006 (2007)
Asst Professor HUANG Dejian

Postdoc., Massachusetts Inst. Techno, 2001; Ph.D., Indiana Univ. Bloomington, 1999; M.Sc., Chinese Acad. of Sciences, 1990; B.Sc., Fujian Teachers Univ., 1987

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RESEARCH INTERESTS

My group focuses on chemistry of transition metal complexes, functionalized fluorescent quantum dots for sensing of reactive oxygen species in food and biological systems, and evidence-based functional foods development. Specific foci are:

- Synthesis and SOD-like activity of metal complexes with polydentate ligands derived from epicatechins
- Design and fabrication of functional semiconductor quantum dots for sensing reactive oxygen species

RECENT HIGHLIGHT


Reaction of CdSe nanocrystals with H₂O₂ or lipid peroxide leads to quenching of fluorescence with LOD at 4.0 nM and LOQ at 14.0 nM. We observed a regain of fluorescence after reaction with peroxides with an emission peak blue-shifted by as much as 15 nm indicating shrinkage of size of CdSe nanocrystals due to oxidation and separation of oxidized layer from the CdSe core.

PREMIUM PUBLICATIONS

- KX Hay, VY Walsundara, Y Zong, M-Y Han and D Huang, CdSe nanocrystals as peroxide scavengers: a new approach to highly sensitive quantification of lipid hydroperoxides, Small, 3, 290-293 (2007)
- D Huang, KB Renkema and KG Caulton, Cleavage of F-C(sp2) bonds by MHR(CO) (PtBu3,Me), (M = Os and Ru; R = H, CH3 or Aryl): Product dependence on M and R, Polyhedron, 25, 459-468 (2006)
Asst Professor HUANG Kuo-Wei
Postdoc., Brookhaven National Laboratory, 2006-2007; Ph.D., Stanford Univ., 2005; B.S., National Taiwan Univ., 1997
http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/huangkw.html
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MAJOR RECOGNITION
- Gertrude and Maurice Goldhaber Distinguished Fellowship, Brookhaven National Laboratory, 2004-2007
- Regina Casper Stanford Graduate Fellowship, Stanford University, 2002-2004
- Dr. Yuan T. Lee Fellowship in Chemistry, CTCI Foundation, Taiwan, 1993-1997

RESEARCH INTERESTS
My interests lie on physical organometallic chemistry of small molecule activations and functionalizations, synthetic and mechanistic organometallic chemistry, polymer chemistry, and DFT studies and modelling of transition metal catalysis. Specific foci are:
- Development of new strategies for photoreduction of carbon dioxide and photogeneration of hydrogen
- Mechanistic studies and design of novel catalysts for unprecedented olefin polymerizations

RECENT HIGHLIGHT

We demonstrated the first theoretical evidence for CO₂ reduction by hydrogen using a complex lacking a metal-hydride bond. These observations suggest that CO₂ reduction does not necessarily require a metal hydride precursor as long as a hydride intermediate is thermodynamically accessible.

PREMIUM PUBLICATIONS
- K-W Huang, JH Han, CB Musgrave and E Fujita, Carbon dioxide reduction by pincer rhodium η₂-dihydrogen complexes: Hydrogen binding modes and mechanistic studies by density functional theory calculations, Organometallics, 26, 508-513 (2007)
Asst Professor HUYNH Hanh Vinh

Dr. rer. nat., Univ. Muenster (WWU), 2002; Dipl. Chem., Univ. Muenster (WWU), 1999

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MAJOR RECOGNITION

• Feodor Lynen Research Fellowship, Alexander von Humboldt Foundation, 2003-2004

RESEARCH INTERESTS

We study organometallic chemistry and catalysis. Specific foci are:

• Transition metal complexes of N-heterocyclic carbenes and their applications
• Bioactivities of organometallic compounds

RECENT HIGHLIGHT


The first pyrazolin-4-ylidene complexes of palladium(II) have been synthesized by oxidative addition of 4-iodopyrazolium salts to Pd(II) complexes and were fully characterized by multinuclear NMR spectroscopies, ESI mass spectrometry and X-ray diffraction studies.

![Synthetic pathway for the preparation of Palladium(II) pyrazolin-4-ylidene complexes](image)

PREMIUM PUBLICATIONS

• HV Huynh, Y Han, JHH Ho and GK Tan, Palladium(II) complexes of a sterically bulky, benzannulated N-heterocyclic carbene with unusual C-H • • • Pd and Cphen • • • Br interactions, Organometallics, 25, 3267-3274 (2006)
• Y Han, HV Huynh and GK Tan, Mono- vs bis(carbene) complexes: A detailed study on platinum(II)-benzimidazolin-2-ylidene, Organometallics, 26, 4612-4617 (2007)
Assoc Professor Stephan JAENICKE

Postdoc., Max Planck Society, 1988; Postdoc., Michigan State Univ., 1983; Ph.D., Dr. rer. nat., Univ. of Karlsruhe, 1981; B.Sc., Diplomchemiker, Univ. of Cologne, 1976

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RESEARCH INTERESTS
The research in my group centers around two topics: catalytic reactions and process integration. Nature provides enzymes which are unsurpassed as catalysts for very specific reactions. We try to enhance the substrate acceptance of enzymes, and work on methods to use these enzymes in a continuous flow reactor (enzyme membrane reactor) for stereoselective transformations. Other unconventional systems include reactions in fluorous medium and in ionic liquids. There, we are particularly interested in selective oxidation reactions. Specific foci are:

- Heterogeneous catalysis (zeolites and mesoporous materials)
- Enzyme catalysis and whole cell fermentation as route to chiral synthons

RECENT HIGHLIGHT

Hydrophobic zeolite beta containing Al was found to be a good catalyst for the racemization of 1-phenylethanol. Combined with an immobilized lipase from Candida antarctica, the dynamic kinetic resolution of 1-phenylethanol to the (R)-phenylethylester can be achieved with high yield and selectivity. By using high molecular weight acyl transfer reagents such as vinyl butyrate or vinyl octanoate, a high enantiomeric excess of the product esters of 92 % and 98 %, respectively, could be achieved.

PREMIUM PUBLICATIONS
Assoc Professor KANG Hway Chuan
Ph.D., Caltech, 1989; B.Sc., Yale Univ., 1983
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RESEARCH INTERESTS
Surface chemistry and physics and computational chemistry are my main interests. My specific foci include:
• Silicon-germanium surfaces/interfaces
• Sputtering dynamics

RECENT HIGHLIGHT
My research focuses upon the use of simulations grounded in statistical and quantum mechanics to provide molecular scale “pictures” of physical and chemical processes in molecules, clusters, surfaces and bulk materials. We are interested in modelling the kinetics of catalytic reactions, the structure and properties of solid and cluster surfaces, reaction energetics, the interactions and reactions of molecules adsorbed on surfaces, and the energetics of defects on surfaces and in the bulk.

PREMIUM PUBLICATIONS
• Q Li, ES Tok, J Zhang and HC Kang, A reassessment of the molecular pathways for H₂ thermal desorption from Si₁₀, Ge₁₀,(100)-(2×1) surfaces, J. Chem. Phys., 126, 44706 (2007)
• FCH Lim, ES Tok and HC Kang, Decomposition of SiH₃ to SiH₂ on Si(100)-(2×1), Phys. Rev. B, 74, 5333 (2006)
• J Shi, HC Kang, ES Tok and J Zhang, Evidence for hydrogen desorption through both interdimer and intradimer paths from Si(100)-(2×1), J. Chem. Phys., 123, 034701 (2005)
Assoc Professor Stefan KASAPIS
Postdoc., Cranfield Univ., 1993; Ph.D., Cranfield Univ., 1991; M.Sc., Univ. of London, 1988; B.Sc., Aristotle Univ., 1986
http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/sk.htm
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MAJOR RECOGNITION
- Editor, Food Hydrocolloids, 2006-present
- Member of the Editorial Board, Carbohydrate Polymerism, 2005-present
- Organizer, 9th International Hydrocolloids Conference, 2008

RESEARCH INTERESTS
General research interest lies on Structure-function relationships in hydrocolloids. Specific foci are:
- Gelatin, fat, sugar replacing in food products for improved sensory perception and health
- Glass transitions and the kinetics of active compound release in foods and pharmaceuticals

RECENT HIGHLIGHT
The prevalent analytical framework traditionally employed to follow the transition from the rubbery to glasslike consistency in biomaterials is that of the free volume theory in conjunction with the WLF equation. Increasingly, the combined WLF/free volume approach is challenged by the coupling model which is able to provide additional insights into the physics of intermolecular interactions in synthetic materials at the vicinity of $T_g$. The model in the form of the Kohlrausch-Williams-Watts function described well the spectral shape of the local segmental motions of gelatin/co-solute at $T_g$. The analysis provided the intermolecular interaction constant and apparent relaxation time, parameters which depend on chemical structure. Results appear to be encouraging for further explorations of the dynamics of densely packed biomaterials at the glass transition region.

PREMIUM PUBLICATIONS
- S Kasapis and IM Al-Marhoobi, Bridging the divide between the high- and low-solid analyses in the gelatin / k-carrageenan mixture, Biomacromolecules, 6, 14-23 (2005)
Assoc Professor KHOR Eugene

Ph.D., Virginia Tech, 1983; B.Sc., Lakehead Univ., 1979

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/khore.htm

Email: chmkhore@nus.edu.sg

MAJOR RECOGNITION

- Associate Editor, Biomaterials, 2005
- International Committee, 7th Asia Pacific Chitin Chitosan Symposium, 2006

RESEARCH INTERESTS

General research interest lies on chitin and chitosan for biomedical applications. Specific foci are:

- Developing bone cement
- Developing anticoagulant

RECENT HIGHLIGHT

Reference: Biomacromolecules, 6, 80-87 (2005)

A methodology was developed to produce chitin derivatives under homogeneous conditions. This has widespread implications for producing a myriad of chitin derivatives for various applications.

PREMIUM PUBLICATIONS

- Y Zou and E Khor, Preparation of C-6 substituted chitin derivatives under homogeneous conditions, Biomacromolecules, 6, 80-87 (2005)
- E Khor and LY Lim, Implantable applications of chitin and chitosan, Biomaterials, 24, 2339-2349 (2003) (Invited review)
Assoc Professor LAI Yee Hing

Postdoc., Univ. of California at Berkeley and Lawrence Berkeley Laboratory, 1982; Ph.D., Univ. of Victoria, 1980; B.Sc., Nanyang Univ., 1978

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/laiyh.htm

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RESEARCH INTERESTS
My primary interest lies on organic chemistry.

RECENT HIGHLIGHT
Our research interests are centred mainly on the studies of conjugated aromatic systems going from theoretically interesting molecules to organic materials for specific applications.

PREMIUM PUBLICATIONS
- YH Ting and YH Lai, Extreme projection of a proton into the pi-cloud of an aromatic ring: Record shielding of an aromatic proton in trans-10b-methyl-10c-(1-naphthyl)-10b,10c-dihdropyrene, J. Amer. Chem. Soc., 126, 909-914 (2004)
Assoc Professor LAM Yulin

Research Fellow, Inst. of Molecular and Cell Biology, 1994-1996; Research Fellow, The Scripps Research Inst., 1992-1994; Ph.D., National Univ. of Singapore, 1992; B.Sc.(Hons), National Univ. of Singapore, 1987

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RESEARCH INTERESTS

My interests are as follows (i) devising new synthetic strategies for traceless combinatorial synthesis; (ii) combinatorial synthesis and biological evaluation of small molecules as potential therapeutic agents; and (iii) developing polymer bound reagents and catalysts. Specific foci are:

- Traceless solid-phase synthesis of heterocycles and their biological evaluations as anticonvulsants, DHFR inhibitors and NOS Inhibitors
- Developing polymer-supported reagents and catalysts

RECENT HIGHLIGHT


A highly regioselective and traceless solid-phase route to 1,7,8-trisubstituted purines has been developed. This methodology could also be extended to the preparation of 8-azapurines and {1}-condensed purines. A representative set of 17 purines, azapurines and {1}-condensed purines was synthesized. This paper also describes a mild method to prepare the BOBA resin.

PREMIUM PUBLICATIONS

- H Fu and YL Lam, Regiospecific solid-phase strategy to N7-substituted purines and its application to 8-azapurines and {1}-condensed purines, J. Comb. Chem., 9, 804-810 (2007)
- Y Chen, KH Kong, J Bai, Y Li, SG Lim, TH Ang and YL Lam, Synthesis and the biological evaluation of 2-benzenesulfonylmethyl-5-substituted-sulfonyl-[1,3,4]-oxadiazoles as potential anti-hepatitis B virus agents, Antiviral Res., 71, 7-14 (2006)
Asst Professor Martin J LEAR

Postdoc., Tohoku Univ., 2000; Postdoc., Parke-Davis & CNRS, 1997; Ph.D., Univ. of Glasgow, 1995; B.Sc., Univ. of Glasgow, 1991

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/lear.htm

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RESEARCH INTERESTS

My research area is in the total and analogue synthesis of natural products of high biological relevance and structural complexity. Specific foci are:

• Total synthesis of natural antimalarial (e.g. bielschowskysin) and antibiotic (e.g. platensimycin) leads
• Development of radiopharmaceuticals and peptide-conjugate probes for disease detection and treatment

RECENT HIGHLIGHT

Reference: Ongoing work @http://staff.science.nus.edu.sg/~chmlmj/

Total synthesis, methodological and bioimaging programmes are being combined in order to develop new antimalarial, antibiotic, immunogenic, and biomedical agents and strategies.

PREMIUM PUBLICATIONS

• MJ Lear, F Yoshimura and M Hira, A direct and efficient α-selective glycosylation protocol for the kedarcidin sugar, L-mycarose: AgPF₆ as a remarkable activator of 2-deoxythioglycosides, Angew. Chem., Int. Ed., 40(5), 946-949 (2001)
Dr Adrian M LEE

Singapore Millenn. Found. Fellow, National Univ. of Singapore, 2002-2004; Postdoc., Univ. of Cambridge, 2002; Ph.D., Univ. of Cambridge, 1997; M.A., Univ. of Cambridge, 1996; B.A., Univ. of Cambridge, 1992

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/aml.htm

Email: chmaml@nus.edu.sg

MAJOR RECOGNITION

• NASA Achievement Award, NASA, 1996

RESEARCH INTERESTS

We study the development and application of fragment-based quantum chemical methods to accurately describe the properties and interactions of very large molecules. Specific foci are:

• Calculating the interaction energy between a neuraminidase substrate and several inhibitors, including tamiflu and relenza
• Optimisation of molecules within the energy-based fragmentation approximation and the application of such techniques to nmr structure elucidation

RECENT HIGHLIGHT


This study reports the fragmentation of an entire enzyme and substrate and shows that the majority of the small fragment molecule interactions can be accurately evaluated without the need to compute the ab initio interaction energy. The perturbation approach presented in this work indicates the possibility to perform accurate first principles molecular dynamics in systems as large as proteins.

Neuraminidase–BCX-1812 complex with the electrostatic potential calculated using a distributed multipole analysis.

PREMIUM PUBLICATIONS

• HK Roscoe, AE Jones and AM Lee, Midwinter start to Antarctic ozone depletion: Evidence from observations and models, Science, 278, 93 – 96 (1997)
Professor LEE Hian Kee
Ph.D., Univ. of Canterbury, 1982; B.Sc., Univ. of Canterbury, 1978
http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/leehk.htm
Email: chmleehk@nus.edu.sg

MAJOR RECOGNITION
- Editor, Analytica Chimica Acta, 2005-present
- Member, Editorial Board, Journal of Chromatography A, 2004-present
- Member, International Advisory Board, The Analyst, 1997-present
- Member, Advisory Board, Analytical Sciences, 2004-present
- Member, Editorial Advisory Board, LC GC Asia Pacific, 2006-present
- Outstanding Researcher Award, NUS, 2006
- National Project Coordinator, United Nations University (Japan) Programme on the Asia Coastal Hydrosphere, 1996-present
- Member, External Audit Panel, Singapore Water Reclamation and Marina Bay Projects, 2003-present

RESEARCH INTERESTS
My major research interests are focused on the development and applications of solvent-minimized miniaturized sample preparation and extraction techniques, particularly, but not limited to, aqueous environmental matrices. Specific foci are:
- Separation science; microscale sample preparation and extraction
- Environmental analysis

RECENT HIGHLIGHT

A zirconia hollow fiber membrane, prepared via a template method coupled with a sol-gel process, was used for the microextraction of pinacolyl methylphos-phonnic acid, a degradation product of a nerve agent, soman, the first time an inorganic hollow fiber membrane has been applied to microextraction.

PREMIUM PUBLICATIONS
Dr LEONG Lai Peng
Ph.D., Univ. of Leeds, 2000; M.Sc., Univ. of Leeds, 1996; B.Sc., Universiti Kebangsaan Malaysia, 1995
http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/leonglp.htm
Email: chmllp@nus.edu.sg

RESEARCH INTERESTS
Main interest is in the kinetics of chemical reactions especially with respect to bioactive compounds such as antioxidants found in plants, as well as the Maillard reaction in foods and model systems. Specific foci are:
- Kinetics of antioxidant and free radical
- Kinetic of Maillard reaction

RECENT HIGHLIGHT

The paper look into the antioxidant properties of aqueous extracts of selected plants found in Singapore market and their potential for use as functional food ingredients. Antioxidants from these extracts can act synergistically to protect biomolecules from being harmed.

![Regeneration of an antioxidant (A1H) by a second antioxidant (A2H) after scavenging radical R*](image)

PREMIUM PUBLICATIONS
Assoc Professor LEONG Weng Kee


http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/leongwk.htm
Email: chmlwk@nus.edu.sg

MAJOR RECOGNITION

- Visiting Professor, Kyoto University, 2006
- Visiting Scientist, Cambridge University, 2005
- Visiting Scientist, ENSCP, 2002 and 2005
- Visiting Fellow, Tohoku University/JSPS, 2000

RESEARCH INTERESTS

We are interested in all aspects of organometallic chemistry, organometallic clusters in particular, ranging from their synthesis to structure, bonding, reactivity and mechanistic studies, and their applications in catalysis (homogeneous and heterogeneous), nanomaterials and bioorganometallics. Specific foci are:

- Organometallic chemistry - synthesis, structure, bonding, reactivity, mechanisms, catalysis, materials
- Bioorganometallic chemistry - biopharmaceuticals, bioimaging, in vivo reactivity studies

RECENT HIGHLIGHT


Organometallic carbonyl clusters can be conjugated onto biomolecules. These bioconjugates can enter cells with ease, and the CO stretching vibrations afford strong mid-infrared signals which can be detected via an IR microscope. This demonstrated, for the first time, that bioimaging in the mid-infrared is possible with stable, water-soluble organometallic carbonyl cluster compounds.

PREMIUM PUBLICATIONS

Simultaneous separation of 27 pollutants by capillary electrophoresis: 1, Oxalic acid; 2, malonic acid; 3–7, formic acid, maleic acid, tartaric acid, succinic acid, malic acid; 8, acetic acid; 9/10, propionic acid, lactic acid; 11, butyric acid; 12, dalapon; 13, TCTPA; 14, 3,5-dichlorobenzonic acid (3,5-DCB); 15, 3-amino-2,5-dichlorobenzonic acid (cloramben); 16, 3,6-dichloro-2-methoxybenzonic acid (dicamba); 17, dichlorophenoxyacetic acid (2,4-D); 18, 3-isopropyl-1H-2,1,3-benzothiadiazin-4(3H)-one-2,2-dioxide (Bentazon); 19/20, 4-amino-3,5,6-trichloro-pyridine-2-carboxylic acid (picloram), 2-(2,4-dichlorophenoxoxy) propionic acid (dicloprin); 21, 2,4,5-trichlorophenoxyacetic acid (2,4,5-T); 22/23, Dinoseb, 2,4,5-TP; 24-24 DB; 25, 4-NP; 26, pentachlorophenol (PCP); 27, acifluorfen.
Assoc Professor LI Tianhu

Postdoc., Scripps Research Institute, 1994; Ph.D., State Univ. of New York, 1992; M.Sc., Beijing Inst. of Chemical Technology, 1982; B.Sc., Jilin Univ., 1980

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RESEARCH INTERESTS
My research primarily focuses on nucleic acid chemistry.

RECENT HIGHLIGHT
The primary focus of my group in recent years has been directed toward the exploration of new properties of G-quadruplex and i-motif as well as their diagnostic and therapeutic applications. Several circularly unimolecular and bimolecular G-quadruplex and i-motif have accordingly been made in our lab in the past years while preparation of fluorescence-tagged circular G-quadruplex and i-motif are currently in progress. We hope that circular G-quadruplex and i-motif could be useful molecular tools for interfering certain biological functions of tetrplex-binding proteins and for examining the winding and resolving mechanisms of G-quadruplex catalyzed by G-quadruplex-promoting and disintegrating proteins.

PREMIUM PUBLICATIONS

• AHF Lee, ASC Chan and TH Li, Acid-accelerated DNA-cleaving activities of antitumor antibiotic varacin, Chemical Communications 18, 2112-2113, (2002)
Asst Professor LIU Xiaogang


http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/liuxg.htm
Email: chmlx@nus.edu.sg

MAJOR RECOGNITION
• Young Investigator Award, National University of Singapore, 2006

RESEARCH INTERESTS
My general interests are supramolecular chemistry, materials science, and nanotechnology. Specific foci are:
• Developing nanoparticle-based ultrasensitive sensor systems for metal ions and biological molecules
• Designing novel nanomaterials with high catalytic activity and recyclability
• Synthesizing low-dimensional nanomaterials
• Developing lanthanide-doped fluorescent nanoparticle probes

RECENT HIGHLIGHT

Emission color modulation is presented based upon (Ln, P)-doped YVO₄ nanoparticle systems. By precisely control of emission wavelengths or intensity ratios through control of different host/activator systems or concentrations of the dopant ions, the color of light emission can be readily tuned under single wavelength excitation.

PREMIUM PUBLICATIONS
Assoc Professor LOH Kian Ping

Postdoc., National Inst. for Material Science, Tsukuba, Japan, 1998; Ph.D., Oxford Univ., 1996; B.Sc., National Univ. of Singapore, 1994

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/lohkp.htm
Email: chmlohkp@nus.edu.sg

MAJOR RECOGNITION

- Deputy Chair, NUS Nanoscience and Nanotechnology Initiative, 2007-present
- Focus Chair, NUS Nanoscience and Nanotechnology Initiative Optoelectronics group, 2007-present
- International Advisory Panel, New Diamond and Nanocarbon Conference, 2007-2008

RESEARCH INTERESTS

General interests include diamond surface science, chemical and bio-functionalization of nanodiamond for energy storage, analytics sensing applications, molecular engineering of novel multiphoton organic molecules and multiexciton quantum dots for photovoltaics, organic-inorganic hybrid for photovoltaic application. Specific foci are:

- Nanodiamond chemistry
- Molecular engineering of organic and inorganic nanomaterials for photovoltaics

RECENT HIGHLIGHT


The adhesion properties of normal human dermal fibroblast (NHDF) cells on ultrananocrystalline diamond (UNCD) surfaces were measured using atomic force microscope by studying the retraction force curves. Cell adhesion forces were observed to be strongest on UV-treated UNCD. Using capillary injection, a surface gradient of polyethylene glycol could be assembled on top of the diamond surface for the construction of a cell gradient. This work was highlighted in Biophotonics International (2007).

PREMIUM PUBLICATIONS

Asst Professor LU Yixin

Postdoc, Nagoya Univ., 2001; Postdoc, Clinical Research Inst. of Montreal, 2000; Ph.D., McGill Univ., 2000; B.Sc., Fudan Univ., 1991

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/lyuyl.htm
Email: chmlyx@nus.edu.sg

RESEARCH INTERESTS
Main areas of study are asymmetric organocatalysis and medicinal chemistry. Specific foci include:
• Organocatalyst-promoted asymmetric organic reactions
• Development of analgesics and anti-cancer agents

RECENT HIGHLIGHT

Organocatalytic direct anti-selective Mannich reactions of O-TBS-hydroxyacetone with various N-tosylimines derived from aromatic aldehydes in the presence of L-threonine-derived catalyst afforded 1,2-amino alcohols in good yields and with enantioselectivities of 99% in almost all cases.

PREMIUM PUBLICATIONS
• L Cheng, X Han, H Huang, MW Wong and Y Lu, Highly diastereoselective and enantioselective direct organocatalytic anti-selective Mannich reactions employing N-tosylimines, Chem. Commun., 4143 (2007)
Dr MAK Ka Wai Karen
Postdoc., Hong Kong Univ. of Science and Tech., 2004; Ph.D., Hong Kong Univ. of Science and Tech., 2003; B.Sc., Hong Kong Univ. of Science and Tech., 1999

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/mak.htm
Email: chmmkwk@nus.edu.sg

RESEARCH INTERESTS
Specific foci are:
- Enzyme sensors for environmental analysis
- Substrate recycling in multienzyme system

PREMIUM PUBLICATIONS
- KKW Mak, U Wollenberger, F Scheller and R Renneberg, An amperometric bi-enzyme sensor for determination of formate using cofactor regeneration, Biosensors and Bioelectronics, 18, 1095-1100 (2003)
Dr MAUNG MAUNG Saw
Ph.D., National Univ. of Singapore, 2006; M.B.B.S., Inst. of Medicine (1), Yangon, 1992

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/maung.htm
http://medicine.nus.edu.sg/meddnr/cv-mms.htm

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MAJOR RECOGNITION

- Vice Chairman, Advisory Committee on Implementation of GMP and GRP in Asia, International Atomic Energy Agency, 2007
- National Consultant, Nuclear Medicine Section, Division of Human Health, International Atomic Energy Agency (IAEA), 2005-2006
- Expert on Radiopharmacy, Nuclear Medicine Section, Division of Human Health, International Atomic Energy Agency (IAEA), 2002-2006

RESEARCH INTERESTS

Major interest is on “Bioorganometallic Chemistry” with emphasis on the development of radiopharmaceuticals/probes for “molecular imaging and therapy” (cancer, metabolic disorders, neurodegenerative diseases, infection and stem cells). There is minor focus on organometallic-based drugs. Specific foci are:

- Bioactive metal complexes ($M = 99\text{mTc}(\text{CO})_3$, $^{185/186}\text{Re}(\text{CO})_3$, $^{99\text{mTc}}\text{Co}$, $^{185/186}\text{ReO}$)
- Development of new rhenium and technetium cores, biocompatible chelators, luminescent complexes, and new targeting approach

RECENT HIGHLIGHT


We have synthesized and characterized new $\text{fac-}(\text{M}(\text{CO})_3)$+ ($M = \text{Tc, Re}$) complexes with pendant C18 chain as surrogates for Lipiodol, a liver cancer therapy agent (ref-1), as a model for labeling other bioactive materials for molecular imaging and therapy. The complexes showed superior \textit{in vivo} stability than $^{188}\text{ReO-N}_2\text{S}_2$ complex currently undergoing Phase III clinical trial participated by us (ref-2).

PREMIUM PUBLICATIONS

- MM S, P Kurz, N Agorastos, TSA Hor, FX Sundram, YK Yan and R Alberto, Complexes with the $\text{fac-}(\text{M}(\text{CO})_3)$+ ($M = 99\text{mTc}$, Re) moiety and long alkyl chain ligands as Lipiodol surrogates. \textit{Inorg. Chim. Acta}, 359, 4079-4086 (2006)
Ms Prabhavathy JANARDHANA

M.Sc., National Univ. of Singapore, 2004; M.Sc., Bangalore Univ., 1996;
B.Sc., Bangalore Univ., 1994

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/jp.htm

Email: chmjp@nus.edu.sg

RESEARCH INTERESTS
Organometallic chemistry is the main area of interest.

PREMIUM PUBLICATIONS
Asst Professor David G POPOVICH

Postdoc., NSERC, 2005; Postdoc., Univ. of British Columbia, 2004; Ph.D., Univ. of British Columbia, 2004; M.Sc., Univ. of Toronto, 1996; B.Sc., Univ. of Toronto, 1991

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/popovich.htm
Email: chmpdg@nus.edu.sg

RESEARCH INTERESTS

My specific foci are:

• Bioactive plant foods and extracts derived from natural health products and traditional food sources
• Dietary saponins from ginseng (ginsenosides), bitter melon and soy

RECENT HIGHLIGHT


Ginsenosides Rh2 and Rg3 are rare bioactive ginsenosides and were effectively shown to be a breakdown product of thermal extraction of ginseng plant material, an underutilized resource, and is potential source for natural health products or pharmaceutical development.

PREMIUM PUBLICATIONS

• DJ Jenkins, DG Popovich, CW Kendall, E Vidgen, N Tariq, TPP Ransom, TMS Wolever, V Vuksan, CC Mehling, DL Docto, C Bolognesi, J Huang and R Patten, Metabolism, 46, 1-4 (1997)
Dr SHIP Chee Peng

Postdoc, Ghent Univ., 2003; Ph.D. Univ. of Southampton, 2002; B.Sc.(Hons), Univ. of Malaya, 1997

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/shipcp.htm
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MAJOR RECOGNITION
• Ph.D. ORS Award and Research Studentship, University of Southampton, 2002

RESEARCH INTERESTS
General interests include heterogeneous catalysis and small peptide synthesis. Specific foci are:
• Replacement of homogeneous liquid acids such as HF and H₂SO₄ by heterogeneous solid acids
• Cyclic dipeptides

RECENT HIGHLIGHT

We have conveniently prepared ultra small palladium(0) particles (less than 1 nm) on magnetic nanoparticle supports, in which immobilized auxiliaries are used as stabilizing ligands. These catalysts were active for Suzuki cross-coupling and Heck reactions giving isolated yields of 83 % and 56 %, respectively. In addition, the catalyst can be easily separated using a magnet and reused several times with sustained activity.

PREMIUM PUBLICATIONS
• CP Ship, A Zainudin and YY Lim, Effects of aminocarboxylate ligands of surface active copper(II) complexes on the hydrolysis of p-Nitrophenyldiphenylphosphate, J. Colloid and Interface Science, 217, 211 (1999)
Asst Professor SIM Wee Sun
Postdoc., Univ. of Cambridge, 1997; Ph.D., Univ. of Cambridge, 1996; B.Sc. (Honours), National Univ. of Singapore, 1992
http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/simws.htm
Email: chmsimws@nus.edu.sg

MAJOR RECOGNITION
- DuPont Young Faculty Award, DuPont, 2001
- SNAS Young Scientist Award, Singapore National Academy of Science/A*STAR, 2002

RESEARCH INTERESTS
We aim to establish viable methods of functionalizing surfaces and gaining molecular-level understanding and control of chemical transformations occurring at the interfaces of solid materials used in catalysis, microelectronics and nanotechnology. Specific foci are:
- Surface science and catalysis
- Thin films and nanomaterials

RECENT HIGHLIGHT

A two-step surface functionalization approach has been used to encase Au nanoparticles in monolayer organometallic Ru-complex shells by the reaction of an intermediate surface-bound mercaptoopropanoic acid capping species with Ru dodecacarbonyl (Ru$_3$(CO)$_{12}$) clusters.

PREMIUM PUBLICATIONS
- BH Kee, WS Sim and W Chew, Application of band-target entropy minimization (BTEM) and residual spectral analysis to in situ reflection-absorption infrared spectroscopy (RAIRS) data from surface chemistry studies, Analytica Chimica Acta, 571, 113 (2006)
- BS Yeo, ZH Chen and WS Sim, Efficient growth of ordered thin oxide films on Ni(111) by NO$_2$ oxidation, Surface Science, 557, 201 (2004)
- BS Yeo, ZH Chen and WS Sim, Surface functionalization of Ni(111) with acrylic acid monolayers, Langmuir, 19, 2787 (2003)
Dr Bellam SREENIVASULU  
Ph.D., National Univ. of Singapore, 2006  
http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/bs.html  
Email: chmsb@nus.edu.sg

MAJOR RECOGNITION  
- CrystEngComm Best Poster Award, ICMAT (2003)  
- Fellowship for American Crystallographic Association (ACA) Summer School, 2005

RESEARCH INTERESTS  
Specific foci are:  
- Supramolecular networks involving transition metal complexes  
- Biomimetic oxidation catalysts  
- Coordination chemistry of lanthanides with reduced Schiff base ligands  
- Lanthanide complexes as magnetic resonance image contrasting agents

RECENT HIGHLIGHT  
Ni(II) complex, [(H₂O)₂]₃[=Ni(HSglu)(H₂O)₂]J • H₂O, derived from  
N-(2-hydroxybenzyl)-L-glutamic acid (H₂Sglu) displaying a novel helical staircase coordination polymeric  
structure encapsulating 1D hydrogen bonded helical water chain as in the chiral helical channels similar to  
that observed in biological aquaporin proteins.

PREMIUM PUBLICATIONS  
- R Ganguy, B Sreenivasulu and JJ Vittal, Amino acid containing reduced Schiff bases as the building blocks for  
- B Sreenivasulu, F Zao, S Gao and JJ Vittal, Synthesis, structures and catecholase activity of a new series of dicopper(II)  
- B Sreenivasulu, M Vetrichelvan, F Zao, S Gao, JJ Vittal, Cu(II) complexes of Schiff base and reduced Schiff base ligands:  
4635-4645 (2005)  
- B Sreenivasulu and JJ Vittal, Helix inside Helix: Encapsulation of hydrogen bonded water molecules in a staircase  
- B Sreenivasulu and JJ Vittal, A metal coordination polymer with hexagonal diamondoid (lonsdaleite) topology, Crystal  
Asst Professor TAN Choon Hong
Postdoc., Harvard Univ., 2002; Ph.D., Univ. of Cambridge, 1999; B.Sc. (Hons), National Univ. of Singapore, 1996
http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/tanch.htm
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RESEARCH INTERESTS
We are interested in Bronsted base catalyzed enantioselective reactions. We are particularly interested in the chiral bicyclic guanidines. We have shown that they can catalyze Michael and Diels-Alder reactions with high enantioselectivities. Specific foci are:

- Chiral Bronsted base catalyzed enantioselective reactions
- Enantioselective reactions using molecular oxygen

RECENT HIGHLIGHT
Chiral bicyclic guanidine was found to be an excellent catalyst for reactions between anthrones and various dienophiles. The catalyst can tolerate a range of substituents and substitution patterns on the anthrone. This is the first case of highly enantioselective base catalyzed anthrone Diels-Alder reaction.

PREMIUM PUBLICATIONS
Dr TAN Sue Qing Emelyn  
Ph.D., Univ. of Canterbury, 2006; B.Sc., Univ. of Canterbury, 2002  
http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/tansq.html  
Email: chmtsqe@nus.edu.sg

RESEARCH INTERESTS
Main area of interest lies on the fabrication of chemically modified surfaces that are spatially defined, in order for subsequent controlled assembly of materials including nanoparticles and protein. Specific focus are:
- Chemically modified surfaces
- Electrochemistry and microfluidics

RECENT HIGHLIGHT

This paper demonstrated three simple strategies employing poly(dimethylsiloxane) (PDMS) molds for patterning carbon surfaces with two different modifiers; in a 18 μm line pattern. The PDMS molds are patterned with microfluidic channels (approximately 20 μm wide and 49 μm deep), and form a reversible, conformal seal to the pyrolyzed photosensitive film (PPF) and modified PPF surfaces. For the fill-in patterning approach (shown in the diagram), the first modifier is electrografted to the PPF surface exposed within the microchannels, and in a second grafting step after removal of the PDMS mold, the second modifier fills-in the remaining surface. Inverse patterns of modifiers were fabricated and the patterns are characterized using SEM, optical microscopy, formation of condensation figures, and SEM imaging after assembly of Au nanoparticles.

PREMIUM PUBLICATIONS
Asst Professor TOH Chee Seng

Postdoc., California Inst. of Technology, 2004; Ph.D., Univ. of Southampton, 2002; M.Sc., National Univ. of Singapore, 1995; B.Sc. (Hons), National Univ. of Singapore, 1993

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/tohcs.htm
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MAJOR RECOGNITION
- Co-Chair, Analytical, Environmental and Green Chemistry Symposium, Singapore International Chemical Conference-5, 2007
- Chair, Local Organising Committee, International Society of Electrochemistry Spring Meeting, 2007

RESEARCH INTERESTS
Our current research interests are in analytical and electrochemistry with the development of ultrasensitive membrane-based sensors, biomimetic membrane systems for sustainability and environment research, transport study of ions/biomolecules through nano-channels. Specific foci are:
- Membrane-based sensors
- Biomimetic membrane systems

RECENT HIGHLIGHT

A membrane-based electrochemical immunosensor sensitive towards proteins is described. The sensing mechanism depends on the blocking of pore channels when protein antigen molecules bind to antibody molecules attached to the channel walls, impeding diffusion of redox probe towards the underlying sensing electrode.

PREMIUM PUBLICATIONS
- GW Koh and CS Toh, Nanoscale bioanalysis using electrochemical methods, *Encyclopedia of Nanoscience and Nanotechnology* accepted
Assoc Professor VALIYAVEETTIL Suresh

Postdoc, Max-Planck Inst. for Polymer Research, 1997; Postdoc., Univ. of Twente, 1992; Ph.D., Univ. of Victoria, 1992; M.Tech., Indian Inst. of Technology, 1987; M.Sc., Calicut Univ., 1985; B.Sc., Calicut Univ., 1983

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MAJOR RECOGNITION

• Visiting Professor, Indian Institute of Technology Madras, 2006-current
• Visiting Professor, University of Houston, 2007

RESEARCH INTERESTS

Current research interest of my group involves the synthesis and characterization of nanostructured materials (polymers, hybrid materials and bionanomaterials). Another area of interest involves establishing the toxicity of nanomaterials in both cell models as well as in fish models to identify the impact of nanomaterials in environment. Nanohybrid materials are prepared from organic and inorganic components for specific applications such as sensors, organophotovoltaics and molecular electronics applications. My specific foci are:

• Synthesis and characterization of novel materials
• Development of nanotechnology and establishing the toxicity of nanomaterials

RECENT HIGHLIGHT

Reference: Adv. Funct. Mat., 17, 1698-1704 (2007) – Figure 1; Macromolecules, 40, 6057-6066 (2007) – Figure 2; Chem. - A Eur. J., 13, 3262-3268 – Figure 3

PREMIUM PUBLICATIONS

• Li HR and S Valiyaveetil, Water-soluble multifunctional cross-conjugated poly(p-phenylene) as stimuli-responsive materials: Design, synthesis, and characterization, Macromolecules, 40, 6057-6066 (2007)
Assoc Professor Jagadese J VITTAL
Postdoc., Univ. of Western Ontario, 1987; Ph.D., Indian Inst. of Science, 1982; M.Sc., Madurai Univ., 1977; B.Sc., Univ. of Madras, 1975
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MAJOR RECOGNITION
• Associate Editor, Journal of Synthesis and Reactivity in Inorganic, Metal-Organic and Nano-Metal Compounds, (A Taylor and Francis Journal), 2006-present
• Member, Editorial Boards of Main Group Metal Chemistry (2003-present), Molecular and Supramolecular Chemistry (2007-present), and Current Chemical Biology (2007-present)
• Keynote Speaker, 37th International Conference on Coordination Chemistry, South Africa, 2006
• Keynote Speaker, 1st Asian Conference on Coordination Chemistry, Japan, 2007
• Keynote Speaker, 12th Asian Chemical Congress, Malaysia, 2007
• Co-editor, Special issue on Coordination Polymers, J. Molecular Structure, 796, 30 August 2006

RESEARCH INTERESTS
Main areas of interests include supramolecular coordination polymeric architectures, photochemistry and solid-state structural transformations in coordination polymers, luminescent coordination polymeric gels and fibers, chemistry of metal chalcogenocarboxylates as molecular precursors for metal chalcogenide materials, thin films and nanocrystals. Specific foci are:
• Inorganic chemistry and inorganic materials
• Supramolecular chemistry and crystal engineering

RECENT HIGHLIGHT

A discrete cyclic water heptamer trapped inside a 3D coordination polymeric crystal lattice with diamondoid topology undergoes phase transition when cooled from 296 K to 223 K, from C2/c to P21/c accompanied by structural transformation to bicyclic water heptamer.

PREMIUM PUBLICATIONS
• L Tian, HI Elm, W Ji and JJ Vittal, One pot synthesis and third-order nonlinear optical properties of AgInS2 nanocrystals, Chem. Commun., 4276-4278 (2006)
• MT Ng, GB Boothroyd and JJ Vittal, One pot synthesis of new phase AgInSe2 nanorods, J. Am. Chem. Soc., 128, 1178-1179 (2006)
Assoc Professor Thomas WALCZYK

Postdoc., Swiss Federal Inst. of Technology (ETH), 1996; Ph.D. (Dr. rer. nat.), Univ. of Regensburg, 1994; Dipl. Chem., Univ. of Regensburg, 1991

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RESEARCH INTERESTS

My research is directed towards a better understanding of mineral and trace element metabolism in humans and their role in health and disease with a special focus on iron and calcium. Specific foci are:

- Development and application of stable isotope techniques for element tracing in human intervention studies
- Analysis and modeling of tracer kinetics in human experiments
- Exploration of natural isotope signatures in the human body for essential elements
- Inorganic trace analysis and elemental speciation analysis by mass spectrometric isotope dilution analysis (IDMS)

RECENT HIGHLIGHT


Within a multi-centre, multidisciplinary project we could successfully validate a new isotopic technique for identifying changes in bone calcium metabolism in humans at supreme sensitivity. The technique uses Ca-41 for labelling of bone calcium and utilizes the tracer signal in urine. The paper describing the underlying principles has received the Springer ABC Best Paper Award in 2007.

PREMIUM PUBLICATIONS

Dr WENG Zhiqiang

Ph.D., National Univ. of Singapore, 2003; B.Sc., Fuzhou Univ., 1994

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/wengzq.htm

Email: chmwz@nus.edu.sg

RESEARCH INTERESTS

My specific foci are:

- Transition metal catalysts for olefin oligomerization/ polymerization
- Transition metal catalysts for organic synthesis

RECENT HIGHLIGHT


An unusual heterovalent bimetallic Ni(I)-Ni(0) complex \([\eta^2-C_5H_4CH=N(C_6F_5)\text{Fe}[\eta^2-C_5H_4PPh_2]_2\text{Ni}_2(\text{Cl})]\) was isolated. Under similar conditions, this bimetallic complex gives somewhat higher activities in ethylene oligomerization than its related Ni(II) and Ni(0) counterparts.

PREMIUM PUBLICATIONS

- Z Weng, S Teo and TSA Hor, Chromium(III) catalysed ethylene tetramerization promoted by bis(phosphino)amines with an N-Functionalised pendant, *Dalton Trans.*, 3493-3498 (2007)
- Z Weng, S Teo and T S A Hor, Isolation and structural elucidation of a Ni(0)-Al(CH_3)_3 bimetallic complex with an agostic alpha-C - H in a bridging methyl, *Chem. Commun.*, 1319-1321 (2006)
Asst Professor Thorsten WOHLAND

*Postdoc., Stanford Univ.; Ph.D., Swiss Federal Inst. of Technology at Lausanne; Dipl. Phys., Univ. of Heidelberg*

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/tw.htm

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**RESEARCH INTERESTS**

My group works on the development of new fluorescence spectroscopy techniques for the measurement of biomolecular interactions in cells, tissues, and organisms. Specific foci are:

- Techniques: Single wavelength excitation fluorescence cross-correlation spectroscopy (SW-FCCS) and EMCCD based fluorescence correlation spectroscopy
- Biological systems: Transmembrane protein receptors and peptides and their interaction with membranes (e.g. epidermal growth factor receptor, antimicrobial peptides)

**RECENT HIGHLIGHT**


Imaging Total Internal Reflection Fluorescence Correlation Spectroscopy (imaging TIR-FCS or ITIR-FCS) is a new imaging spectroscopy method which results in the measurement of maps of concentrations and diffusion coefficients of membrane proteins over a whole cell membrane. This method can measure in one minute more than 3500 FCS functions simultaneously, a feat which would take more than a week with conventional single spot measurements thus constituting an important multiplexing advantage. The image shows the concentration and diffusion coefficient map of a peptide bound to a SH-SYSY cell (laser wavelength: 532 nm, laser power: 6 mW, measurement time: ~70 seconds, time resolution: 7 ms).

**PREMIUM PUBLICATIONS**

Assoc Professor WONG M W Richard


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MAJOR RECOGNITION
• International Board Member, Asian Pacific Association on Theoretical and Computational Chemistry, 2005
• Outstanding Researcher Award, National University of Singapore, 2002
• Australian Research Fellow, Australian Research Council, 1992-1997

RESEARCH INTERESTS
Specific foci are:
• Computational quantum chemistry
• Organocatalysis, weaker intermolecular interactions and molecular sensors

RECENT HIGHLIGHT

Recent experimental observation of O₈ crystal in high pressure has demonstrated a remarkable rhomboid geometry of O₈ molecule. Theoretical calculation readily reproduced the experimental O₈ geometry. The spin state of the rhomboid O₈ is singlet and the O₈ structure can be rationalized as a cluster of four O₂ molecules connected via eight-center π*-π*-π*-π* interactions.

PREMIUM PUBLICATIONS
Schematic model for (a) chemisorbed 3-chloro-1-propanol on the Si(111)-7×7, (b) photodissociation of 3-chloro-1-propanol followed by interaction of the radical with cyano group of physisorbed benzonitrile, (c) H abstraction by the -N=C• radical from an adjacent rest-atom site, and (d) the second covalently bonded organic layer.
Asst Professor WU Jishan

Postdoc., Univ. of California at Los Angeles, 2005-2007; Ph.D., Max-Planck Inst. for Polymer Research, 2004; M. Sc., Chinese Acad. of Sciences, 2000; B.Sc., Wuhan Univ., 1997

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/wujs.html

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RESEARCH INTERESTS

We study the functional π-systems for electronics and supramolecular chemistry and responsive materials. Specific foci are:

- Graphene-related materials and devices
- Template-directed synthesis of supramolecular architectures and their materials applications

RECENT HIGHLIGHT


Nanosized graphene molecules with well-defined size and shape have been prepared and they showed remarkable self-assembling properties in solid state, in solution and on solid-liquid interface. These molecules can be used as one-dimensional semiconductors for electronic devices such as FETs and solar cells.

PREMIUM PUBLICATIONS

Asst Professor XU Qing-Hua

Postdoc., Univ. of California at Santa Barbara, 2005; Postdoc., Stanford Univ., 2002; Ph.D., Univ. of California at Berkeley, 2001; B.Sc., Zhejiang Univ., 1993

http://staff.science.nus.edu.sg/~chmxqh
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RESEARCH INTERESTS
We are interested in development and application of novel temporally and spatially resolved optical spectroscopic methods to study low-dimensional materials, biomacromolecules and fundamental chemical processes, to understand their structure-dynamics-function relationship. Specific foci are:

- Materials physics and biophysics
- Laser spectroscopy and imaging

RECENT HIGHLIGHT

A two-photon excitation fluorescence resonance energy transfer scheme is reported. The two-photon excitation fluorescence of the intercalator is found to be enhanced by a factor of over 35 by using conjugated polymers as two-photon light-harvesting complex. The obtained results may have profound implications in two-photon imaging and phototherapy.

PREMIUM PUBLICATIONS

Asst Professor XUE Feng

Postdoc., The Wistar Inst., 2005; Ph.D., The Chinese Univ. of Hong Kong, 2000; B.Sc., Tsinghua Univ., 1993

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/xf.htm

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RESEARCH INTERESTS

We aim to understand structures and functions of (bio)molecules through X-ray crystallography, leading to engineered molecular assemblies and structure-based drug design. Specific foci are:

- Crystal engineering and supramolecular self-assemblies
- Protein crystallography, structural biology and bioinformatics

RECENT HIGHLIGHT


A novel vector based on AdC68 is being developed as HIV vaccine carrier to circumvent the pre-existing immunity. Crystal structure of AdC68 hexon shows an arrangement resembling that in the adenovirus virion. We have identified putative epitopes on three most exposed loops of the hexon surface.

PREMIUM PUBLICATIONS

- R Thaimattam, F Xue, JA Sarma, TC Mak and GR Desiraju, Inclusion compounds of tetrakis(4-nitrophenyl)methane: C-h...O networks, pseudopolymorphism, and structural transformations, J. Am. Chem. Soc., 123, 4432-45 (2001)
Assoc Professor YAO Shao Qin

Postdoc, Scripps Research Institute, 2001; Postdoc, Univ. of California Berkeley, 1999; Ph.D., Purdue Univ., 1998; B.Sc., Ohio State Univ., 1993

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MAJOR RECOGNITION

- Mr & Mrs Sun Chan Memorial Award, 9th International Symposium by Chinese Inorganic Chemists & 6th International Symposium by Chinese Organic Chemists, 2006
- Young Research Award, National University of Singapore, 2005
- Young Investigator Award, A*STAR Singapore, 2002

RESEARCH INTERESTS

“Catalomics” - We are interested in developing powerful strategies in Chemical Biology and Chemical Proteomics that enable organism-wide, high-throughput studies of enzymes. Specific foci are:

- Chemical biology
- Medicinal chemistry

RECENT HIGHLIGHT


To specifically elucidate activity-dependent protein/ligand interactions, we have developed a technique that can be universally applied to present Small Molecule Microarray (SMM) systems. Overcoming the limitations of slide-to-slide variation, this method directly revealed activity-dependent interactions through a one-step application of protein samples on SMM.

PREMIUM PUBLICATIONS

Assoc Professor YIP Hon Kay John

Postdoc., Caltech, 1997; Postdoc., Technical Univ. of Munich, 1995; Ph.D., Univ. of Hong Kong, 1993; B.Sc., Univ. of Hong Kong, 1989

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RESEARCH INTERESTS

My general interests lie on supramolecular chemistry and physical inorganic chemistry. Specific foci are:

• Self-assembly and dynamics of metallosupramolecular systems
• Design and synthesis of luminescent metal complexes and molecular wires

RECENT HIGHLIGHT


This work shows the presence of a dynamic equilibrium between silver-metallacycles and helical polymers in solution. A ring opening mechanism is proposed for the exchange in acetonitrile.

PREMIUM PUBLICATIONS

• JHK Yip, J Wu, K-Y Wong, KP Ho, CS-N Pun and JJ Vittal, Electronic communication mediated by Pt-Pt σ-bond, Organometallics, 21, 5292-5233 (2002)
• S. Muthu, JHK Yip and JJ Vittal, Coordination networks of Ag(I) and N,N'- bis(3-pyridinecarboxamide)-1,6-hexane: structures and anion exchange, J. Chem. Soc., Dalton Trans. 4561-4568 (2002)
Asst Professor ZENG Huaqiang

Postdoc., Univ. of California at Santa Barbara, 2005; Postdoc., Stanford Univ., 2002; Ph.D., Univ. of California at Berkeley, 2001; B.Sc., Zhejiang Univ., 1993

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/zenghq.htm

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RESEARCH INTERESTS

The central theme in our research group is focused on the applications of broadly defined, bioinspired Supramolecular Chemistry to address many challenging issues at the interface of chemistry and biology. Specific foci are:

• Synthetic ion channels
• High-throughput screening systems widely suitable for discovering highly efficient, stereoselective catalysts of varying kinds for catalyzing wide-ranging chemical transformations
• Catalytic drugs that can catalytically cleave any chosen disease-causing proteins

RECENT HIGHLIGHT


To capture Nature’s astonishing ability in creating sophisticated folding biopolymers with nanosized cavities, we have developed a general strategy for designing folded structures with modifiable outer surfaces and easily tunable interior cavities, which may find important applications in catalysis, separation & molecular recognition, etc.

PREMIUM PUBLICATIONS

Dr ZHAO Jin

Ph.D., Technological Univ. of Munich, 2005; M.Sc., Chinese Acad. of Science, 1995; B.Sc., Liaoning Univ., 1992

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RESEARCH INTERESTS
Organometallic chemistry and catalysis are our main areas of study. Specific foci are:
• Organometallic chemistry of metals with high oxidation state and their application in oxidation catalysis
• Nickel and chromium complexes and their application in selective catalytic oligomerisation of ethylene

RECENT HIGHLIGHT

Ansa-bridged \( \eta^5 \)-cyclopentadienyl molybdenum and tungsten tricarbonyl complexes were synthesized. The low ring strain of the ansa-bridged system improves the stability of the complexes under oxidative conditions and therefore paves the way to introduction of chirality in these systems.

PREMIUM PUBLICATIONS
Assoc Professor ZHOU Weibiao
Postdoc., Univ. of Waterloo, 1991; Ph.D., Univ. of Queensland, 1991; M.Eng, Chinese Academy of Sciences, 1985; B.Sc., Beijing Univ. of Chemical Technology, 1982

http://www.chemistry.nus.edu.sg/ourpeople/academic_staff/zhouwb.htm
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MAJOR RECOGNITION

• Associate Editor, International Journal of Food Properties, 2007-current
• Member, International Editorial Board, International Journal of Food Engineering, 2004-current
• Member, International Editorial Board, Food Manufacturing Efficiency, 2006-current
• Member, Editorial Board, Food and Bioprocess Technology, 2007-current
• Fellow, Australian Institute of Food Science and Technology (AIFST), 2007
• Member-at-large, Executive Committee, International Society of Food Engineering (ISFE), 2006-current

RESEARCH INTERESTS

My interests lie on food processing and food engineering; particularly baking processes, dairy processes, food process modelling and optimisation, advanced process control, and the effect of food processing on some functional components such as isoflavones and antioxidants. Specific foci are:

• Modeling, optimisation, and advanced control of food processes
• Effect of processing on functional components of food

RECENT HIGHLIGHT

Reference: Food Research Int, 40, 470-479 (2007)

Sensory evaluation techniques involving both untrained and trained panelists and instrumental analyses were used to investigate the changes in crumb appearance, texture properties and taste profile of bread containing green tea antioxidants. Results showed that the sensory evaluation was generally correlated well with the instrumental analysis.

PREMIUM PUBLICATIONS

• SY Wong, W Zhou and J Hua, Designing process controller for a continuous bread baking process based on CFD modelling, J. Food Engineering, 81, 523-534 (2007)
• Y Liu, B Bhandari and W Zhou, Study of glass transition and enthalpy relaxation of mixtures of amorphous sucrose and amorphous tapioca starch syrup solid by Differential Scanning Calorimetry (DSC), J. Food Engineering, 81, 599-610 (2007)
• W Zhou, Application of FDM and FEM to solving the simultaneous heat and moisture transfer inside bread during baking, Intl. J. Computational Fluid Dynamics, 19(1), 73-77 (2005)
GRADUATE STUDENT COHORT 2007
HONOURS STUDENT COHORT 2007