兴大报告年报

2020 XING DA LECTURE YEARBOOK

北京大学化学与分子工程学院

Preface

At the turning point to reform and boost its research and education system in 1995, College of Chemistry and Molecular Engineering (CCME) at Peking University, China, proposed to set up a science forum to foster idea refreshments and brainstorming between its faculty and outside scientists, aiming at broadening its collaborations with institutions of chemical sciences and educations all over the world. Against all odds, CCME and Beijing Xinda Scientific Systems hit it off instantly to jointly establish the Xingda Lecture Series. Thanks to its enthusiasm for science, Beijing Xinda Scientific Systems has been financially supporting this lecture series ever since then. From the very beginning, Prof. Chunhua Yan had been serving as the organizer of this lecture series until 2015 after which Prof. Kai Wu was named as the successor.

The Xingda Lecture Series is held on every Friday throughout the academic year. Up to the time this booklet was edited, about 500 scientists had been invited to give talks at the Xingda Lecture Series which nearly cover all the research areas in chemistry and related disciplines. Needless to say, this lecture series won't be able to last without great contribution from these scientists.

With the great success of the Xingda Lecture series that has already benefited the faculty and students at CCME and the science communities inside and outside PKU as well, CCME in 2015 made the decision to upgrade this forum to the Xingda Lectureship that would be held by invited renowned and distinguished scientists from all over the world. This is also echoing the mission of Peking University in the new century which is to advance sciences and cultivate next-generation scientists for the betterment of humanity. To do this, a searching committee chaired by Prof. Kai Wu was established to select and invite scientists, normally one year in advance, to spend a period of time at CCME to share their latest achievements and exchange ideas with the faculty and students at CCME through both the Xingda Lectureship and in-lab discussions.

As a thank-you gift and historical document, we have edited this booklet to record the invited speakers and their biosketches as well as the titles and abstracts of their presentations delivered at the Xingda Lectureship in the last academic year. We'll continue to do this on a yearly basis in the future.

Last but not least, we are grateful to all who have been involved in the Xingda Lectureship and helped us in one way or another.

Kai Wu

Organizer, the Xingda Lectureship

May, 2017

2020 Xingda Lecture schedule

Issue	Time	Speaker	Institution	Title
582	March.15	Prof. Jonathan L. Sessler	Department of Chemistry, The Univ. of Texas, Austin	Texaphyrins as Drug Candidates
583	March.22	Jianping Gong (龚剑萍）	Hokkaido University	Molecular design of tough hydrogels with sacrificial bonds mechanism
584	March.29	Takashi Kato	The University of Tokyo	Supramolecular Functional Liquid Crystals for the Next Generation of Materials
585	April.12	Wonwoo Nam	Ewha Womans University	Biomimetic Metal-Oxygen Intermediates in Dioxygen Activation Chemistry
586	April.19	Vivian W.W. Yam（任咏华）	The University of Hong Kong	From Simple Discrete Metal Complexes to Ensembles, Conjugates and Nano-Assemblies for Sensing, Molecular Imaging and Bioassays
587	April.26	Herbert Waldmann	Max-Planck-Institute of Molecular Physiology	Pseudo Natural Products
588	May.10	Todd O. Yeats	UCLA	Learning from Nature How to Build Beautiful Structures from Protein Molecules
589	May.24	Peter Schultz	The Scripps Research Institute	Playing with the Molecules of Life
590	Jun.1	Ashutosh Chilkoti	Duke University	Translating Molecular Bioengineering from the Lab to the Patient
591	Sep.20	Phillpe Saute	University of California Los Angeles	Catalytic active sites are dynamical and metastable
592	Sep.27	Suljo Linic	University of Michigan	Plasmonic chemistry: opportuniteis challenges and unresolved questions

Growth of Single-Walled Carbon Nanotubes Array with Controlled Structures

Abstract

Single-walled carbon nanotubes (SWNTs) had received broad attention in the past decades due to its dramatic physical and chemical properties. As synthesis determined the future, in this talk, I will focus on the structure controlled growth of horizontal carbon nanotubes array using designed catalysts. These new strategy will fast the application of SWNTs in nano-electronic devices.

Prof. Jin Zhang（张锦）

College of Chemistry and Molecular Engineering, Peking University, Beijing, China

1995 – 1997 Ph.D., Lanzhou University & Peking University, China
1998 – 2000 Postdoctor, Department of Physics and Astronomy, Leeds University
2000 – 2006 Associate Professor, College of Chemistry and Molecular Engineering, Peking University, China
2006 – present Professor, College of Chemistry and Molecular Engineering, Peking University, China

Honors and Awards

1. 2017 “National Award for Natural Sciences, second class, first achiever” Sponsored by State Council of China
2. 2013 “Cheung Kong Scholar Chair Professor” Sponsored by Ministry of Education, China
3. 2007 “National Science Fund for Distinguished Young Scholars” Sponsored by National Natural Science Foundation of China

Selected Publications

Zhang, S. C.†; Kang, L. X.†; Wang, X.; Tong, L. M.; Yang, L. W.; Wang, Z. Q.; Qi, K.; Deng, S. B.; Li, Q. W.; Bai, X. D.; Ding, F.; Zhang, J.*, Arrays of Horizontal Carbon Nanotubes of Controlled Chirality Grown Using Designed Catalysts, Nature, 543(2017), 234-238.

Zhang SC, Wang X, Yao FR, He MS, Lin DW, Ma H, Sun YY, Zhao QC, Liu KH, Ding F* and Zhang, J.*, Controllable Growth of (n, n-1) Family of Semiconducting Carbon Nanotubes, Chem, 2019, 5, 1182-1193.

MS He*, X Wang, SC Zhang, H Jiang, F Cavalca, HZ Cui, JB Wagner, TW Hansen, E Kauppinen, J Zhang*, F Ding*; Growth kinetics of single-walled carbon nanotubes with a (2n, n) chirality selection, Science Advances 2019, 5(12): eaav9668.

Science in Radioactive Waste Management

Prof. Bernd Grambow

IMT Atlantique | IMT · Department of Subatomic Physics and Associated Technologies， France

Baccalaureat 1972, Berlin
Diploma in Chemistry at Freie Universität-Berlin 1979
PhD thesis on nuclear waste glass dissolution mechanism at FU-Berlin/Hahn Meitner Institut Berlin 1984
Habilitation as PhD director: Université de Nantes, France 2000

Abstract

Radioactive waste management is a societal mission in most countries. As it is the first time in history that it is suggested to use deep geological formations for protecting thousands of future generations from the hazardous waste, much research is necessary. Research in radioactive waste management is ongoing since about 50 years. In the meantime, not a single disposal site for high radioactive waste has been licensed worldwide, even though; one is coming closer, awaiting the first repository openings in the next decade. So, much more research will be necessary in the future.

Research needs cover chemistry (incl. radiochemistry), nuclear physics, mathematics and computer science, earth and engineering sciences, life sciences etc. for studying and modelling the interactions and temporal evolutions of nuclear waste matrices, containers, overpacks, backfills and seals, as well as the behaviors of repository rocks and overburdens, the hydrological settings and transport properties like diffusion of fluids and radionuclides from the emplaced waste to the human environment.

The ongoing European EURAD Joint program of 103 partners from a large part of the member states of the European Union is going to establish a research road map and strategic research agenda, bridging the various phases and themes of a generic nuclear waste disposal program in granite or clay, from the waste to the engineered barrier system and the geosphere to safety analyses.

Some research examples will be given in my presentation in the areas of spent fuel and nuclear waste glass behavior, container corrosion, radionuclide solubility, radionuclide migration or gas migration in clay rock.

Honors and Awards

Grand Prix Ivan Peychès 2008 of The French Academy of Science
2013: Knight of the Order of Academic Palms, attributed by the French Prime Minister
2018 Professor H.C. of the Frumkin Institut of Physical Chemistry and Electrochemistry of the Russian Academy of Science (IPCE RAS) on behalf of the ministry of Science and higher education of the Russian Federation.

“What is basic research?” therefrom …

Abstract

本报告试图阐明“疑问”、“询问”和“问题”之间区别；以及在解决问题时创造和应用知识与基础研究之间的关系，并利用报告者在自己实验室里的若干实例进一步说明这一关系。希望可以和年轻的同行和学生们分享自己的经验教训，强调“研究是解决问题，而不是仅仅发表文章”这一宗旨。报告者将利用自己寻找问题的经历展示“何为真正的问题？”。希望听众可以认同报告者多年前提出的两个架子的说法：不上书架，便上货架！真正将研究工作聚焦到“解决问题”。

Prof. Chi WU（吴奇）

Emeritus Wei Lun Professor of Chemistry and Honorary Professor of Physics in the Chinese University of Hong Kong

Chi WU, Ph.D., Emeritus Wei Lun Professor of Chemistry and Honorary Professor of Physics in the Chinese University of Hong Kong; In 1982, he graduated from Chemical Physics in the University of Science and Technology of China. After obtaining his Ph.D. in 1987 and then remaining as a postdoctoral both under the supervision of Professor Benjamin Chu in the State University of New York at Stony Brook, he moved to BASF (Ludwigshafen, Germany) in 1989: first as an Alexander von Humboldt Fellow for one year to cooperate with Dr. Wolfgang Schrof under the supervision of Dr. Dieter Horn; and then as a permanently hired staff to supervise the laser light-scattering laboratory in the Dispersion Group, the Department of Solid Stat and Polymer Physics. In 1992, he resigned from BASF to join the Department of Chemistry in the Chinese University of Hong Kong as a Lecturer (British System); underwent a double promotion to Reader in 1996; became a Professor of Chemistry in 1999 and an Honorary Professor of Physics in 2003; and was further appointed as a Wei Lun Professor of Chemistry in 2010. For his significant contributions in profound understanding of conformation, dynamics and phase transition of macromolecular chains in solutions, Professor Chi Wu was elected as a Fellow of the American Physical Society and a Member of Chinese Academy of Sciences in 1999 and 2003, respectively. His research mainly combines synthetic chemistry, polymer physics and molecular biology to design and execute decisive experiments to address certain important problems in biology, macromolecules and polymer colloids, including the development of non-viral vectors for gene and molecular medicines; the nucleation of protein-protein aggregation in neuron-degenerative diseases; the stress-induced stem cell differentiation and its biomedical applications; the design, synthesis and self-assembly of functional macromolecules; the structure and dynamics of polymer solutions and gel networks; and molecular characteristic properties of intractable and special polymers. His current research interest has mainly moved to food science and processing, especially profound processing of soy proteins.

Single Cell Analysis

Abstract

Single cell biosensing and imaging provides rich information on the composition, structure and properties of single cells, which enables people to better understand the significant biological processes and signal transduction mechanisms in living cells at the molecular level, providing possible approaches for observing molecular abnormalities and pathological changes in the early stage of disease. 1) miRNA imaging in single cell was realized using toehold-initiated rolling circle amplification. 2) DNA-sequence-encoded fluorescence barcoding was applied in fluorescence tagging RNA with single-nucleotide resolution. 3) CRISPR/Cas9-mediated proximity ligation assay was designed for direct visualization of mtDNA at single- molecular resolution. 4) Proton-driven transformable nanovaccine and mitochondrial oxidative stress amplifier was developed for cancer treatment.

Prof. Jinghong Li（李景虹）

Department of Chemistry, Tsinghua University

1986-1991	B. Sc., University of Science and Technology of China
1991-1996	Ph. D., Changchun Institute of Applied Chemistry, Chinese Academy of Sciences
1997-2001	Post-doc/research scientist, University of Illinois at Urbana-Champaign, University of California at Santa Barbara, Clemson University, and Evonyx Inc., USA
2001-2004	Professor, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences
2004-	Professor, Tsinghua University

Honors and Awards

2019 Academician, Chinese Academy of Science;
2015 National Natural Science Award (second class);
2009 Changjiang Scholar Professor;
2001 National Science Fund for Distinguished Young Scholars of China.

Selected Publications

1. Ningqiang Gong, et al., Nature Nanotech.., 2019, 14, 379-387.
2. Ying Wang, et al., Nature Protocol, 2014, 9, 1944-1955.
3. Xiaonan Shan, et al., Nature Nanotech., 2012, 7, 668-672.

The Journey From Sulfur Ylides to Boron Chemistry: Evolution of Research in the Aggarwal

Abstract

In this lecture I will present an overview of the research we have done over the last 30 years. In the 1980's there was great interest in asymmetric alkene oxidation to make epoxides. We were also drawn to this field but chose to develop asymmetric sulfur ylide reactions to make epoxides instead. This led to a broad platform of research that lead to asymmetric aziridination and cyclopropanation too. A side project on phosphorus ylides that developed from this work led to a new understanding of the origin of control in the Wittig reaction. The sulfur ylide story continued in reactions with boranes (successful) but problems were encountered when studying boronic esters. This opened up the broad program in homologation of boronic esters. I will also show how natural product synthesis has been used as vehicles to showcase the methodology we have developed.

Prof. Varinder K. Aggarwal

School of Chemistry, University of Bristol，UK

1980-1983	B.Sc., Cambridge.
1983-1986	Ph. D., Cambridge, Supervisor: Dr. Stuart Warren
1986-1988	Postdoctoral Fellow with Prof. Gilbert Stork, Columbia University
1988-1991	Lecturer in Chemistry, Bath University
1991-1997	Lecturer in Chemistry, Sheffield University
1997-2000	Professor in Chemistry, Sheffield University
2000-	Professor in Synthetic Chemistry, Bristol University

Selected Publications

1. Stymiest, J. L.; Bagutski, V.; French, R. M.; Aggarwal, V. K. Nature 2008, 456, 778–782.
2. Coulthard, G.; Erb, W.; Aggarwal, V. K. Nature 2012, 489, 278–281.
3. Burns, M.; Essafi, S.; Bame, J. R.; Bull, S. P.; Webster, M. P.; Balieu, S.; Dale, J.W.; Butts, C. P.; Harvey, J. N.; Aggarwal, V. K. Nature 2014, 513, 183–188.
4. Fawcett, A.; Pradeilles, J.; Wang, Y.; Mutsuga, T.; Myers, E. L.; Aggarwal, V. K. Science 2017, 357, 283–286.
5. Wu, J.; Lorenzo, P.; Zhong, S.; Ali, M.; Butts, C. P.; Myers, E. L.; Aggarwal, V. K. Nature 2017, 547, 436–440.
6. Shu, C.; Noble, A.; Aggarwal, V.K. Nature, 2020, 586, 714.

Honors and Awards

1997 RSC Hickinbottom Fellowship; 1999 RSC Corday Morgan Prize and Medal; 1999 Novartis Lectureship; 2007 RSC Tilden Lecturer awarded; 2009 RSC Stereochemistry Award; 2012 Elected Fellow of the Royal Society; 2013 RSC Perkin Award; 2017 RSC Organic Synthesis Award; 2019 ACS Cope Scholar Award; 2019 Yamada-Koga Award; 2019 Royal Society Davy Medal.

Hydrogen Storage Materials for Renewable Energy Uptake

Abstract

Among hydrogen storage materials, ammonia has a highest volumetric hydrogen density of 10.7 kgH2/100L, because it is easily liquefied by compression at 1 MPa and 298K. The volumetric hydrogen density is above 1.5 times of liquid hydrogen. Moreover it has a high gravimetric hydrogen density of 17.8 wt%. However, ammonia is a deleterious substance. Ammonia removal system combined water and insoluble proton-based materials will be candidate to suppress the leaked ammonia concentration. Therefore, ammonia will be applied for hydrogen and energy carriers for global levelling of renewable energy. It is difficult to store and transport a large amount of electricity using secondary batteries, although energy conversion efficiency from renewable electricity to the battery is about two times compared with the efficiency from renewable electricity to ammonia. Then the secondary battery will be used for local levelling of renewable energy.

Prof. Yoshitsugu Kojima

Natural Science Center for Basic Research and Development, Hiroshima University,Japan

1984 Doctor of Engineering, Tokyo Institute of Technology
2006- Professor, Hiroshima University, June 1 2006
2016- Director, Research Center for Nitrogen Recycling Energy Carrier, Center of Excellence in Hiroshima University

Selected Publications

1. Y. Kojima, S. Hino, K. Tange, et al.; MRS Proceedings, 2007, 1042, 1042-S06-01.
2. Y. Kojima, Y. Kawai, S. Towata, et al.; J. Alloys Compd., 2006, 419,256–261.
3. Y. Kojima, T. Haga. Int. J. Hydrogen Energy. 2003, 28, 989 – 993.

Honors and Awards

2005: The Technical Development Award [The Japan Institute of Metals] 2007: Highly Cited Researcher [ISI HighlyCited.com] 2009: Presidential Awards [Hiroshima University] 2012: International Steering Committee of the International Symposia on Metal-Hydrogen Systems, Certificate of Appreciation 2017: Academic Contribution Award [The Japan Institute of Metals]

Biomimetic and biofunctional polymersomes: from nanomedicine to protocells

Abstract

We report here an overview on the self-assembly in water of amphiphilic block copolymers developed in our laboratory into different nanomedicines, mainly focusing on polymer vesicles, also referred as polymersomes, and their applications in nanomedicine, biomaterials and artificial cells.

We pay special attention to polysaccharide, polypeptide and protein-based block copolymer vesicles. We developed over the last years synthetic strategies for the design of glycosylated polypeptides and polysaccharide-polypeptide biohybrids with controlled placement of sugar functionality. We were especially interested in designing amphiphilic copolymers able to self-assemble into well- defined micelles and vesicles that can advantageously be loaded with drugs and present a surface with multivalent presentation of bioactive saccharides or oligosaccharides. The ability of these nanoparticles for different biomedical applications, from drug-delivery to inhibitor, will be presented. We especially evidenced the particular benefit of nanoparticles and their multivalency toward the interaction with biological receptors.

Finally, our recent advances in using “biomimicry approaches” to design complex, compartmentalized and functional protocells will be proposed. Such a system constitutes a first step towards the challenge of structural cell mimicry and functionality, and may act in the future as an autonomous artificial cell that can sense and cure in situ any biological deregulation.

Prof. Sébastien Lecommandoux

Department of Chemistry and Biochemistry,
University of California, Los Angeles

Sébastien Lecommandoux received his Ph.D. (1996) in Physical Chemistry from the University of Bordeaux. After a postdoctoral experience at the University of Illinois (UIUC, USA) in the group of Prof. Samuel I. Stupp, he started his academic career at the Laboratoire de Chimie des Polymères Organiques as Associate Professor (1998) and was promoted to Full Professor at Bordeaux INP in 2005. He is currently Director of the Laboratoire de Chimie des Polymères Organiques (LCPO-CNRS) and is leading the group “Polymers Self-Assembly and Life Sciences”. His research interests include polypeptide and polysaccharide-based block copolymers self-assembly, the design of polymersomes for drug-delivery and theranostic, as well as biomimetic approaches toward design of synthetic viruses and artificial cells. He published more than 180 publications in international journal, 6 book chapters and 10 patents (2 being licenced), with over 13700 citations (h-factor 59, Google Scholar). Sébastien Lecommandoux is recipient of the CNRS bronze medal (2004), Institut Universitaire de France Junior Chair (IUF 2007), Fellow of the Royal Society of Chemistry RSC (2017), Seqens Award of the French Academy of Science (2019), Member of the Academia Europaea (2020). He is Editor-in-Chief of Biomacromolecules (ACS) since 2020 after being Associate Editor since 2013. He is also in the Editorial Advisory Board of several international journals, including Bioconjugate Chemistry (ACS), Polymers (MDPI), Polymer Chemistry (RSC) and Biomaterials Science (RSC).

Protein organic chemistry in live cells and beyond

Abstract

The aim of this research is to develop state-of-the-art molecular technologies that can facilitate the deep understanding of intracellular signal transmission and intercellular network formation in the neural systems and brain at the individual protein molecule level of resolution. Using such methods that enable to chemically label and image several key proteins such as neurotransmitter receptors, GPCRs and channel proteins in neural cells and brain tissues, the dynamic structural changes and critical functions of proteins in living cellular systems can be unveiled. Furthermore, by combining selective functional control of a target receptor in live cells with imaging techniques, we expect to analyze and clarify the complicated intercellular networks involving target receptor proteins for memory formation in brain. For this objective, this proposal will attempt to develop a new live-cell organic chemistry that can modify and regulate the target protein under the living cell conditions, which should be unique and complimentary to conventional chemical genetics or optogenetics approaches. In addition to developing these molecular technologies in the basic research fields of neuroscience and chemical biology, I am aiming to create a new field, a really interdisciplinary research area, termed neuro-chemical biology, which should be critically important between chemistry, biology and neuroscience toward a goal including development of innovative technologies for diagnosis and treatment of brain and neurological disorders such as schizophrenia and dementia.

Prof. Itaru Hamachi

Department of Synthetic Chemistry and Biological Chemistry, Faculty of Engineering, Kyoto University

He received his B. S. in 1983 from Kyoto University,
M. S. in 1985 from Kyoto University, and
Ph. D. in 1988 from Kyoto University (supervised by (late) Prof Iwao Tabushi)
He joined the faculty of Kyushu University as an assistant Professor (Prof. Toyoki Kunitake's Lab) in 1988, and was promoted to be an associate Professor of Kyushu University (Prof. Seiji Shinkai's Lab) in 1992. In 2001, he became a full Professor of Kyushu University and then moved to Kyoto University in 2005.
He had been a PRESTO investigator for 7 years (from 2000 to 2006), a team leader of two CREST projects (from 2008 to 2013 and then from 2013 to 2018) and has been ERATO research director (from2018 to 2023) which all are supported by Japan Science and Technology (JST) Agency. He is now a supervisor of a PRESTO project (single cell analysis) of JST that encourages and supports young generation in the field of single cell analysis.

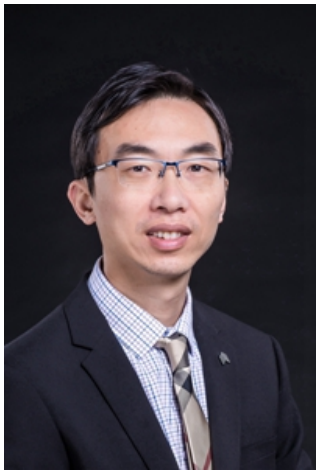
Honors and Awards

The Chemical Society of Japan Award for Creative Work (2005),
Fellow of Royal Society of Chemistry (UK, 2011)
Nagoya Silver Medal of Organic Chemistry (2014)
Peking University Eli-Lily Lectureship award (China, 2014)
UC Berkeley BASF Lectureship award (USA, 2017)
The Chemical Society of Japan Award (2018)

Framework Nucleic Acids: Molecule Design to Intelligent Creation

Abstract

DNA origami, which exploits programmable folding of single-stranded DNA molecules to generate complex framework nucleic acids, has emerged as a highly programmable method to construct objects with controlled sizes and shapes. The construction of framework nucleic acids allows quantitative analysis of Raman enhancement localized in the hot spot, which provides direct physical evidence for the single-molecule SERS. DNA origami framework with site-specifically anchored and spatially organized artificial epitopes also has been developed to capture transient conformations of lgGs at room temperature. Meta-DNA self-assembly concept may transform the microscopic world of structural DNA nanotechnology.



Prof. Chunhai Fan（樊春海）

School of Chemistry and Chemical Engineering, Shanghai Jiao Tong University

1992-1996	B. Sc., Nanjing University
1996-2000	Ph. D., Nanjing University
2001-2003	Post-doc at University of California, Santa Barbara
2004-2018	Professor, Shanghai Institute of Applied Physics, Chinese Academy of Sciences
2018-	Professor, Shanghai Jiao Tong University

Selected Publications

1. Yao, G., et al. Nat. Chem., 2020, 12, 1067-1075.
2. Chao, J., et al. Nat. Mater., 2019, 18, 273-279.
3. Liu, X., et al. Nature, 2018, 559, 593-598.
4. Zuo, X., et al. Nat. Biomed. Eng., 2017, 1.

Honors and Awards

2019 Academician, Chinese Academy of Science;
2016 National Natural Science Award (second class)
2007 National Science Fund for Distinguished Young Scholars of China

The Physical Organic Chemistry of Molecular Conductance

Abstract

This talk will describe fundamental measurements aimed at understanding the conductance of molecules connected between metal electrodes. We explore conductance in two regimes: the tunneling regime, applicable to short molecules, and the polaron hopping regime, which pertains to longer molecules. There are many opportunities to understand the kinetics of electrical conduction in molecules in much the same way the kinetics of reactions are explored in classical physical organic chemistry.

Prof. C. Daniel Frisbie

Department of Chemical Engineering & Materials Science, University of Minnesota, USA

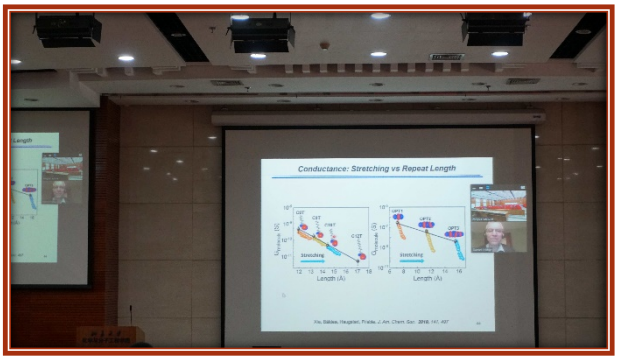
1989 B.A. in Chemistry, Carleton College, Northfield, MN
1993 Ph.D. in Physical Chemistry, Massachusetts Institute of Technology, Cambridge, MA
2000-06 Associate Professor, Department of Chemical Engineering and Materials Science, University of Minnesota
2006- Professor, then Distinguished McKnight Professor, Department of Chemical Engineering and Materials Science University of Minnesota

Selected Publications

1. Hyun, W.J.; Secor, E.B.; Bidoky, F.Z.; Walker, S.B.; Lewis, J.A. Hersam, M.C.; Francis, L.F.; Frisbie, C.D. *Flexible and Printed Electronics*, **2018**, *3*, 035004.
2. He, T.; Wu, Y.F.; D'Avino, G.; Schmidt, E.; Stolte, M.; Cornil, J.; Beljonne, D.; Ruden, P.P.; Wurthner, F.; Frisbie, C.D. *Nature Commun.*, **2018**, *9*, 2141.
3. Choi, H. H.; Cho, K.; Frisbie, C. D.; Sirringhaus, H.; Podzorov, V., *Nature Materials*, **2018**, *17*, 2-7.

Honors and Awards

2012 Distinguished McKnight University Professor;
2009 National Science Foundation, Special Creativity Award;
1999, 2002 Outstanding Professor Award, College Student Board.



尊重规律，肩负责任，大胆实践——万华化学创新发展汇报

Abstract

中国是全球化工行业发展最活跃的地区，生产、销售均位列全球首位，是我国重要产业之一。本报告简述了万华化学集团股份有限公司 42 年发展历史和六次重大国企改革，介绍了公司人才培养与激励机制、科研投入及世界领先的技术创新成果。重点综述了全球化学化工行业投资、生产、销售和研发的现状与低碳、减排、禁塑的发展趋势。以高端化、绿色化、园区化、一体化、全球化五大趋势为基础阐述了万华对中国化工行业发展机遇和挑战的思考，并分享了万华在碳循环、新能源、营养化学、绿色环保、高端化工产品等领域的发展战略及规划。

廖增太 董事长

万华化学集团股份有限公司党委书记、董事长，国务院特殊津贴专家。

廖增太，万华化学集团股份有限公司党委书记、董事长，国务院特殊津贴专家。历任公司技术员、工程师、副厂长、总工程师、副总裁、总裁。

廖增太先生在万华工作37年，从扎根基层一线到带领万华化学集团实现整体上市，并跻身全球化工50强第32位，贡献卓越。他带领的创新团队成功突破国外技术封锁，开发出了具有自主知识产权的超大规模MDI制造技术，使万华成为了世界排名第1、技术全球最领先的MDI制造商。廖增太先生先后获得国家科技进步一等奖等科技奖励、全国劳动模范等荣誉称号。党和国家领导人多次到万华视察，听取了廖增太先生关于国企改革、企业创新和高质量发展的专题汇报后，给予了高度评价。