



陕西师范大学
SHAANXI NORMAL UNIVERSITY



化学化工学院
School of Chemistry & Chemical Engineering

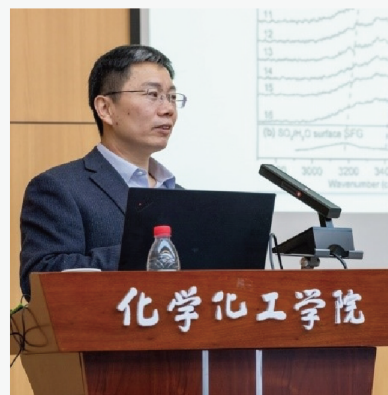
03 / 2023

光子鼻与分子材料团队

Photonic Nose and Molecular Materials Group

简报

Newsletter



目录 Contents

三月大事记 Events in March

- 03 / 房喻院士应邀赴西北大学作报告
Fang Yu gives a report at Northwest University
- 04 / 房喻院士带队参加 2023 年陕西省化学会理事会年会
Fang Yu attends 2023 council meeting of Shaanxi Provincial Chemical Society
- 06 / 刘科通过博士后出站答辩
Liu Ke passes postdoctoral report defense

简讯动态 News in Brief

- 07 / 房喻院士出席 2023 先进凝胶材料及产业应用论坛
Fang Yu attends 2023 Advanced Gel Material and Industrial Application Forum
- 07 / 房喻院士出席西安市科学技术协会第九次代表大会
Fang Yu attends Ninth Congress of Xi'an Science and Technology Association
- 07 / 房喻院士出席西安交通大学新港化学论坛并作报告
Fang Yu presents at Xi'an Jiaotong University's Xingang Chemistry Forum
- 08 / 团队召开工作推进部署会
Fang Group meet to plan and promote work
- 08 / 房喻院士一行赴咸阳考察科技成果转化
Fang Yu visits Xianyang for transformation of research achievements

研究亮点 Research Highlight

- 09 / 激发态质子转移的分子内电荷作用调控及对芥子气模拟物检测
Bi-ortho-Carborane Units Riveted Perylene Monoimides: Structure-Tuned Optical Switches for Electron Transfer and Robust Thin-Film-based Fluorescence Sensors

交流合作 Exchange & Cooperation

- 11 / 深圳大学吴奇院士应邀作学术报告
Prof. Wu Qi invited to present on Macromolecular Physics and Food Processing
- 12 / 大连化物所江凌教授应邀作学术报告
Prof. Jiang Ling invited to present on Structural Evolution Mechanism of Neutral Water Clusters
- 13 / 复旦大学周鸣飞教授应邀作报告
Prof. Zhou Mingfei invited to present on gas-phase molecules and cluster chemical bonds

观点视角 Opinion & Perspective

- 14 / 留学随感——请微笑着做科研
Please do research with a smile --- My study abroad reflections



房喻院士应邀赴西北大学作报告

Fang Yu gives a report at Northwest University

2023年3月15日，房喻院士应邀赴西北大学，为西大化学与材料科学学院150余名师生作了题为《我所理解的化学》的学术报告。

房喻院士围绕习近平在中共中央政治局第三次集体学习时强调切实加强基础研究，夯实科技自立自强根基的指示，从化学学科的地位、特征和作用三方面展开。他表示化学作为一门基础学科，是支撑包括材料、能源、环境、生命、医药、农业、食品、航天、军事科学，乃至整个物质科学发展的最重要力量之一。房喻院士指出，化学不能代替一切，但没有化学肯定没有一切；化学就是未来，没有化学就没有未来；化学能够为人们认识客观世界、改造客观世界提供独特的视角和手段；除此之外，化学带给人的是一种思维习惯，做事习惯，即把每一个细节都能够想到，把每一个细节都能够做好。房喻院士还向师生介绍传感器研究的现状、未来以及其团队在传感器领域的研究成果。

在互动问答环节，房喻院士回答了参会人员提出的问题，并以自身经历鼓励青年教师和科研工作者在遇到问题时要积极寻找解决问题的方法，相信办法总比困难多。

On March 15, 2023, Prof. Fang Yu was invited to give an academic report titled “Chemistry as I Understand it” for more than 150 teachers and students of the School of Chemistry and Materials Science of Northwest University.

Fang Yu, focusing on Xi Jinping’s instruction to effectively strengthen basic research and solidify the foundation of scientific and technological self-reliance and self-improvement during the third collective study of the Political Bureau of the CPC Central Committee, unfolds his report from the three aspects of the status, characteristics and role of the discipline of chemistry. He said that chemistry, as a basic discipline, is one of the most important forces supporting the development of research in materials,

energy, environment, life, medicine, agriculture, food, space, military, and even the whole material science. Fang Yu said that “though chemistry cannot replace everything, but without chemistry there is certainly no everything; chemistry is the future, without chemistry there is no future, and chemistry can provide a unique perspective and means for people to understand the objective world and transform it; in addition, chemistry brings people a habit of thinking and doing, that is, to be able to think of every detail and to do every detail well.” Fang Yu also introduced the current status and future of sensor research and his group’s research results in the field of sensors to the audience.

In the Q&A session, Fang Yu answered the questions raised by the participants and encouraged the young teachers and researchers to actively look for solutions when they encounter problems, telling them there are always more solutions than difficulties.

房喻院士带队参加 2023 年陕西省化学会理事会年会

Fang Yu attends 2023 council meeting of Shaanxi Provincial Chemical Society



2023 年 3 月 26 日，房喻院士、丁立平教授和彭浩南教授前往杨凌参加了由陕西省化学会主办、西北农林科技大学承办的陕西省化学会理事会年会。

省内相关高校、科研单位的专家学者和会员企业负责人 120 余人参加会议。会议进行了陕西省化学会第十一届理事会分支机构换届工作，房喻院士和丁立平教授分别受聘物理化学学科委员会主任和副主任。

房喻院士作为陕西省化学会名誉理事长发表了讲话。他回顾了著名胶体化学家、物理化学家、陕西现代化学奠基人虞宏正院士为我国教育科学事业，特别是我国西北地区化学和土壤科学事业发展做出的杰出贡献，分享了化学学科发展鲜为人知的过往和取得的可喜成绩，勉励我省广大化学界同仁继承和发扬前辈们的光荣传统和奋斗精神，助推我省化学事业发展

更好、更强。

会议还颁发了第四届陕西省化学奖，房喻院士为王尧宇教授颁发了陕西省化学杰出贡献奖，团队彭浩南教授荣获陕西省化学优秀青年奖，并作为教师代表作学术报告。

会后，房喻院士与丁立平、彭浩南一同前往中国科学院西北水土保持研究所缅怀虞宏正先生，并与虞宏正先生铜像合影。

On March 26, 2023, Prof. Fan Yu, Prof. Ding Liping and Prof. Peng Haonan went to Yangling to attend the annual council

meeting of the Shaanxi Provincial Chemical Society, which was hosted by Shaanxi Provincial Chemical Society and organized by Northwest Agriculture and Forestry University.

More than 120 experts and scholars from universities and research institutes and heads of member enterprises in the province attended the meeting. The



meeting elected new members of branch committees of the 11th Council of Shaanxi Chemical Society, and Fang Yu and Ding Liping were appointed as the director and deputy director of Physical Chemistry Committee respectively.

Fang Yu delivered a speech as the honorary council director of Shaanxi Chemical Society. He recalled the outstanding contributions made by the famous colloidal chemist, physical chemist and the founder of modern chemistry in Shaanxi, Academician Yu Hongzheng, to the development of education and science in China, especially chemistry and soil science in northwest China, shared the little-known history and the promising achievements in the development of chemistry discipline, and encouraged his chemistry colleagues to inherit and carry forward the glorious tradition and struggle spirit of their predecessors to help make the chemistry in Shaanxi province better and stronger.

The 4th Shaanxi Provincial Chemistry Award was also awarded



at the meeting. Fang Yu presented the Shaanxi Provincial Chemistry Outstanding Contribution Award to Prof. Wang Yaoyu. Prof. Peng Haonan was awarded the Shaanxi Provincial Chemistry Outstanding Youth Award and gave a report as a faculty representative.

After the meeting, Fang Yu, Ding

Liping and Peng Haonan went to the Northwest Institute of Soil and Water Conservation of Chinese Academy of Sciences to pay tribute to Mr. Yu Hongzheng and took a photo with Mr. Yu's bronze statue.



刘科通过博士后出站答辩

Liu Ke passes postdoctoral report defense



科研成果斐然，学术见解独到并富有新意，具有独立开展研究工作的能力，可完全自主从事科学研究工作。

On March 27, 2023, the Photonic Nose and Molecular Materials Group held a postdoctoral report defense session

precise manipulation of intramolecular proton transfer process, and developed related solid-luminescent materials, obtaining an important breakthrough in the fluorescence behavior regulation strategy of o-carborane derivatives, and laying a foundation for related applications. During this period, Liu Ke published 5 academic papers in high-level journals including JACS as the first author or corresponding author, and was funded by the National Natural Science Foundation of China Youth Fund Project, the China Postdoctoral General Program, and the Special Project for Basic Scientific Research Business of Central Universities.

Prof. Liu Feng of Xi'an Jiaotong University served as the chairman of the defense committee, Prof. Tian Wei of Northwestern Polytechnical University, Prof. He Gang of Xi'an Jiaotong University, Prof. Ding Liping and Prof. Liu Jing of Shaanxi Normal University served as members, and Associate Professor Liu Xiaoyan of Shaanxi Normal University served as the secretary. The Defence Committee unanimously agreed that Dr. Liu Ke's research achievements were remarkable, his academic insights were unique and innovative, and he had the ability to carry out research work independently.

2023年3月27日下午16点，光子鼻与分子材料团队在长安校区致知楼1668教室举行了刘科博士后出站答辩，刘科博士进行了题为“碳硼烷衍生物荧光行为的分子内氢键调控及其传感应用”的答辩报告。

刘科博士在站期间的工作主要围绕碳硼烷衍生物荧光行为的分子内氢键调控及其传感应用开展。他将分子内氢键引入邻碳硼烷小分子体系，以此调控邻碳硼烷衍生物光物理行为，构建新型邻碳硼烷荧光传感分子体系。此外，他将分子内跨空间电荷作用引入，实现了分子内质子转移过程的精准操控，并发展了相关固体发光材料，获得了邻碳硼烷衍生物荧光行为调控策略的重要突破，并为相关应用奠定了基础。在站期间刘科以第一作者或通讯作者在包括JACS在内的高水平期刊发表学术论文5篇，获得国家自然科学基金委青年基金项目、博士后面上项目、中央高校基本科研业务专项项目等资助。

西安交通大学刘峰教授担任答辩委员会主席，西北工业大学田威教授、西安交通大学何刚教授、陕西师范大学丁立平教授和刘静教授担任委员，陕西师范大学刘小燕副教授担任答辩秘书。答辩委员会一致认为刘科博士

for Dr. Liu Ke in Room 1668, Zhizhi Building, Chang'an Campus, at which Dr. Liu Ke presented his research report titled "Intramolecular hydrogen bond regulation of fluorescence behavior of carborane derivatives and its sensing applications".

Liu Ke's postdoctoral work mainly focuses on the regulation of intramolecular hydrogen bonds and sensing applications of carborane biofluorescence behavior. He introduced intramolecular hydrogen bonds into the o-carborane small molecule system, thereby regulating the photophysical behavior of o-carborane derivatives and constructing a novel o-carborane fluorescent sensing molecular system. In addition, he introduced intramolecular trans-space charge action, realized the



房喻院士出席 2023 先进凝胶材料及产业应用论坛

Fang Yu attends 2023 Advanced Gel Material and Industrial Application Forum



2023年3月1日，房喻院士出席在苏州国际博览中心举办的“2023先进凝胶材料及产业应用论坛”，并作题为“软模板基高品质泡沫聚苯乙烯”的报告。论坛由中国科学院苏

州纳米技术与纳米仿生研究所、DT新材料、苏州纳米科技发展有限公司共同主办，来着国内科研机构、院校及相关企业的400位代表参加会议，分享凝胶行业的最新科研成果、前沿技术和创新产品。

On March 1, 2023, Prof. Fang Yu attended the 2023 Advanced Gel Materials and Industrial Applications Forum held in Suzhou International Expo Center and gave a presentation titled “Soft Template-based High Quality Foam Polystyrene”. The forum was co-organized by Suzhou Institute of Nanotechnology and Nanomimetics of Chinese Academy of Sciences, DT New Materials and Suzhou Nanotechnology Development Co., Ltd., which was attended by 400 representatives from research institutions, universities and related enterprises, for sharing the latest research results, cutting-edge technologies and innovative products in the gel industry.

房喻院士出席西安市科学技术协会第九次代表大会

Fang Yu attends Ninth Congress of Xi'an Science and Technology Association

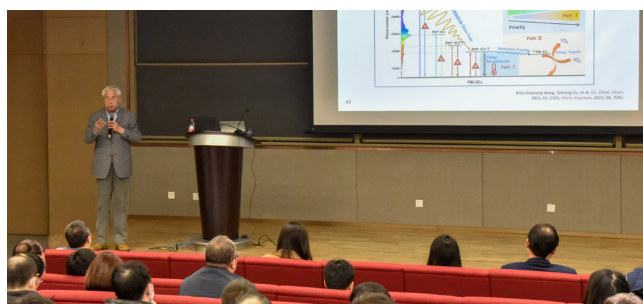


2023年3月16日上午，房喻院士出席西安市科学技术协会第九次代表大会开幕式并在座谈会上发言。

On March 16, 2023, Prof. Fang Yu attended the opening ceremony of the ninth Congress of Xi'an Science and Technology Association and spoke at the symposium.

房喻院士出席西安交通大学新港化学论坛并作报告

Fang Yu presents at Xi'an Jiaotong University's Xingang Chemistry Forum



2023年3月18日下午，房喻院士出席西安交通大学新港化学论坛，并作题为“薄膜荧光传感器研究——进展与展望”的报告。

On March 18, 2023, Prof. Yu Fang attended the Xingang Chemistry Forum of Xi'an Jiaotong University and gave a report titled “Research on Film-based Fluorescent Sensors - Progress and Prospects”.

团队召开工作推进部署会

Fang Group meet to plan and promote work



2023年3月20日上午，光子鼻与分子材料团队在致知楼6层接待室召开工作推进部署会，房喻院士分析了团队面临的挑战和机遇，并就接下来的工作进行了安排部署。团队所有成员参加了会议。

On March 20, 2023, the Photonic Nose and Molecular

Materials Group held a meeting in the reception room on the 6th floor of Zhizhi Building to plan and promote work. Prof. Fang Yu analyzed the challenges and opportunities facing the group and made arrangements for the work in the following weeks. All members of the group attended the meeting.

房喻院士一行赴咸阳考察科技成果转化

Fang Yu visits Xianyang for transformation of research achievements



2023年3月23日，房喻院士一行赴咸阳市对接科技成果转化事宜，学校科技处、化学化工学院、资产经营有限公司负责人和课题组骨干成员一同考察。考察组一行听取了咸阳经开区总体规划及区位优势介绍，参观了秦创原临空智港项目和咸阳清华紫光AI智慧展示中心，并与咸阳市人民政府副市长李忠平及相关单位负责人就科技成果转化落地、秦创原平台建设等进行了沟通交流，并达成进一步合作共识。

On March 23, 2023, Prof. Fang Yu visited Xianyang city for cooperation in the transformation research achievements. Shaanxi Normal University officials from the Science and

Technology Department, School of Chemistry and Chemical Engineering, Asset Management Company and the key members of the Fang Group accompanied him for the visit. After listening to the overall planning and location advantages of Xianyang Economic Development Zone, and visiting the Qinchuangyuan Airport Smart Port project and Xianyang Tsinghua Purple AI Intelligent Display Center, the delegation talked with Li Zhongping, vice mayor of Xianyang Municipal People's Government and heads of relevant departments on the transformation of research achievements and the construction of Qinchuangyuan platform, reaching a consensus on further cooperation.

Precise Manipulation of Excited-State Intramolecular Proton Transfer via Incorporating Charge Transfer toward High-Performance Film-Based Fluorescence Sensing

Ke Liu, Jing Zhang, Qiyuan Shi, Liping Ding, Taihong Liu,* and Yu Fang*



Cite This: <https://doi.org/10.1021/jacs.2c13843>



Read Online

激发态质子转移的分子内电荷作用调控及对芥子气模拟物检测

作为入选 2022 年度 IUPAC 化学十大新兴技术之一，薄膜荧光传感器（FFSs）以其卓越的探测性能、优异的可集成性，以及低功耗和小型化等特征成为国际公认的新一代最具发展潜力的微量物质探测技术。其中，敏感薄膜材料创制和高性能化是获得高性能 FFSs 的关键，其核心又是高性能敏感单元的创制。理性设计、激发

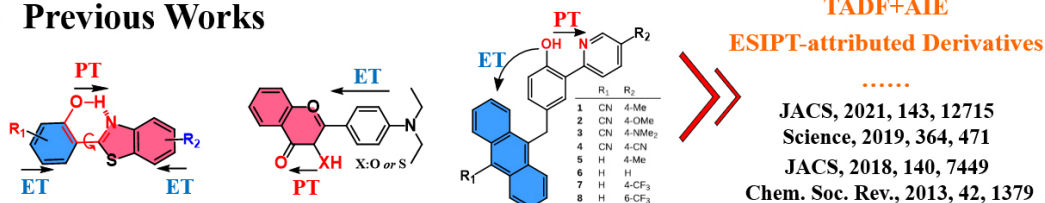
态过程精准调控是获得理想敏感单元，进而实现敏感薄膜的高性能化的主要途径。

工作中以激发态分子内质子转移片段为受体结构，通过引入分子内跨空间电荷作用，发展了一种激发态质子转移的分子内电荷作用调控新机制。基于该策略，作者依次改变供电子片段（萘，菲，茈），以增加分子内片

段间耦合作用，进而精准操控体系的激发态过程。光谱学研究和理论计算表明，在光激发下，通过调节分子内非共价相互作用和溶剂极性，可以连续调控该分子体系的激发态质子转移和激发态分子内电荷转移，并实现不同时间尺度和不同方向的热力学和动力学操控。

此外，研究表明，该分子体系

a) Previous Works



b)

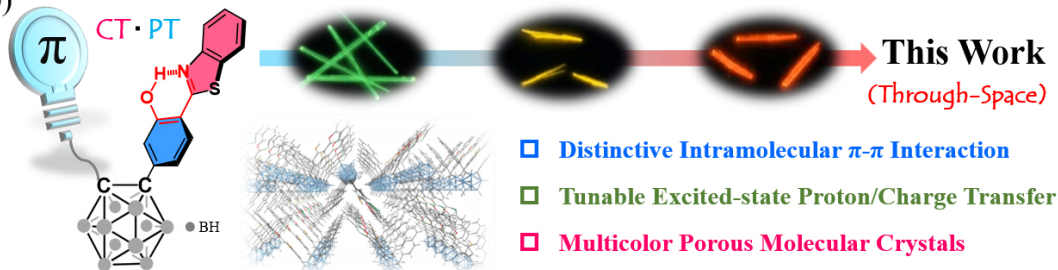


图 1. 基于非共价作用调控分子内质子 / 电子转移新策略。

Figure 1. Present molecular design strategy of intramolecular proton/electron transfer enabled by controlled noncovalent interactions.

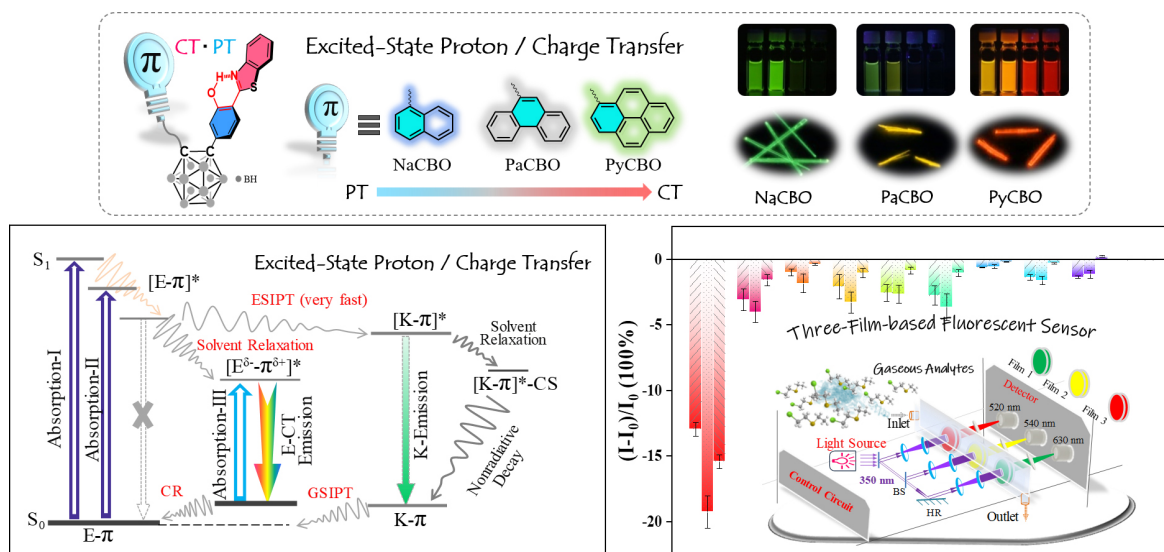


图 2. 该分子体系光物理行为及薄膜态传感应用。

Figure 2. Photophysical behaviors and sensing performances of the developed fluorophores.

固态荧光行为仍以单分子态光物理过程主导，荧光发射可由绿色演化至红色，且保持优异的发光效率和光化学稳定性。此外，目标分子固有的立体结构赋予相关分子晶体独特的泡孔结构，泡孔直径可达 4.0 Å，孔隙率超过 30%，为高通透性敏感薄膜奠定了坚实的基础。研究表明，基于三种敏感单元发展的阵列型 FFSs 对 2-氯乙基硫醚气体(芥子气模拟物)表现出灵敏、高选择、可逆传感特性，实验检出限低于 50 ppb，响应时间小于 5 s。以具有立体结构分子为基础，该工作所发展的以激发态分子内电荷转移(ESICT)调控激发态分子内质子转移(ESIPT)策略不仅仅丰富了荧光分子的激发态过程，获得了多样化荧光分子，而且为发展传质效率高、传感对象适应面广的多样化高性能荧光敏感薄膜材料提供了新的思路。

第一作者：陕西师范大学刘科博士

通讯作者：陕西师范大学房喻教授、刘太宏副教授

全文链接：<https://pubs.acs.org/doi/10.1021/jacs.2c13843>

Being one of the most important and state-of-the-art technologies, film-based fluorescent sensors (FFSs) have achieved great progress and been selected as one of the International Union of Pure and Applied Chemistry (IUPAC) Top Ten Emerging Technologies in Chemistry 2022 owing to their excellent sensing performances, outstanding designability, easy integration, etc. However, the performance of the FFSs highly depends on innovative design of sensing fluorophores employed. As is well-known to all, Excited-State Intramolecular Proton Transfer (ESIPT) has been widely employed for the design of a variety of functionality-led molecular systems. However, precise manipulation of the excited-state reaction is challenging.

Herein, we report a new tactic for tuning ESIPT via incorporating an Excited-State Intramolecular Charge Transfer (ESICT) process. Specifically, three o-carborane derivatives, NaCBO, PaCBO and PyCBO, were designed, where the 2-(2'-hydroxyphenyl)-benzothiazole is a typical ESIPT unit functioning as an electron acceptor, and the electron donating units are naphthyl-

(Na), phenanthrenyl- (Pa) and pyrenyl- (Py), respectively. The architectures of the molecules are featured with a face-to-face alignment of the two units. Spectroscopy and theoretical calculation studies revealed that the electron donating capacity of the donors and solvent polarity continuously modulate the ESIPT/ESICT energetics and dynamics, resulting in distinct emissions. Moreover, the molecules depicted not only highly porous structures but also very different fluorescent colors in the solid state, enabling highly selective film-based fluorescent sensing of mustard gas simulant, 2-chloroethyl ethyl sulfide (CEES), with a detection limit of 50 ppb and a response time of 5 s. This work thus provides a reliable strategy for the creation of high-performance sensing fluorophores via ESIPT manipulation.

Firstly Author: Dr. Liu Ke, Shaanxi Normal University

Corresponding Authors: Prof. Fang Yu and Assoc. Prof. Liu Taihong, Shaanxi Normal University

Full-Text Link: <https://pubs.acs.org/doi/10.1021/jacs.2c13843>

深圳大学吴奇院士应邀作学术报告

Prof. Wu Qi invited to present on Macromolecular Physics and Food Processing



2023年3月7日上午9:30, 中国科学院院士、深圳大学食品科学与加工中心主任吴奇教授应邀在致知楼1668报告厅作了题为“大分子物理和食品加工”的专题报告。化学化工学院房喻院士主持报告会, 学院师生代表以及食品工程与营养科学学院部分师生参加了此次报告会。

在报告中, 吴奇院士从“能源与环境”“政治和经济”两个方面介绍了食品加工的重要性与可能性, 并基于对大分子物理的深入理解, 聚焦于食品研究与加工, 尤其是大豆蛋白的精深加工。吴奇院士团队解决了植物蛋白代替动物蛋白的口感问题, 研发出“好吃营养又便宜”的素肉, 为保障国民摄入足够的优良蛋白质, 提高整体健康水平探索出了一条新的道路。

此外, 吴奇院士还指出“原始创新是从0到1的突破, 常常意味着漫长而艰难的探索, 但可产生颠覆性的进步, 带来革命性的技术和产品。创新研究需要产、学、研的结合和资本投入, 更需要眼光、思路和耐心”, 以此鼓励大家在科研的道路上不断超越自己、勇攀高峰。

报告结束后, 吴奇教授还与在场师生互动交流, 回答了师生的提问, 并与参会老师合影留念。

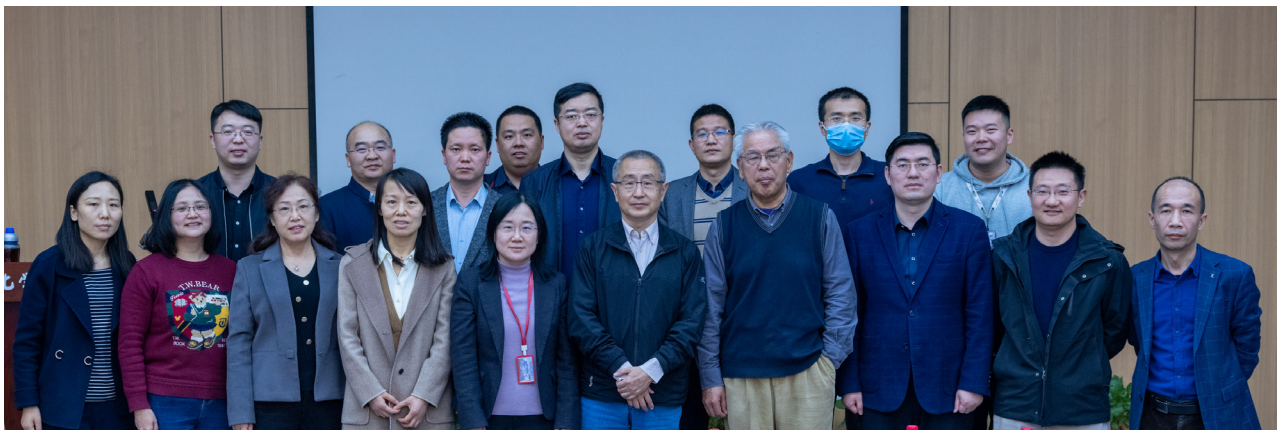
On March 7, 2023, Prof. Wu Qi, academician of the Chinese Academy of Sciences and director of the Food Science and Processing Center of Shenzhen University, was invited to give a report titled "Macromolecular Physics and Food Processing" in the lecture hall 1668 of Zhizhi Building.

Prof. Fang Yu of the School of Chemistry and Chemical Engineering presided over the meeting, and some teachers and students of School of Food Engineering and Nutritional Sciences joined SCCE teachers and students at the meeting.

In the report, Wu Qi introduced the importance and possibility of food processing from the aspects of "energy and environment" and "politics and economy", and focused on food research and processing, especially the deep processing of soy protein, based on his in-depth understanding of macromolecular physics. Wu Qi's group solved the taste problem of plant protein replacing animal protein, and developed "delicious, nutritious and cheap" vegetarian meat, which explores a new path to ensure that Chinese people consume enough good protein and improve the overall health level.

Wu Qi also told the audience that "original innovation is a breakthrough from 0 to 1, which often means a long and difficult exploration, but it can produce subversive progress and bring revolutionary technologies and products. Innovative research requires the combination of production, learning and research and capital investment, and more importantly, vision, thinking and patience", encouraging them to constantly surpass themselves and scale the peak on the road of scientific research.

After the presentation, Wu Qi interacted with the teachers and students present, answered their questions, and took a group photo with the participating teachers.



大连化物所江凌教授应邀作学术报告

Prof. Jiang Ling invited to present on Structural Evolution Mechanism of Neutral Water Clusters



2023年3月18日上午10:00, 中国科学院大连化学物理研究所团簇光谱与动力学研究组组长江凌研究员应邀在致知楼1668报告厅作了题为“中性水团簇的结构演化机制研究”的专题报告。团队教师和研究生参加了此次交流会, 会议由刘静教授主持。

江凌研究员主要从事于大气化学和能源催化相关团簇结构及动力学研究, 已在 Science、PNAS、JACS 等期刊发表论文 130 余篇。

在报告中, 江凌研究员指出中性水团簇研究的核心关键问题是发展质量选择、具有通用性的中性团簇光谱探测方法。江凌研究员基于提高分辨率、对团簇进行选择性电离等一系列设计理念进行了仪器研制, 通过红外激发以及紫外电离技术相结合的方法, 实现了气相质量选择性中性团簇的高灵敏红外光谱探测。研究了水团簇结构演化机制, 打破了最小水滴由 6 个水分子构成的固有认识, 发现了最小分子冰立方新结构, 为中性团簇的研究开辟了新的道路, 具有重要的指导意义。

报告结束后, 江凌研究员与在场师生就相关问题进行了讨论, 并与参会老师合影留念。

On March 18, 2023, Prof. Jiang Ling, head of the Cluster Spectrum and Dynamics Research Group of the Dalian Institute of Chemical Physics, Chinese Academy of Sciences, was invited to give a report titled Research on the Structural Evolution Mechanism of Neutral Water Clusters in the lecture hall 1668 of Zhizhi Building.

Teachers and students of the Photonic Nose and Molecular Materials Group attended the meeting, which was chaired by Prof. Liu Jing.

Prof. Jiang Ling mainly engages in the research of cluster structure and dynamics related to atmospheric chemistry and energy catalysis, and has published more than 130 papers in Science, PNAS, JACS and other journals.

In the report, Jiang Ling said that the core key problem in the research of neutral water clusters is the development of quality selection and universal neutral cluster spectral detection methods. Based on a series of design concepts such as improving resolution and selective ionization of clusters, Jiang Ling developed the instrument, and realized the highly sensitive infrared spectral detection of selective neutral clusters in the gas phase through the combination of infrared excitation and ultraviolet ionization technology. He studied the evolution mechanism of water cluster structure, broke the inherent understanding that the smallest water droplet is composed of six water molecules, and discovered the new ice cube structure of the smallest molecule, which opened up a new path for the study of neutral clusters.

After the presentation, Jiang Ling interacted with the teachers and students present, answered their questions, and took a group photo with the participating teachers.



复旦大学周鸣飞教授应邀作报告

Prof. Zhou Mingfei invited to present on gas-phase molecules and cluster chemical bonds



2023年3月20日下午4:00, 复旦大学化学系周鸣飞教授应邀在致知楼1668报告厅作了题为“气相分子和团簇化学键”的专题报告。光子鼻与分子材料团队教师和学生参加了报告会, 会议由边红涛教授主持。

周鸣飞教授从化学键的历史展开, 首先介绍了历代科学家对化学键的研究过程。接着, 他重点介绍了如何利用化学键理论理解和预测分子的化学性质, 其中的两个重要理论分别是共轭分子的Hückel分子轨道理论和配位化合物的配位场理论。然后, 他通过硼烷的缺电子多中心键、富勒烯的共轭大 π 键和过渡金属多重键等三个例子, 解释了原子之间可以通过化学键形成不同结构和性质的分子。最后, 周鸣飞教授对化学键的本质进行了总结, 梳理了化学键成键背后的规则, 带来对化学键新的认识。

房喻院士对周鸣飞教授的报告进行了点评, 指出当代的基础科学研究是在不断地拓展过去的认识, 而周教授在中国人对化学的基础理论研究方面作出了贡献。

报告结束后, 周鸣飞教授与在场师生就相关问题进行

了讨论, 回答了提问, 并与参会老师合影留念。

On March 20, 2023, Prof. Zhou Mingfei of the Department of Chemistry of Fudan University was invited to give a report titled "Gas Phase Molecules and Cluster Chemical Bonds" in the lecture hall 1668 of Zhizhi Building. The faculty and graduate students of Photonic Nose and Molecular Materials Group attended the meeting, which was anchored by Prof. Bian Hongtao.

Starting from the history of chemical bonds, Zhou Mingfei first introduced the research process of chemical bonds by successive generations of scientists, then focused on how to use chemical bond theory to understand and predict the chemical properties of molecules, two important theories of which are Hückel molecular orbital theory for conjugated molecules and coordination field theory for coordination compounds. He then explained that atoms can form molecules with different structures and properties through chemical bonds, using three examples of electron-deficient polycentric bonds of boranes, conjugated large π bonds of fullerenes, and transition metal multiple bonds. Finally, Prof. Zhou summarized the essence of chemical bonds, sorted out the rules behind chemical bonds, bringing to audience new understanding of chemical bonds.

Prof. Fang Yu commented on Professor Zhou's report that contemporary basic scientific research is constantly expanding the understanding of the past, and Prof. Zhou has made a Chinese contribution to the basic theoretical research of chemistry.

After the presentation, Prof. Zhou discussed relevant issues with the teachers and students present, and answered their questions, before taking a group photo with the participating teachers.



留学随感——请微笑着做科研

Please do research with a smile
——My study abroad reflections

文 / 薄鑫 by Bo Xin

无意翻阅起博士毕业时发的朋友圈：

满纸学术研，一把辛酸泪，
都云博士痴，谁解其中味。

毕业三载，疫情不再，往事回首，
万千感慨。

思绪回到了2016年春节，硕士毕业“坐家”半年，等到了录取offer，刷够了雅思，熬来了签证。告别家人，整装待发，一路向南，穿越赤道，开启了留澳博士研究生的求学之路。

与在国内时不同，留学生面临的第一个问题就是孤独，没有家人、不识多友、物价昂贵，一切都得靠自己。尤其是在做学问的道路上，实验室、住所两点一线，披星戴月的出入，像

是左手牵着右手前行，无可语者，唯有自己的搀扶。这种状态很煎熬，于是，我意识到得强逼着自己改变。多和本地人交流，学习新的规则，如何找当地人租房、右舵开车、打工、生活等等。

我觉得自己是一个幸运的人，身边总有愿意引导和帮助我的良师益友。学术上，导师赵川老师给了我无限的自由度，鼓励我去发现问题、解决问题，告诉我永远自己想做什么老师都会支持。当然还有老梁和老田，一位是新南威尔士大学的学长，一位是我大学同寝室的兄弟。他们的陪伴，至少让原本单调的留学生活，染上了点点灿烂。慢慢的，我学会了如何去接受并享受这种宁静，做研究的间歇，

也可以去锻炼、去旅行、去吃吃喝喝、去思考怎么过好自己的人生。

一晃在澳四年，提交了论文，即将毕业。我努力着让自己变成那个别人想像中的留学生的样子，学有所获，光鲜明媚。我当然羡慕那些已经成家立业的同龄人，而我也并未挥霍人生中最美好的时光。如今，我也成为了一位科研工作者，面对着越来越多的研究生，仿佛看到了自己当年的样子。不管在哪里做研究，心态很重要，有时候累了，就停下来，走走看看想想，请保持微笑。

最后，愿人间安康，愿世界和平。



I flipped through my WeChat Moments and accidentally found this post when I graduated with my PhD:

“Papers published with research findings,

are made with bittersweet tears;

Obsessed am I in pursuit for doctorate,

who else understands the taste?”

Three years after graduation, the COVID epidemic is over. Looking back on the past, I am filled with a thousand emotions.

In the Spring Festival of 2016, sitting at home half a year after I graduated from my master’s degree, I finally received the offer, got the IELTS scores required, and obtained the visa. Saying goodbye to my family and getting myself ready, I headed south, crossed the equator, and began my study in Australia as a doctoral student.

Unlike in China, the first problem international students face is loneliness. No family, no friends, expensive prices, and everything is on their own. Especially on the road of learning, you go back and forth between the lab and the residence, working long hours day and night, like holding your right hand with the left hand. There is no one to talk to, and you are your own support alone. It was a very torturous state and I realized that I had to force myself to change. I began to communicate more with locals, learn new rules and tricks, such as how to rent an apartment from local landlord, how to right-hand drive, how to work and live, etc.

I feel that I am a lucky person, who is always surrounded by mentors and friends who are willing to guide and help me. Academically, my mentor, Prof. Zhao Chuan, gave me unlimited freedom, encouraged me to find problems and solve them, and told me he would always support whatever I wanted to do. Of course, there were also Lao Liang and Lao Tian, one is an upperclassman at University of New South Wales and the other is my buddy from the same dormitory at university. Their company at least made the monotonous life of

studying abroad a little bit brighter. Slowly, I learned how to accept and enjoy the peace and quiet. In between doing research, I can also exercise, travel, eat and drink, and think about how to live my life well.

Four years in Australia have passed as if in a flash, I submitted my desertation and was about to graduate. I have tried hard to make myself the way others think I should be as an international student, learning something and shining brightly. I certainly envy my peers who have

already started a family, but I have not squandered the best years of my life. Now, I have also become a researcher, facing more and more graduate students, as if I saw myself back then. No matter where you do research, mindset is crucial. Sometimes when you are tired, just stop for a bit, take a walk, look around, think for a while. Also, please keep smiling.

Finally, may people be healthy and may there be peace in the world.





总策划：房喻教授

Producer & Editor-in-Chief: Prof. Fang Yu

责任编辑：刘静 冯伟

Executive Editors: Liu Jing, Feng Wei

翻译：冯伟

Translator: Feng Wei

校对：团队全体老师

Proofreading: Fang Group teachers

装帧设计：长乐央吉 | 泛象空间

Designed by Changle Yangji, FanSee Space

地址：陕西省西安市长安区西长安街 620 号

陕西师范大学长安校区致知楼 6 层

Add: 6F, Zhizhi Bldg., Chang'an Campus, Shaanxi Normal University,
620 West Chang'an Avenue, Chang'an District, Xi'an, Shaanxi, P. R. China

联系电话 (Tel): 86-29-81530726

电子邮箱 (Email): incsmm@snnu.edu.cn