

Department of Chemistry

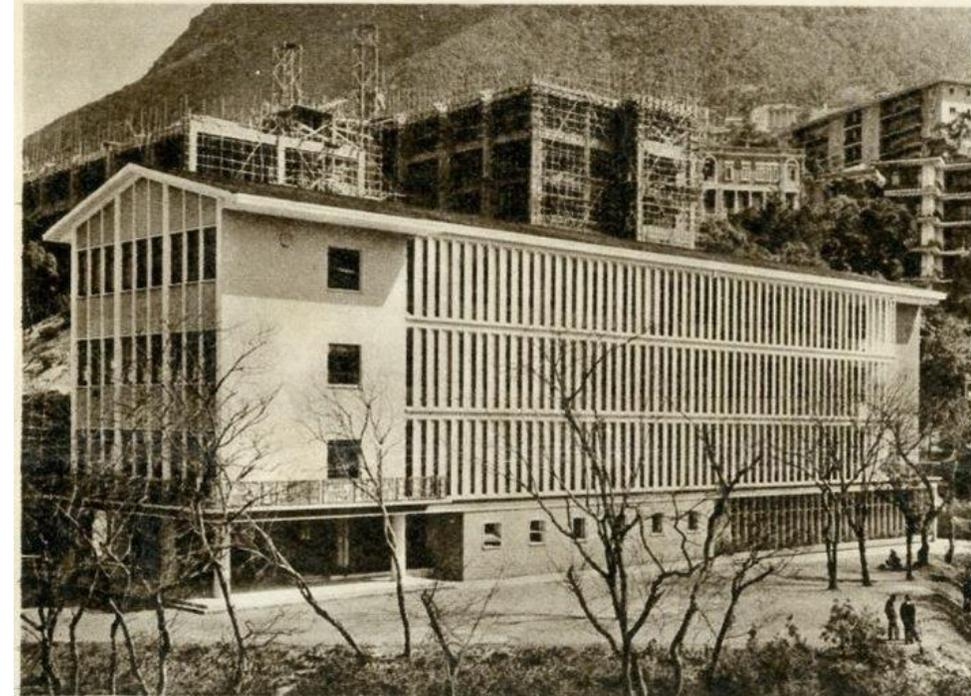
THE UNIVERSITY OF HONG KONG

WELCOMES YOU!



Department of Chemistry (化學系)

- **1913-20:** Pure science subjects offered in the Faculty of Arts: **Chemistry**, math, physics
 - *Up to 1939: five science graduates*
 - First housed in the Main building
- **1939:** Faculty of Science formed: 4 Founding Departments; Biology, **Chemistry**, Math, Physics
- **1939-44:** Prof. George T. Byrne, first Head of Chemistry Department
- **1933:** Dr. Hui Wai-Haan became demonstrator/lecturer



HKU PhD/MPhil Graduates

Non-academic Sector

Chemists in Private Sector and The HK Government

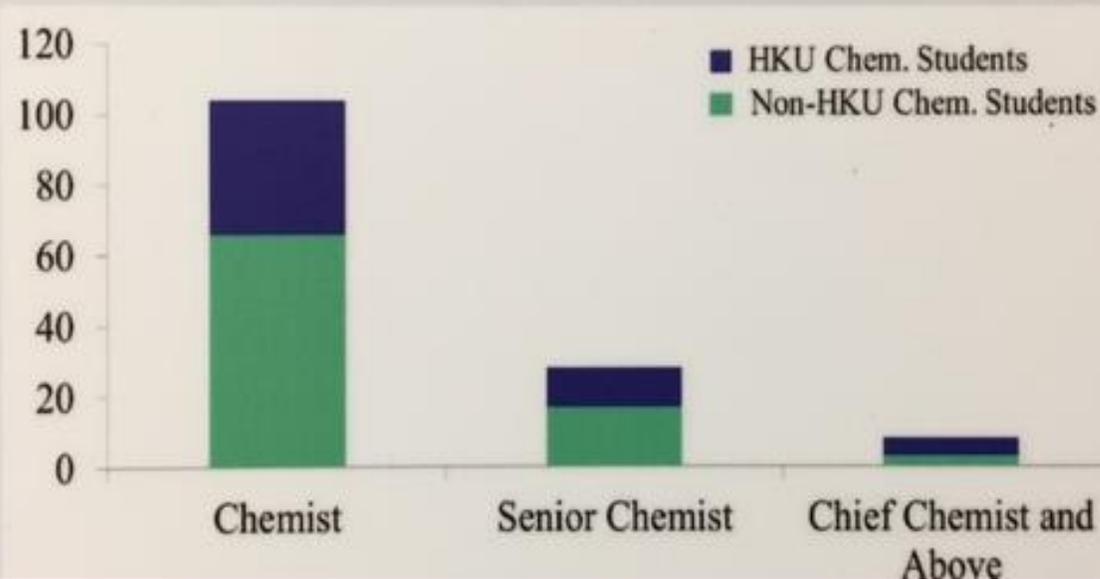


Dr. Della Sin
Government
Chemist



Dr. Ivan Chan
Chief Technical Officer
of SGS (HK-China)

The employment of HKU Chemistry Graduates and Post-graduates in The HK Government Laboratory (May 2016)



HKU PhD/MPhil Graduates

Academic Sector

HKU



Prof. CM Che
Member of Chinese
Academy of
Sciences (China)



Prof. VWW Yam
Member of Chinese
Academy of Sciences
(China)



Prof. DX Li

CityU



Prof. MHW Lam



Prof. TC Lau



Prof. HL Kwong



Prof. KKW Lo



Dr. VCC Ko



Dr. ACY Wong

HKU PhD/MPhil Graduates

Academic Sector

PolyU



Prof. WT Wong



Prof. WM Kwok



Prof. KY Wong



Prof. RWY Wong



Dr. DKW Mok



Dr. JKF Yung



Dr. GL Law



Dr. MK Wong

BU



Prof. EDL Ma



Prof. GKL Wong

UST



Prof. WH Leung



Dr. JQ. Huang

Outstanding Young Scholar Award (傑青), NSFC (2020)



SUSTECH (南方科技大學)/ Ph.D 2010

Excellent Young Scientist Award (優青), NSFC (2020)



SYSU (中山大學)/ Ph.D 2011

The Department of Chemistry

Academic Professional Staff and Lecturers (24 Professors + 3 Lecturers)



Dr. H.Y. Au-Yeung



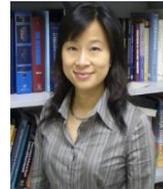
Prof. K.Y. Chan



**Head of Dept
Prof. C.M. Che**



Prof. G.H. Chen



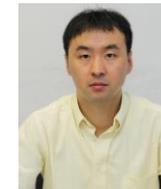
Prof. P. Chiu



Dr. I.K. Chu



Prof. D.X. Li



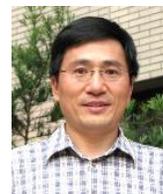
Prof. X.C. Li



Dr. X.Y. Li



Prof. D.L. Phillips



Prof. H.Z. Sun



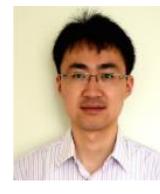
Dr. J.Y. Tang



Dr. P.H. Toy



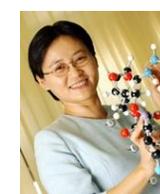
Dr. E.C.M. Tse



Dr. Y.F. Wang



Prof. V.W.W. Yam



Prof. D. Yang



Dr. J. Yang



Dr. W.T. Chan



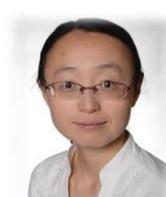
Dr. A.P.L. Tong



Dr. A.M.Y. Yuen



Drs. Kou Okuro



Y Li



ZX Huang



JZ Liu



J He



YX Li

New colleagues



Our vision

Be one of the world best academic centers for **undergraduate and postgraduate educations** as well as for **innovative, creative research** in frontier science.

Our mission

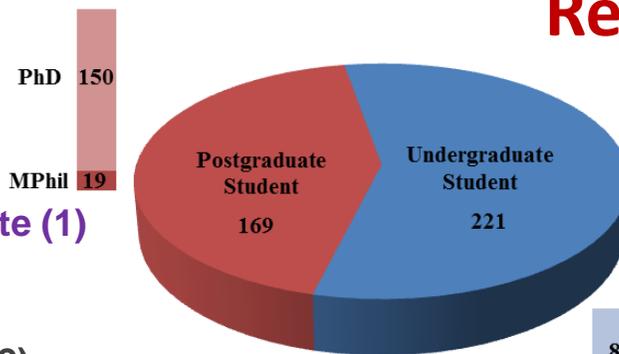
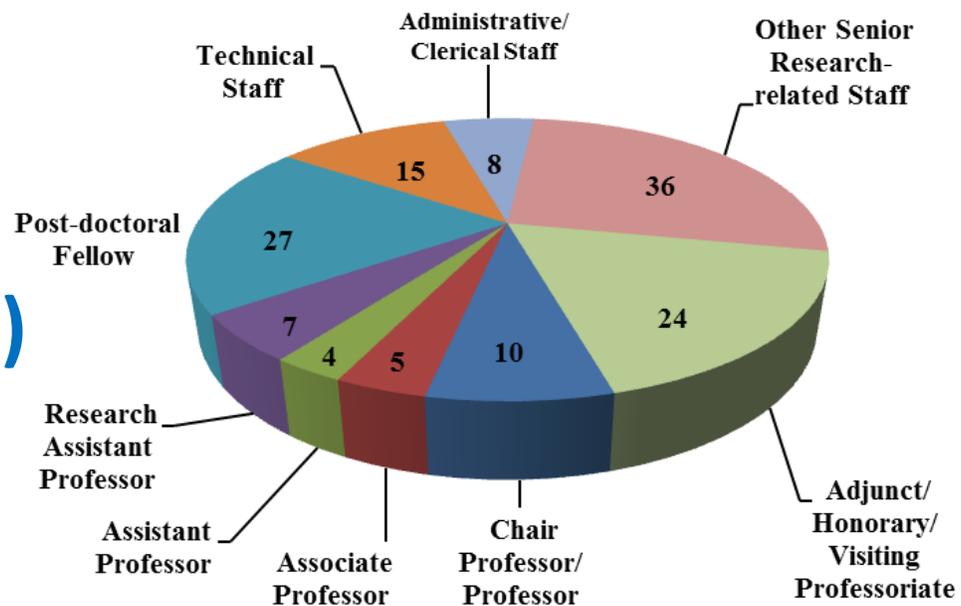
- ◆ To **nurture/train students** with independent mind and creativity for innovation, academic rigor and professional skills in Chemical Science.
- ◆ To **inspire and mentor the development of young scientists** to excel as academic leaders.
- ◆ To **perform innovative, original cutting edge research in basic and interdisciplinary Chemical Sciences**.
- ◆ To disseminate knowledge to the public and to raise public awareness on the important role of science played in sustainable development of the society.
- ◆ To engage in translational research contributing to the economic growth of the society.

Chong Yuet Ming Chemistry Building

Major Achievements

- **Croucher Senior Research Fellows (8)**
- **Croucher Innovation Award (1)**
- **QS World University Rankings by Subject 2016: Chemistry – 23rd in the World**
- **Foreign Associates of the United States National Academy of Sciences (2)**
- **Members of the Chinese Academy of Sciences (2)**
- **Foreign Member of Academia Europaea (1)**
- **Fellows of TWAS, The World Academy of Sciences (2)**
- **Fellow of the American Physical Society (1)**
- **Royal Society of Chemistry Centenary Medals (2)**
- **Royal Society of Chemistry Ludwig Mond Award (1)**
- **TWAS Prizes in Chemistry (2)**
- **State Natural Science Awards (one First Class Prize and one Second Class Prize) (2)**
- **L'ORÉAL-UNESCO Awards for Women in Sciences – Laureate (1)**
- **Chinese Young Women in Science Fellowship (1)**
- **Seaborg Lectureships at UC Berkeley (2)**
- **Edward Clark Lee Lectureship at the University of Chicago (2)**
- **Lavoisier Lectureship at the University of Paris Diderot 7 (1)**
- **Novartis Chemistry Lectureship Award (1)**
- **Davison Lectureship at MIT (1)**
- **Earl L. Muettterties Lectureship at UC Berkeley (1)**

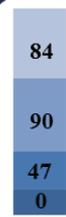
Staff (136)



Student (390)

Recent Awards (Ph.D.)

- **Hong Kong PhD Fellowship**
- **Sartorius HK Scholarship**
- **The winner of the HK young scientist award in 2014**
- **The finalist (top 45 candidates) of Reaxys Prize**
- **The Springer Thesis Prize**
- **SciFinder Future Leaders Program**
- **The best presentation award in the 17th International Conference on Biological Inorganic Chemistry**
- **The Best Poster Presentation Award - The 5th Asian Conference on Coordination Chemistry Committee**
- **Croucher Postdoctoral Fellowship**



Major Achievements

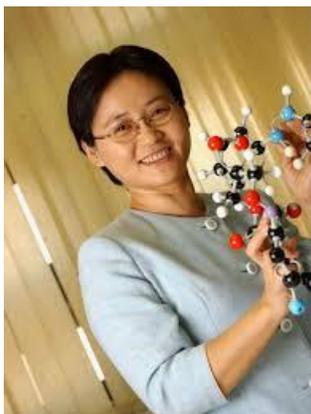


Prof. Chi-Ming Che received Luigi Sacconi Medal 2020 for his achievements in *Inorganic Chemistry* have been of top quality during all his scientific career.

The Luigi Sacconi Medal is awarded by The Inorganic Chemistry Division of the Italian Chemical Society and the Luigi Sacconi Foundation every year to a scientist who has obtained outstanding results in Inorganic Chemistry.



Prof. Vivian YAM as awarded the prestigious **The Porter Medal 2020** for her contribution in the field of photochemistry. The Porter Medal is named after the late George Porter (Nobel Laureate); and is awarded every two years to the scientist who has contributed most to photochemistry. **She has also been conferred the Foundation Lectureship Award 2019**



Prof. Dan Yang received the Yoshida Award 2020. The Yoshida Prize (starting in 2015) honors researchers with achievements contributing to international academic development in the field of organic chemistry. The Foundation honors one person a year.

Major Achievements:

Excellent Young Scientist Scheme (優青), NSFC

David Xiang LI (2019): chemical biology



Yufeng WANG (2020): colloid particle synthesis and assembly



Major Interdisciplinary Research and Platforms

Materials Science



Thermo Orbitrap Fusion

Bruker Xtreme TOF/TOF



Analytical Science



State Key Lab of Synthetic Chemistry

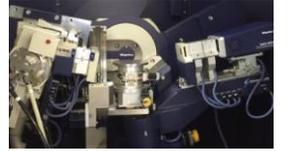
State-of-Art Facilities:
High Performance Tandem Mass Spectrometry,
NMR Spectroscopy,
Protein Crystallography,
Ultra-fast femto- to nano-second Laser Spectroscopy

Chemical Biology Centre

HKU-CAS Joint Lab on New Materials

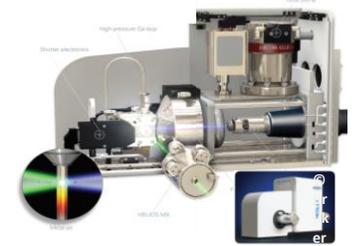


Chemical Biology



Rigaku SmartLab 9kW

Bruker X8 PROTEUM



Bruker VENTURE MetalJet X-ray diffractometer

Computational Science

Energy & Environment

Interdisciplinary Research: Chemical Biology



Prof. Chi-Ming CHE



Prof. Pauline CHIU

Chemical Biology Center

Chemistry:

Molecular design and synthesis
Molecular imaging
Chemical proteomics
Chemical genetics
Chemical glycobiology

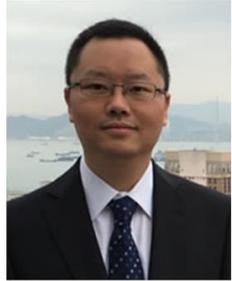


Medicine:

Metal-based medicine
Natural products
Traditional Chinese medicine
Medicinal chemistry



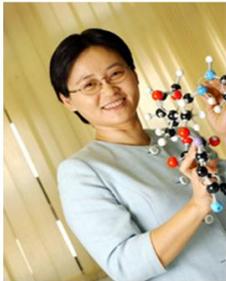
Dr. Ho Yu AU-YEUNG



Dr. Xiang LI



Prof. Xuechen Li



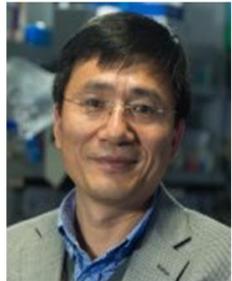
Prof. Dan YANG

understanding fundamental biological processes

develop novel therapeutic approaches to human diseases



Dr. Xiaoyu LI



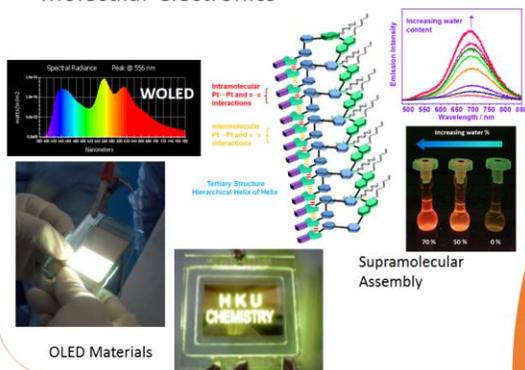
Prof. Hongzhe SUN

- **Innovative Metal and Natural Product Medicines**
- **Total Synthesis of Bioactive Natural Products**
- **Bio-macromolecule Synthesis and Protein Modification/Labeling**
- **Metal in Medicine; Metallobiology & Metallomics**

- **Selective Recognition and Luminescent Detection of Small Molecules**
- **Chemical Epigenetics**
- **Chemical Genetics; DNA-Programmed Drug Discovery and Target Identification**

Materials Science

- Molecular design and synthesis of inorganic/ organometallic metal complexes and polymers and their supramolecular assembly
- Functionalized MOF materials for solar reactions
- Applications in optoelectronic materials for OLEDs; spectrochemical and luminescence chemosensors and biolabels; photochromic and photoswitching materials and molecular electronics



Photofunctional Materials



Prof. Vivian Wing-Wah YAM



Prof. Chi-Ming CHE

- Design and synthesis of metallo-polymers and metal organic frameworks for ion exchange and charge transport
- Development of electrochemical systems and materials for energy research
 - Anode and cathode materials for Li-air batteries, lithium ion and sodium ion batteries
 - Development of electrocatalysts for capacitors and alcohol oxidation

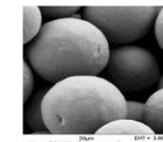
Materials for Cleaner Energy & Energy Storage



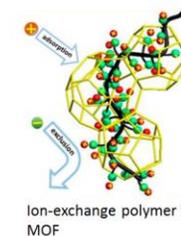
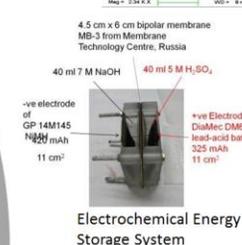
Prof. Wai-Kin CHAN



Prof. Kwong-Yu CHAN



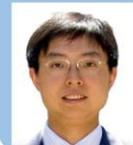
Multiscale Structuring of Electrodes



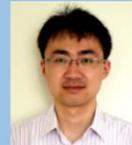
HKU-CAS Joint Lab on New Materials

- Development of new structures and processes that combine basic synthetic nanomaterials into complex functional nanostructures
- Applications in nanorobots and two-dimensional material-based optoelectronic devices
- Architecturally well-defined 3D soft materials that are potentially useful for plasmonics, photonic, electro-optical, catalysis, energy-related, biomedical, and computer-based applications

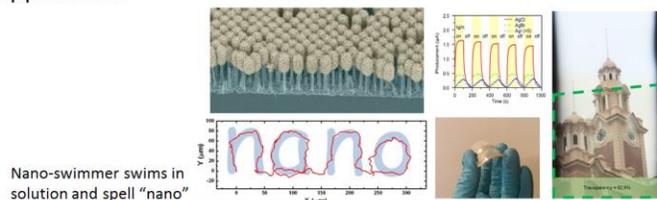
Dr. Jinyao TANG



Dr. Yufeng WANG



Nanomaterials, Nanodevices and Soft Materials



Prof. David Lee PHILLIPS



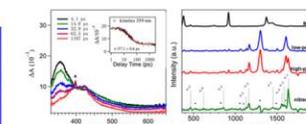
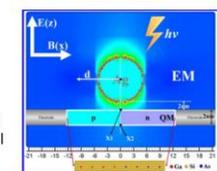
Prof. Guanhua CHEN



Computation and Fundamental Studies

- Utilization of time-resolved spectroscopy experiments and quantum mechanical calculations to study short-lived intermediates in chemical reactions of interest in chemistry, biology and materials science
- Investigation and characterization of new materials with applications related to solar cells and OLED applications
- First principles methods for open systems and application to emerging nanoelectronics

Plasmonic photovoltaic device for a coupled optical-electrical QM/EM simulation



Analytical Science



Dr. WT Chan



Dr. Ivan Chu

Instrumental, Fundamental and Biophysical

Development of Ionization Techniques

- Megavolt Electrostatic Ionization MS
- Single-particle and Single-cell ICP-MS
- Nano-DESI



Hyphenated Separation Techniques

- Field Asymmetric waveform Ion-mobility (FAIM) &
- Fully automated Multidimensional Liquid chromatography (MDLC)

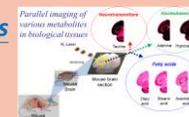


Dissociation & ion-molecule reaction

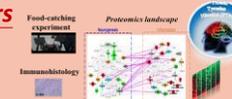
Analytical Science and Mass Spectrometry Research

Analytical, Bioanalytical and Biomedical Analysis

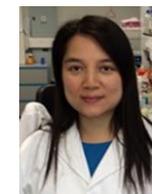
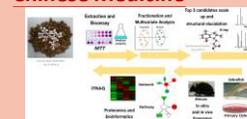
- Quantitative **Proteomics** and PTM Mapping in Cerebral Infarcts
- Tissue **Imaging Mass Spectrometry**
- Tissue-Spray Ionization MS
- **Single-cell analysis**



- molecular mechanism studies of **neurodegenerative disorders**



- Discovery of Bioactive Compounds in **Traditional Chinese Medicine**



Dr. Eva Fung

Mass Spectrometry Facilities



Key Mass Spectrometers in the Department



Social Impact

Chemists in Private Sector and The HK Government

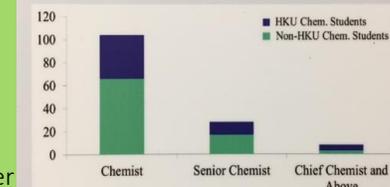


Dr. Della Sin
Government Chemist



Dr. Ivan Chan
Chief Technical Officer of SGS (HK-China)

The employment of HKU Chemistry Graduates and Post-graduates in The HK Government Laboratory (May 2016)



Dr. Jaclyn Sy

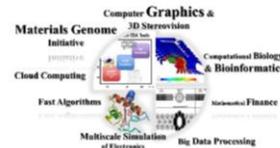
Computational Science

*Computational methods have become indispensable research tools in chemistry, materials science, molecular biology, and many other fields. In the Department of Chemistry, a group of faculty members are working together on to develop computational methods and apply the existing computational tools to interpret their experimental findings, justify the proposed reaction mechanism, and to predict the properties prior to the measurements ultimately. With these collaborative activities, we have formed an excellent team on Computational Chemistry. **Our research directions include theory development for open quantum systems, the interaction of photon and phonon with the semiconductor devices, synthesis of OLED materials, and molecular functional materials.***



Area of Excellence on Theory, Modeling, and Simulation of Emerging Electronics

The Objective of the AoE-TMSEE is to develop a suite of multi-scale electronic design automation (EDA) tools ranging from atomistic simulation methods to circuit simulators and to electromagnetic solvers for electrical signals for emerging sub-22nm technology. With these tools, we will study the sub-22nm devices and their systems; and calculate their physical and dynamical properties, and explore the possible paradigm shifts of next generation electronics.



Computation & Information Excelling Together Strategic Research at The University of Hong Kong

By pulling together our strengths in information technology and computational science under the Computation and Information SRT, we aim to solve the major challenges that are common to both fields and thus promote further HKU's position and reputation in the world.



CECAM was founded in Paris in 1969, and it is devoted to the promotion of fundamental research on advanced computational methods and their application to important problems in frontier areas of science and technology. It is the biggest event on atomistic and molecular simulations in Europe. In 2011 and 2015, we successfully organized two International CECAM workshops in Hong Kong on *Simulation and Modeling of Emerging Electronics* and *Open Quantum Systems*. They are the first two CECAM workshops held in Asia.

Machine Learning Based Quantum Chemistry

First Principle Method for Open Systems

Photo-physics and Photo-chemistry

Prof. Guan-Hua Chen

Prof. Chi-Ming Che

Excited State Dynamics and Time-dependent Density Functional Theory

Prof. Vivian W.W. YAM

OLED and Photovoltaic Cell

Visiting Professors and International Collaborators



Prof. Mark A. Ratner



Prof. Ratner is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, the International Academy of Quantum Molecular Sciences. Ratner is a pioneer in molecular electronics.



Prof. Dr. E.K.U. Gross



Prof. Gross is the Director at the Max Planck Institute of Microstructure Physics, Halle. Runge-Gross theorem provides the formal foundation of time-dependent density functional theory



Prof. Angel Rubio



Prof. Rubio is Director of the Theory Department of the Max Planck Institute for Structure and Dynamics of Matter at Hamburg. Rubio has more than 300 publications with more than 25000 citations (i-Index index 78)



Prof. Weitao Yang



Prof. Yang is a Philip Handler Professor of Chemistry at Duke University. Yang's main contributions to chemistry include density functional theory development, and its applications to chemistry



Prof. Thomas Frauenheim



Prof. Frauenheim is a chair professor and the funding director of Bremen Center for Computational Materials Science. The DFBS+ program developed in his group is widely applied to the atomistic simulation of various materials at large scale.



Prof. Garnet Chan



Prof. Chan is the A. Barton Hepburn Professor of Chemistry at Princeton University, New Jersey. He is a multi-award winning theoretical chemist and received the American Chemical Society Award in Pure Chemistry (2009).

Large-scale programmes (by 2019)

- **SKL on Synthetic chemistry (CMC)**
- **2×CAS-HKU joint laboratories (CMC) (and two signed MoU with CAS)**
- **AoE (two completed and one on-going)**
- **HKU-industry joint laboratory (e.g. TCL-HKU joint lab)**
- **Very recently 2×InnoHK@**

Large-scale programmes (by 2020)

- **CAS-HKU joint laboratories**



Medicinal chemistry & drug discovery

Molecular science

Metallomics for health & environment



Thank you for your attention
