

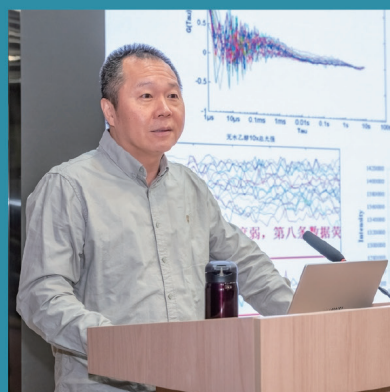


2025年9月
September, 2025

简报
Newsletter



新概念传感器与分子材料研究院 Institute of New Concept Sensors and Molecular Materials



目录 Contents

九月大事记 Events in September

- 03 / 房喻院士、丁立平和彭浩南教授参加基金委化学部胶体与界面化学“十五五”发展战略研讨会
Fang Yu, Ding Liping and Peng Haonan attend the “Fifteenth Five-Year” Development Strategy Seminar on Colloid and Interface Chemistry
- 03 / 陕师大选手讲述薄膜荧光传感器研发故事获 2025 年陕西省科普讲解大赛一等奖
SNNU contestant telling story of Film-based Fluorescent Sensor development wins first prize at 2025 Shaanxi Science Popularization Presentation Competition
- 04 / 学校学院领导看望房喻院士
School officials visit Fang Yu ahead of Teachers’ Day
- 05 / 陕师大新概念研究院举办科研分享会
SNNU INCSMM Research Sharing Seminar held
- 07 / 房喻院士出席 2025 陕西科幻创作大会
Fang Yu attends 2025 Shaanxi Science Fiction Creation Conference
- 07 / 房喻院士出席中陕核集团第六届科技大会并作报告
Fang Yu speaks at Sixth S&T Conference of ZSH Industry Group
- 08 / 赵智豪博士参加自然－低维电子学会议
Zhao Zhihao attends Nature Conference on Low-Dimensional Electronics
- 08 / 房喻院士出席中国化学会第五屆硼化学会议并作报告
Fang Yu speaks at CCS Fifth Boron Chemistry Conference
- 09 / 薄鑫副研究员访问深圳清华大学研究院
Bo Xin visits Research Institute of Tsinghua University in Shenzhen
- 09 / 马佳妮教授参加第十九届全国化学动力学会议并作报告
Ma Jiani presents at 19th National Conference on Chemical Kinetics
- 10 / 房喻院士获聘西安人才馆首席科学家
Fang Yu appointed Chief Scientist of Xi’an Talent Museum
- 10 / 房喻院士出席 2025 年化学理论与机制学科发展战略研讨会并作专题报告
Fang Yu speaks at 2025 Symposium on Discipline Development Strategy for Chemical Theory and Mechanism
- 11 / 房喻院士参加广东省高等学校聚集集体科学基础研究卓越中心中期评议与学术交流会
Fang Yu participates in Review and Exchange Meeting of Guangdong Basic Research Center of Excellence for Aggregate Science

研究亮点 Research Highlight

- 12 / 手性毗邻桥联碳硼烷：协同可扩展合成和圆偏振发光增强
Chirality-Contiguous Bridged Carboranes: Synergistic Scalable Synthesis and Amplification of Circularly Polarized Luminescence
- 14 / 具有 280 nm 斯托克斯位移的闭环罗丹明荧光分子驱动塑料循环经济
Inverting the Rhodamine Paradigm: Closed-Form Fluorescence with 280 nm Stokes Shift Drives Plastic Circularity
- 17 / 低温聚合辅助共价有机框架气凝胶制备
Cryopolymerization-assisted production of covalent organic framework aerogels
- 19 / 具有高压电电压系数聚偏氟乙烯的加工温度－压力窗口
A Critical Temperature–Pressure Window for Attaining a Giant

Piezoelectric Voltage Coefficient in Poly(vinylidene fluoride)

- 22 / 基于自愈和可拉伸弹性体组装的可编程手性光学多层薄膜用于信息加密
Programmable chiroptical multilayer films assembled from self-healing stretchable elastomers for information encryption
- 25 / 推－拉电子效应调控茚并二噻吩的双光子吸收及光限幅性能研究
Diverse roles of indacenodithiophene in push-pull chromophores for enhanced two-photon absorption and efficient nonlinear optical limiting
- 27 / 电解水制氢催化中的评估问题
Assessment Issues on Electrochemical Catalysis for Water Splitting
- 28 / 基于苯并噻二唑的席夫碱型三分体制备及神经性毒剂模拟物检测
A benzothiadiazole-containing Schiff base type triad: Synthesis and detection of nerve agent simulants

交流合作 Exchange & Cooperation

- 29 / 吉林大学汪大洋教授应邀作报告
Prof. Wang Dayang from Jilin University invited to give a report
- 29 / 俄罗斯伊万诺国立化工大学校长发来感谢信
Letter of appreciation from rector of Ivanovo State University of Chemistry and Technology received
- 30 / 安徽滁州市委一行来访
CPC Chuzhou Municipal Committee visitors received
- 31 / 中国科学院大学黄韶辉教授应邀作报告
UCAS Prof. Huang Shaohui invited to give a report
- 32 / 计划财务处来研究院开展财务工作调研座谈
Meeting with Planning and Finance Office on financial work held
- 32 / 吉林省能源局绿色能源转化处一行来访
Jilin Energy Bureau Green Energy Conversion Division visitors received
- 33 / COMSOL 公司蔡吉量工程师应邀作报告
COMSOL engineer Cai Jiliang invited to give a report

心绪感悟 Thoughts and Reflections

- 34 / 授学悟道 点化人生
Teach to foster enlightenment, Illuminate the Path of Life

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房喻院士、丁立平和彭浩南教授参加基金委化学部胶体与界面化学“十五五”发展战略研讨会

Fang Yu, Ding Liping and Peng Haonan attend the “Fifteenth Five-Year” Development Strategy Seminar on Colloid and Interface Chemistry

2025年9月4日至5日，陕西师范大学新概念传感器与分子材料研究院房喻院士、丁立平教授和彭浩南教授应邀赴北京参加了由国家自然科学基金委员会化学科学部主办、中国科学院过程工程研究所承办的“胶体与界面化学‘十五五’发展战略研讨会”。

会议由房喻院士、唐智勇院士和李峻柏研究员担任主席，组织国内专家围绕十个专题探讨未来5至10年胶体与界面化学的发展趋势与优先方向。会议成果将凝练为战略规划建议，提交基金委作为“十五五”规划的重要参考。

From September 4th to 5th, 2025, Prof. Fang Yu, Prof. Ding Liping and Professor Prof. Peng Haonan from the Institute of New Concept Sensors and Molecular Materials of Shaanxi Normal University were invited to attend the “Strategic Development Seminar on Colloid and Interface Chemistry for the 15th Five-Year Plan” hosted by the Chemistry Department of the National Natural Science Foundation of China and organized by the Institute of Process Engineering, Chinese Academy of Sciences in Beijing.

The conference was chaired by Academician Fang Yu, Academician Tang

Zhiyong and Researcher Li Junbai, who organized invited experts to discuss the development trends and priority directions of colloid and interface chemistry in the next 5 to 10 years around ten topics. The conference outcomes will be condensed into strategic planning suggestions and submitted to the National Natural Science Foundation of China as an important reference for its “15th Five-Year Plan”.

陕师大选手讲述薄膜荧光传感器研发故事获2025年陕西省科普讲解大赛一等奖

SNNU contestant telling story of Film-based Fluorescent Sensor development wins first prize at 2025 Shaanxi Science Popularization Presentation Competition

2025年9月9日，在2025年陕西省科普讲解大赛决赛上，陕西师范大学历史文化学院本科生邵靖雯聚焦房喻院士团队自主研发的薄膜荧光传感器故事的讲解作品《让“危险分子”无处遁形》获得一等奖。

邵靖雯的获奖讲解，讲述了房喻院士团队攻坚克难研发薄膜荧光传感器，从实验室走向应用的多年历程，弘扬了老一辈科学家求真务实、无私奉献的崇高精神。她用生动通俗的语言，将高深的技术原理及其在爆炸物检测等领域精准识别“危险分子”的重大应用价值，转化为引人入胜的科普叙述。

本次大赛以“矢志创新发展 建设科技强国”为主题，旨在加强全省科普能力建设，弘扬科学家精神，培育崇尚科学、追求创新的社会风尚。

On September 9, 2025, at the finals of the 2025 Shaanxi Provincial Science Popularization Presentation Competition, Shao Jingwen, an undergraduate student from the School of History and Culture at Shaanxi Normal University, won



first prize for her presentation titled “Exposing ‘Dangerous Elements’,” which focused on the story of the film-based fluorescent sensor independently developed by Prof. Fang Yu’s team.

Shao Jingwen’s award-winning presentation recounted the years-long from laboratory to practical application journey of

Fang Yu's team overcoming challenges to develop film-based fluorescent sensors. It celebrated the noble spirit of older generations of scientists—their pursuit of truth, pragmatism, and selfless dedication. Using vivid and accessible language, she transformed complex technical principles

and their significant applications—such as precisely identifying “dangerous elements” in explosive detection—into an engaging science narrative.

This competition, themed “Dedicated to Innovation and Development, Building a Technologically

Advanced Nation,” aims to strengthen science popularization capabilities across the province, promote the spirit of scientists, and foster a societal ethos that reveres science and pursues innovation.

学校学院领导看望房喻院士

School officials visit Fang Yu ahead of Teachers' Day

在第41个教师节来临之际，9月8日上午，陕西师范大学党委书记李晓兵一行来到新概念传感器与分子材料研究院看望慰问房喻院士，致以节日的问候和祝福，并与房喻院士座谈交流。

党委副书记罗永辉、人才工作处处长张卫兵，化学化工学院党委书记高玲香、院长刘成辉陪同慰问。

9月10日上午，化学化工学院党委书记高玲香，院长刘成辉，党委副书记贾颖辉，副院长翟全国、丁立平、肖新军、顾泉和办公室主任张伟一行看望慰问了房喻院士。

此外，9月10日上午，西安交通大学前沿科学技术研究院党委书记赵卫滨、西交大新概念传感器与分子材料研究院执行院长刘峰和教师焦佼一行看望慰问了房喻院士。

On the morning of September 8th, as the 41st Teachers' Day was approaching, Li Xiaobing, secretary of Party Committee of Shaanxi Normal University, visited Prof. Fang Yu at the Institute of New Concept Sensors and Molecular Materials to extend greetings and best wishes.

SNNU Party Committee deputy secretary Luo Yonghui, SNNU Talent Work Office director Zhang Weibing, School of Chemistry and Chemical Engineering Party Committee secretary Gao Lingxiang, and SCCE dean Liu Chenghui, accompanied the visit.

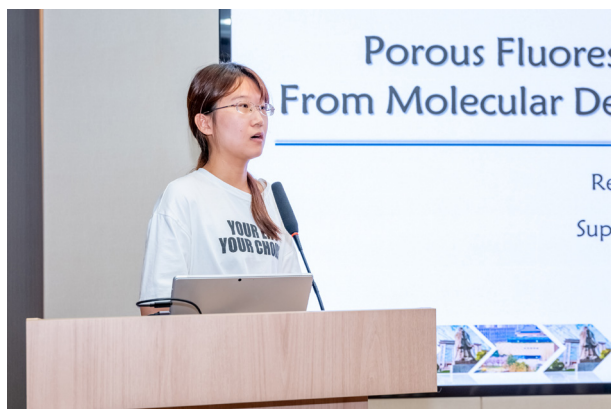
On the morning of September 10th, Gao Lingxiang, Liu Chenghui, SCCE Party Committee deputy secretary Jia Yinghui, vice deans Zhai Quanguo, Ding Liping, Xiao Xinjun, Gu Quan and Administrative Office director Zhang Wei, paid a visit and expressed their regards to Prof. Fang Yu.

Also on the morning of September 10th, Zhao Weibin, party secretary of Xi'an Jiaotong University's Frontier Institute of Science and Technology, XJTU Institute of New Concept Sensors and Molecular Materials executive director Liu Feng, and teacher Jiao Jiao paid a visit and expressed their regards to Prof. Fang Yu.



陕师大新概念研究院举办科研分享会

SNNU INCSMM Research Sharing Seminar held



2025年9月13日上午，陕西师范大学新概念传感器与分子材料研究院在研究院报告厅举行科研分享会。研究院教师、2025级硕博新生及部分高年级同学共100余人参会，交流科研经验、探讨学术成长途径。会议由马佳妮教授主持。

首先，副院长丁立平教授在开幕致辞中介绍了分享会的举办背景。她强调科研分享会是团队科研传承的一个载体，也是每年欢迎新同学的重要仪式。活动一直以来秉持“交流—传承”的宗旨，旨在鼓励与帮助新生融入科研团队、尽快适应科研节奏，深化与拓宽学生的学术视野。

首场报告由博士研究生林思敏主讲。她分享了自己攻读博士学位的心路历程与科研经历，表示研究过程每一次跨越都离不开持之以恒的探索与不懈努力，提醒学弟学妹“科研没有捷径，唯有刻苦与坚持，方能有所收获；稍有懈怠，便可能功亏一篑、颗粒无收。”

第二场报告由彭灵雅老师主讲。她介绍了自身的研究经历与近期科研进展，分享她在新加坡的合作研究经历，坦言海外深造在开阔学术视野、完善研究方法等方面的重要促进作用。她鼓励同学们要积极主动了解并探索化学的内在规律，让科学研究成为真正热爱的事业，从而产出更有价值的成果。

第三场报告由刘凯强教授主讲。他以“莫论出身，争做有理想追求的人”为题，从自身求学经历出发，阐释了“知识改变命运，努力成就梦想”的人生内涵。他勉励青年学子要秉持“追本溯源、怀疑批判、努力坚持”的原则，潜心做有价值、有深度的科学研究；要学会在困境中自我反思与对话，形成“从容随愿、努力向前”的奋斗心态。

最后，房喻院士作总结发言。他以陕西师范大学的“抱道不曲 拥书自雄”学风为引言，勉励大家要恪守学术正道，以丰厚学识涵养底气与自信；号召全体师生在未来的学术道路上坚定前行，既要追求个人学术理想，也要积极服务学科发展与国家科技进步，努力成长为有理想、有本领、有担当的优秀科研工作者。

On September 13, 2025, the Institute of New Concept Sensors and Molecular Materials of Shaanxi Normal University held a research sharing seminar in the lecture hall. Over 100 attendees, including faculty members, Class 2028 new master's and doctoral students, and senior graduate students, gathered to exchange research experiences and explore pathways for academic growth. The meeting was chaired by Prof. Ma Jiani.

First, vice dean Prof. Ding Liping introduced the background of the sharing seminar in her opening remarks. She said that the research sharing seminar serves as a vehicle for passing down research traditions within the team and is also an important annual ceremony to welcome new students. The event has always adhered to the principle of “exchange and inheritance,” aiming to encourage and assist new students in integrating into the research team, quickly adapting to the pace of research, and deepening and broadening their academic horizons.

The first report was presented by doctoral candidate Lin Siming. She shared her journey toward earning her PhD and her research experiences, emphasizing that every breakthrough in the research process required persistent exploration and relentless effort. She reminded her juniors that “there are no shortcuts in research; only through diligence and perseverance can one achieve results. The slightest slackness may lead to failure and yield nothing.”

The second report was presented by Dr. Peng Lingya. She shared her research journey and recent academic progress, highlighting her collaborative research experience in Singapore. She said that overseas studies significantly broadened her academic horizons and refined her research methodologies. She encouraged students to proactively explore the intrinsic principles of chemistry, transforming

research into a truly beloved pursuit that yields more valuable outcomes.

The third report was presented by Prof. Liu Kaiqiang, under the title “Regardless of Background, Strive to Be a Person with Ideals and Aspirations”. He drew from his own academic journey to elucidate the life philosophy that “knowledge changes destiny, and hard work achieves dreams”. He encouraged young students to embrace the principles of “tracing origins, critical inquiry, and persistent dedication” in pursuing valuable, in-depth research. He also urged them to cultivate self-reflection and inner dialogue during adversity, fostering a mindset of “calm acceptance of circumstances while striving forward”.

Finally, Prof. Fang Yu delivered the concluding remarks. He began by citing Shaanxi Normal University's academic ethos of “Upholding principles without compromise, drawing strength from knowledge,” urging everyone to adhere to the true path of scholarship and cultivate inner confidence through profound learning. He called upon all faculty and students to advance resolutely on their future academic journeys, pursuing personal scholarly ideals while actively contributing to disciplinary development and national scientific progress, encouraging them to strive to become outstanding researchers with ideals, capabilities, and a sense of responsibility.



房喻院士出席 2025 陕西科幻创作大会

Fang Yu attends 2025 Shaanxi Science Fiction Creation Conference

2025 年 9 月 14 日，陕西省科普作家协会第七届理事会理事长房喻院士出席了在西安电子科技大学举行的 2025 陕西科幻创作大会。

房喻院士、陕西省科协党组书记李豫琦向科幻作家超侠和陆杨颁发“陕西省科普作家协会科幻创作导师”证书，并由这两位科幻作家带来“科幻大咖讲堂”，分享创作经验。

本次大会由陕西省科学技术协会、西安电子科技大学主办，陕西省科普作家协会承办。来自省内外的六位科幻作家在圆桌论坛上共同探讨“陕西传统文化与科幻想象的创新融合”，此外还举行了“科幻影视产业发展”以及“青年科幻创作”两个分论坛，并举行科幻电影《绿佑》开拍启动仪式。

On September 14, 2025, Prof. Fang Yu, chairperson of the Seventh Council of the Shaanxi Association of Science Writers, attended the 2025 Shaanxi Science Fiction Creation Conference held at Xidian University.

Fang Yu and Li Yuqi, party secretary of the Shaanxi Association for Science

and Technology, presented certificates of “Science Fiction Mentors of the Shaanxi Association of Science Writers” to science fiction authors Chaoxia and Lu Yang, who then delivered a “Science Fiction Masterclass,” sharing their creative insights.

This conference was jointly hosted by the Shaanxi Association for Science and Technology and Xidian University, with the Shaanxi Association of Science Writers serving as the organizer. Six

science fiction authors from within and outside the province participated in a roundtable forum to explore the innovative integration of Shaanxi’s traditional culture with science fiction imagination. Additionally, two parallel forums were held on “Science Fiction Film and Television Industry Development” and “Youth Science Fiction Creation,” alongside the launch ceremony for the science fiction film Green Guardian.



房喻院士出席中陕核集团第六届科技大会并作报告

Fang Yu speaks at Sixth S&T Conference of ZSH Industry Group

2025 年 9 月 19 日，房喻院士应邀出席中陕核工业集团有限公司第六届科技大会并作题为《CBRN 探测技术研究意义重大而深远》的报告。

中国科学院院士彭建兵，陕西省相关政府部门、高校、企业、行业协会负责人，中陕核集团原领导班子、老专家，现任领导班子、机关部门负责人、外派董事，以及权属企业负责人等 400 余人参加本次大会。

On September 19, 2025, Prof. Fang Yu was invited to attend the Sixth Science and Technology Conference of ZSH Industry Group Co., Ltd. and delivered a report titled “Research on CBRN detection technology holds profound and far-reaching significance”.

Academician Peng Jianbing of the Chinese Academy of Sciences, along with over 400 attendees including representatives from relevant government

departments, universities, enterprises, and industry associations in Shaanxi Province, as well as ZSH Industry Group former leadership members and veteran experts, current leadership members, heads of administrative departments, external directors, and heads of affiliated enterprises participated in the conference.

赵智豪博士参加自然 – 低维电子学会议

Zhao Zhihao attends Nature Conference on Low-Dimensional Electronics

2025 年 9 月 15 日至 19 日，陕西师范大学新概念传感器与分子材料研究院赵智豪博士在北京参加了北京大学与 Nature 系列期刊联合举办的低维电子学会议。

低维电子学会议旨在探讨下一代半导体技术相关低维材料的新近进展，关键主题包括碳纳米管、石墨烯与 2D 材料领域的创新，以及太赫兹射频器件和非硅电子学领域所取得的突破。

From September 15 to 19, 2025, Dr. Zhao Zhihao from the Institute of New Concept Sensors and Molecular Materials at Shaanxi Normal University attended the Nature Conference on Low-Dimensional Electronics in Beijing, which was jointly organized by Peking University and Nature series journals.

The Conference aims to explore recent advances in low-dimensional materials for next-generation semiconductor technologies. Key themes include innovations in carbon



nanotubes, graphene, and 2D materials, as well as breakthroughs in terahertz RF devices and non-silicon electronics.

房喻院士出席中国化学会第五届硼化学会议并作报告

Fang Yu speaks at CCS Fifth Boron Chemistry Conference



On September 20, 2025, Prof. Fang Yu was invited to attend the 5th Chinese Chemical Society Conference on Boron Science held in Xi'an, where he presented a report titled "Innovation in Sensor-Driven Molecular Materials."

This conference was jointly organized by CCS's Inorganic Chemistry Discipline Committee and Xi'an Jiaotong University. CAS Academician Xie Zuwei from Southern University of Science and Technology served as convener, while Prof. Fang Yu and Xie Zuwei jointly chair the Academic Committee.

2025 年 9 月 20 日，房喻院士应邀出席在西安召开的中国化学会第五届硼化学会议，并作题为“传感驱动分子材料创新”的报告。

本次会议由中国化学会无机化学学科委员会与西安交通大学共同主办。大会由南方科技大学谢作伟院士担任召集人，房喻院士与谢作伟院士共同担任学术委员会主任。

麻生明、张生勇等多位中国科学院、中国工程院院士，英国皇家学会院士 Varinder Aggarwal 教授、复旦大学周鸣飞教授、美国波士顿学院 Shih-Yuan Liu 教授，以及 20 余位国家级领军人才，以及来自国内外 70 余所高校、科研院所和企业近 500 名专家学者参加了会议。

The conference was attended by distinguished scholars, including Academicians of the Chinese Academy of Sciences and the Chinese Academy of Engineering such as Ma Shengming, Zhang Shengyong, Prof. Varinder Aggarwal, Fellow of the Royal Society, Prof. Zhou Mingfei from Fudan University, Prof. Shih-Yuan Liu from Boston College, over 20 national-level leading talents, and nearly 500 experts and scholars from more than 70 universities, research institutions, and enterprises.

薄鑫副研究员访问深圳清华大学研究院

Bo Xin visits Research Institute of Tsinghua University in Shenzhen



2025年9月19至20日，陕西师范大学新概念传感器与分子材料研究院薄鑫副研究员赴深圳清华大学研究院参观访问，并与深圳大学/深圳清华大学研究院先进制氢膜材料研发中心朱光明教授团队就离子交换膜相关工艺进行了交流。

On September 19 and 20, 2025, Assoc. Prof. Bo Xin from the Institute of New Concept Sensors and Molecular Materials at Shaanxi Normal University visited the Research Institute of Tsinghua University in Shenzhen. During the visit, he engaged in technical discussions on ion exchange membrane processes with Prof. Zhu Guangming's team from the Advanced Hydrogen Membrane Materials R&D Center at Shenzhen University/Research Institute of Tsinghua University in Shenzhen.

马佳妮教授参加第十九届全国化学动力学会议并作报告

Ma Jiani presents at 19th National Conference on Chemical Kinetics



2025年9月18日至9月21日，陕西师范大学新概念传感器与分子材料研究院马佳妮教授参加了在杭州举办的第十九届全国化学动力学会议。

马佳妮教授在会议上作了题为“光致变色类光笼分子反应机制研究”的邀请报告，介绍了课题组在光致变色类光笼分子机制研究的进展，并与在场同行进行了交流，探讨了未来的合作方向。

本次会议邀请了国内外化学动力学及相关领域专家学者参加，旨在展示和交流化学动力学研究领域及相关交叉学科的最新研究成果和最新动态，分析当前国际研究前沿和热点，促进化学动力学研究的发展。

From September 18 to 21, 2025, Prof. Ma Jiani from the Institute of New Concept Sensors and Molecular Materials at Shaanxi Normal University attended the 19th National Conference on Chemical Kinetics held in Hangzhou, and presented an invited report titled “Reaction Mechanism Study of Photochromic Photocage Molecules” at the conference.

She introduced her research group's progress in investigating the mechanisms of photochromic photocage molecules, engaged in discussions with fellow researchers in

attendance, exploring potential avenues for future collaboration.

This conference was attended by experts and scholars from home and abroad engaged in chemical kinetics and related fields. Its purpose is to showcase and exchange the latest research findings and developments in chemical kinetics and related interdisciplinary areas, analyze current international research frontiers and hot topics, and promote the advancement of chemical kinetics research.

房喻院士获聘西安人才馆首席科学家

Fang Yu appointed Chief Scientist of Xi'an Talent Museum



2025年9月22日，房喻院士应邀出席在长安先导国际创新人才交流中心举行的2025教育科技人才一体化项目人才推介会，并在会上接受由西安市委常委、组织部部长王晓林颁发的“西安人才馆首席科学家”聘书。

在嘉宾演讲环节，房喻院士在题为“民族进步，人才是根本、制度是保障”的报告中阐述了高端人才在科技创新中的引领作用，呼吁加强高校与企业的协同创新，为青年人才搭建“敢想敢干”的实践平台。

本次活动由中共西安市委组织部（市委人才办）指导，西安人才集团、西安市人才协会、长安先导产业创新中心联合主办，省市区党委、政府部门、高校及科研院所、企业、金融机构及

省外人才集团代表等260余家单位参会。

On September 22, 2025, Prof. Fang Yu was invited to attend the 2025 Education-Technology-Talent Integration Project Talent Promotion Conference held at the Chang'an Pioneer International Innovation Talent Exchange Center, and accepted the appointment letter of "Chief Scientist of Xi'an Talent Pavilion" presented by Wang Xiaolin, member of the Standing Committee and head of the Organization Department of the CPC Xi'an Municipal Committee.

During the keynote address session, Fang Yu delivered a report titled "National Progress: Talent as the Foundation, Systems as the Safeguard." He elaborated on the pivotal role of high-caliber talent

in driving scientific and technological innovation, calling for enhanced collaborative innovation between universities and enterprises. He advocated for establishing practical platforms that empower young professionals to "dare to dream and dare to act."

This event was guided by the Organization Department of the CPC Xi'an Municipal Committee (Municipal Talent Office) and jointly hosted by Xi'an Talent Group, Xi'an Talent Association, and Chang'an Pioneer Industrial Innovation Center. Over 260 organizations attended, including provincial, municipal, and district Party committees and government departments, universities and research institutions, enterprises, financial institutions, and representatives from talent groups outside the province.

房喻院士出席2025年化学理论与机制学科发展战略研讨会并作专题报告

Fang Yu speaks at 2025 Symposium on Discipline Development Strategy for Chemical Theory and Mechanism

2025年9月26日至28日，陕西师范大学新概念传感器与分子材料研究院房喻院士、马佳妮教授和彭灵雅老师在北京参加了“2025年化学理论

与机制学科发展战略研讨会”。

房喻院士作题为“化学理论与机制研究需要关注传感驱动分子材料与器件创新”的专题报告，并与与会

专家学者共同研讨学科前沿动态与发展战略。

本次研讨会由国家自然科学基金委员会化学科学部与北京师范大学共

同主办，多位中国科学院、中国工程院院士，以及近百位国家级领军人才参会。与会专家围绕理论与智能计算、光谱与动力学、均相与多相反应机制、高分子与交叉前沿等核心议题进行了交流研讨，为我国化学理论与机制学科的未来发展绘制了战略蓝图。

From September 26 to 28, 2025, Prof. Fang Yu, Prof. Ma Jiani, and Dr. Peng Lingya from the Institute of New Concept Sensors and Molecular Materials at Shaanxi Normal University attended the “2025 Symposium on Discipline Development Strategy for Chemical Theory and Mechanism” in Beijing.

Fang Yu delivered a keynote report titled “Chemical Theory and Mechanism Research Requires Focus on Innovation in Sensor-Driven Molecular Materials and Devices”, and engaged in discussions with attending experts and scholars on cutting-edge developments and strategic directions within the discipline.

This symposium was jointly organized by the Chemistry Division of the National Natural Science Foundation of China and Beijing Normal University. Attendees included multiple academicians from the Chinese Academy of Sciences and



the Chinese Academy of Engineering, along with nearly 100 national-level leading talents. Experts engaged in discussions on core topics including theoretical and computational chemistry, spectroscopy and dynamics, homogeneous and heterogeneous reaction mechanisms, polymer science, and interdisciplinary frontiers. These exchanges laid out a strategic blueprint for the future development of China's chemical theory and mechanism.

房喻院士参加广东省高等学校聚集体科学基础研究卓越中心中期评议与学术交流会

Fang Yu participates in Review and Exchange Meeting of Guangdong Basic Research Center of Excellence for Aggregate Science

2025年9月29日，房喻院士应邀赴深圳在香港中文大学（深圳）参加了广东省高等学校聚集体科学基础研究卓越中心中期评议与学术交流会，作题为“传感驱动的材料创新”的邀请报告，并与港中大（深圳）理工学院院长、首席科学家唐本忠院士及其他与会专家一起进行了专家交流与质询、及综合评议与建议。



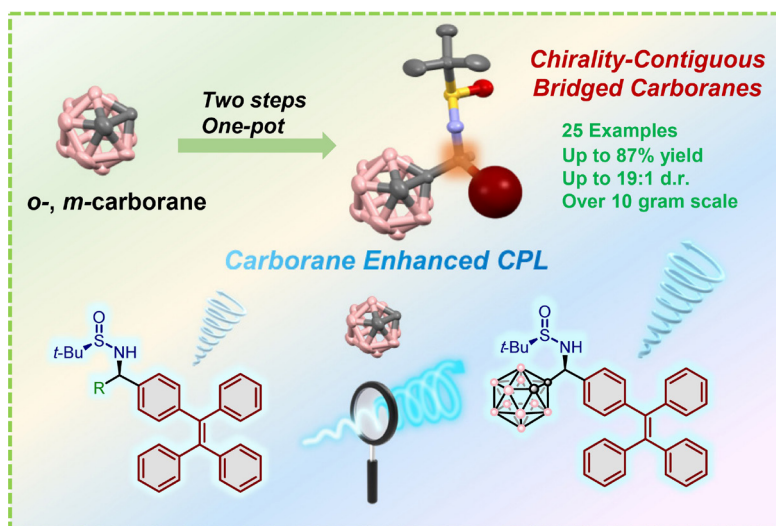
On September 29, 2025, Prof. Fang Yu was invited to Shenzhen to participate in the Mid-Term Review and Academic Exchange Meeting of the Guangdong Basic Research Center of Excellence for Aggregate Science at The Chinese University of Hong Kong, Shenzhen. He delivered an invited report titled “Sensing-Driven Innovation in Molecular Materials” and engaged in expert discussions, Q&A sessions, comprehensive evaluations, and recommendations with Academician Tang Benzong, dean and chief scientist of CUHK-Shenzhen School of Science and Technology, along with other attending experts.

Chirality-Contiguous Bridged Carboranes: Synergistic Scalable Synthesis and Amplification of Circularly Polarized Luminescence

Longfei Nan,[¶] Pei He,[¶] Tingwei Zhang, Yiran Dong, Chao Feng, Tong He, Pengfei Li, Yanfeng Zhang*, Yong Nie*, and Jiao Jiao*Cite This: *J. Am. Chem. Soc.* 2025, 147, 24430–24441

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手性毗邻桥联碳硼烷：协同可扩展合成和圆偏振发光增强

Longfei Nan[#], Pei He[#], Tingwei Zhang, Yiran Dong, Chao Feng, Tong He, Pengfei Li, Yanfeng Zhang*, Yong Nie*, and Jiao Jiao*. *J.**Am. Chem. Soc.* 2025, 147, 24430–24441. DOI: 10.1021/jacs.5c03381

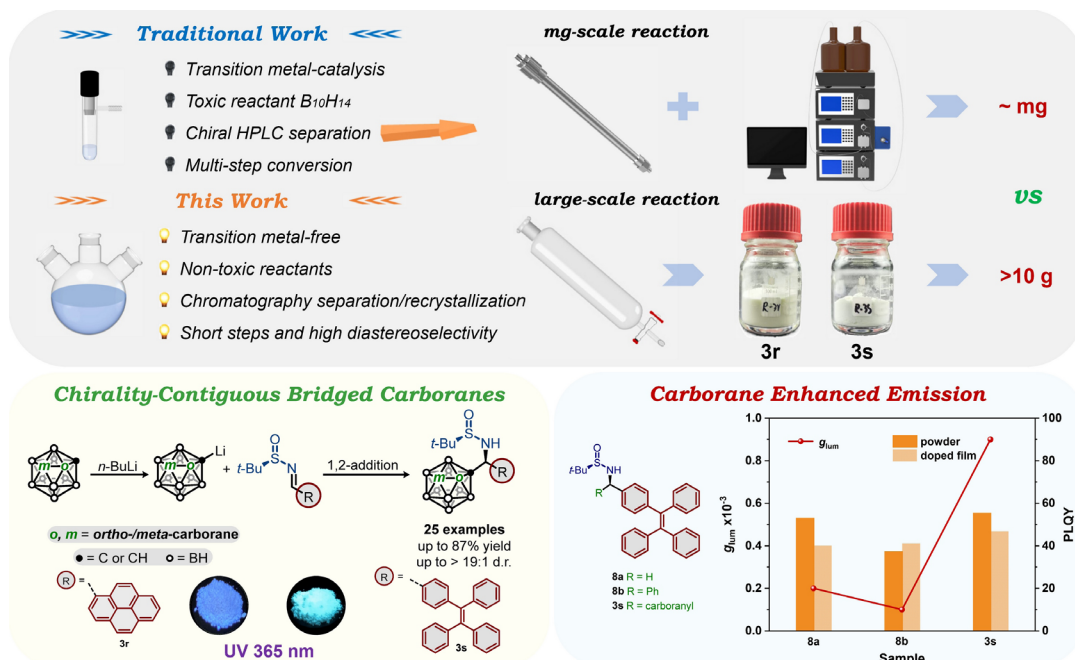
二十面体碳硼烷因其独特的三维芳香结构、电子离域骨架和出色的热/化学稳定性而著称,已成为配位化学、催化化学、功能材料和光电子学的多功能结构基元。在发光系统中,它们具有的大空间位阻和缺电子结构的双重功能可以有效抑制聚集引起的猝灭并调节供一受体结构中的电荷转移,从而增强聚集态发光。

尽管近年来碳硼烷衍生物的发光

特性已经得到了广泛研究,但碳硼烷基手性发光化合物的开发及其手性特性的探索仍长期受制于复杂的合成路线及缺乏高效的大规模制备方法。具有 CPL 活性的碳硼烷衍生物的常规合成策略主要依赖于①手性炔烃-癸硼烷的加成反应或②过渡金属催化的不对称 B-H 键活化反应。这些方法需要剧毒前体或昂贵的催化体系,通常也需要借助手性 HPLC 分离对映体,导

致成本高昂、研究样本单调以及制备规模不足,进而限制了对其光电特性的综合研究。因此,开发简洁环保的不对称合成方法以实现光学纯碳硼烷衍生物的可扩展和多样化制备对于其光电性质和构效关系的研究至关重要。

本工作中,我们开发了一种高度立体选择性的手性碳硼烷衍生物的不对称合成方法。利用两步一锅法实现



光学纯分子的 10 克级规模化制备，且无需手性 HPLC 分离，突破了传统手性光电功能分子的规模化合成瓶颈。在光物理和手性识别中的应用突出了这种手性毗邻桥联结构的多重功能，首次发现碳硼烷可同时显著提升发光量子产率 (Φ_{PL} 提升 30%) 与不对称因子 (g_{lum} 提升 9 倍)，并成功应用于水相氨基酸的对映选择性荧光识别。

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全文链接：<https://pubs.acs.org/doi/10.1021/jacs.5c03381>

Carboranes, distinguished by their three-dimensional aromaticity, electron-delocalized frameworks, and exceptional thermal/chemical stability, have emerged as versatile platforms in coordination chemistry, catalysis, functional materials, and optoelectronics. In luminescent systems, their dual functionality as steric spacers and electron-deficient units enables effective suppression of aggregation-caused quenching and modulation of

charge-transfer dynamics in donor-acceptor architectures, thereby enhancing solid-state photoluminescence.

Despite extensive research on the luminescent properties of carborane derivatives in recent years, the development of chiral carborane-based luminescent compounds and exploration of their chiroptical properties remains a challenge constrained by synthetic limitations. Conventional strategies for CPL-active carboranes rely on either ① chiral alkyne-decaborane(14) addition or ② asymmetric B–H bond activation. These methods necessitate either toxic precursors (decaborane)/resource-intensive catalytic systems, or laborious enantiomer separation via HPLC, resulting in low scalability, high environmental footprint, and inadequate material throughput for comprehensive optoelectronic studies. Therefore, developing concise and eco-friendly asymmetric synthesis methods to achieve scalable and diverse access to optically pure carborane compounds is crucial for studying the properties and structure-activity relationships.

Herein, we developed a highly stereoselective and straightforward asymmetric synthesis for chiral carborane molecules. This method employs readily available starting materials and enables the precise construction of optically pure chirality-contiguous bridged carborane derivatives via a two-step, one-pot protocol, achieving scalable synthesis on a 10 gram-scale without chiral HPLC resolution. It has been observed that the introduction of carborane into the chiral bridging structure significantly enhances the Φ_{PL} and g_{lum} of the luminescent compounds. Such concurrent enhancement of both parameters is scarcely documented. Applying one of the chiral emissive compounds, a good enantioselective discrimination of several free amino acids in aqueous phase has been achieved.

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Full Text Link: <https://pubs.acs.org/doi/10.1021/jacs.5c03381>

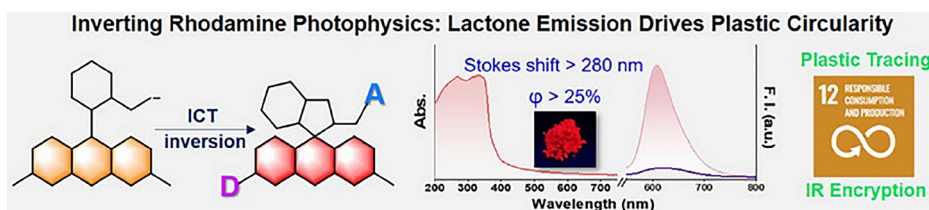
[jacs.5c03381](https://pubs.acs.org/doi/10.1021/jacs.5c03381)

Inverting the Rhodamine Paradigm: Closed-Form Fluorescence with 280 nm Stokes Shift Drives Plastic Circularity

Qiuping Wang, Yalei Ma, Yutong Shang, Taihong Liu, Xiaoyan Liu, Jing Liu, Liping Ding, Rong Miao,* and Yu Fang

具有 280 nm 斯托克斯位移的闭环罗丹明荧光分子驱动塑料循环经济

Qiuping Wang (#), Yalei Ma (#), Yutong Shang (#), Taihong Liu, Xiaoyan Liu, Jing Liu, Liping Ding, Rong Miao,* and Yu Fang. *Angew. Chem. Int. Ed.* 2025, e202514295. DOI: <https://doi.org/10.1002/anie.202514295>



罗丹明类化合物在化学传感、生物成像、激光染料及荧光标记等诸多领域具有重要应用价值。该类分子的一个关键结构特征在于其内酯（闭环结构）与两性离子（开环结构）之间的动态平衡。传统研究中多聚焦于两性离子形式，因其具有可调控的荧光性能及位于可见光区的吸收光谱。然而，常规罗丹明衍生物普遍存在斯托克斯位移较小以及易发生聚集导致荧光猝灭的问题，这严重限制了其在固态体系中的应用效果。因此，开发兼具大斯托克斯位移和高效固态发光性能的新型罗丹明体系具有重要意义。

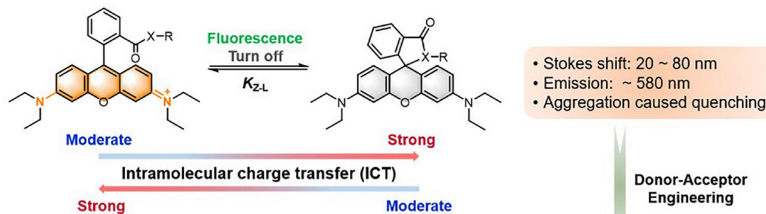
本研究提出了一种供体-受体工程策略，成功激活了罗丹明闭环形式的荧光发射，实现了超过 280 nm 的巨大斯托克斯位移，并有效克服了聚集引起的荧光猝灭现象。具体而言，通过将 N, N'-二乙基取代为吡啶（供体

基团），并将螺内酰胺转化为苯磺酰胺（受体基团），我们合成出一类新型罗丹明衍生物，其开环-闭环荧光行为与常规罗丹明相反。单晶 X 射线衍射分析确认了其闭环构型，结构解析表明，吡啶和苯磺酰胺的引入赋予分子三维立体构型，有效抑制了紧密

堆积，从而避免了激子耦合作用，使该类化合物在固态下仍能发射明亮荧光，部分衍生物的固态绝对量子产率超过 25%。

进一步，我们利用密度泛函理论计算了系列分子的基态和激发态前线轨道电子分布，结果表明，所合成化

◆ Conventional rhodamine dyes



◆ This work



图 1. 传统罗丹明染料与本研究设计染料性质的对比。

Figure 1. Comparison between conventional rhodamines and the rhodamines in this work.

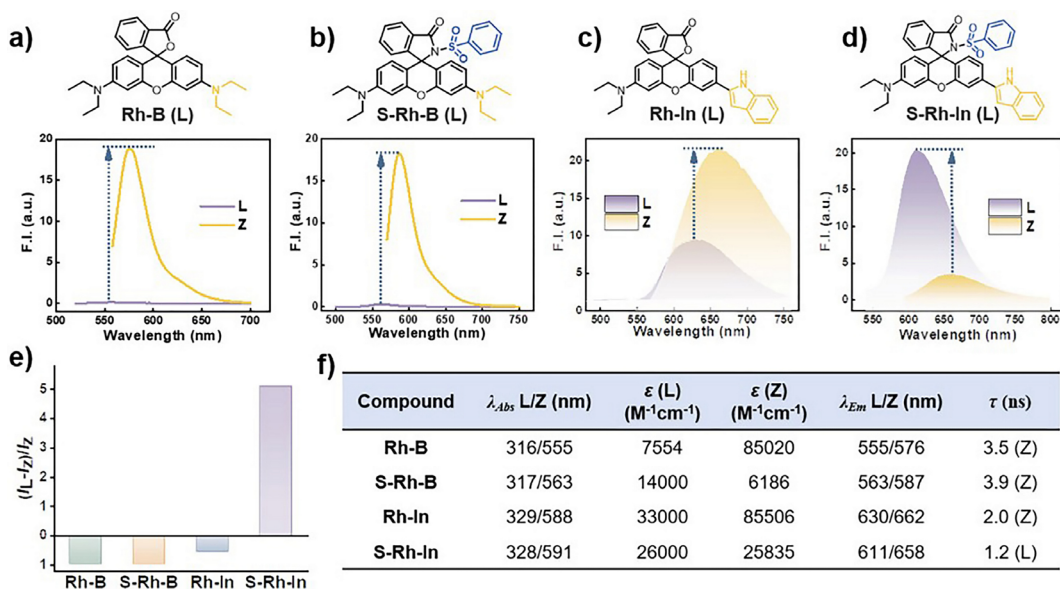


图2. 具有不同取代基的罗丹明染料。a)–d) Rh-B、S-Rh-B、Rh-In 和 S-Rh-In 的化学结构及其不同形态的荧光发射 (L: 内酯; Z: 两性离子); e) 染料从 Z 态向 L 态转变的荧光增强效应 (IL: L 态的荧光强度; IZ: Z 态的荧光强度); f) Rh-B、S-Rh-B、Rh-In 和 S-Rh-In 在二氯甲烷中的光物理性质。染料浓度: 5×10^{-6} M。测试中使用三乙胺 (1% v/v) 和三氟乙酸 (1% v/v) 溶液确保维持 L 态与 Z 态。

Figure 2. Rhodamine dyes with varied substitution groups. a)–d) Chemical structures and fluorescence emission of Rh-B, S-Rh-B, Rh-In, and S-Rh-In in different forms (L: lactone; Z: zwitterion). e) Fluorescence enhancement of the dyes upon the Z to L transition (IL: fluorescence intensity of L; IZ: fluorescence intensity of Z). f) Photophysical properties of Rh-B, S-Rh-B, Rh-In, and S-Rh-In in dichloromethane. Dye concentration: 5×10^{-6} M. Triethylamine (1% v/v) and trifluoroacetic acid (1% v/v) solutions were used to ensure L and Z states during the measurement.

合物与罗丹明 B 相比具有相反的分子内电荷转移特性: 其中等强度 ICT 态为荧光亮态, 而强 ICT 态则导致荧光减弱。基于该类新型罗丹明化合物独特的光物理性质, 我们进一步提出了一种闭环塑料回收方案: 利用其闭环态进行荧光追踪, 而经酸处理转为开环态标记的不可回收塑料则可作为加密墨水使用。该策略为罗丹明染料在塑料循环经济中的创新应用提供了新思路, 不仅拓展了罗丹明染料的荧光调控途径, 也为塑料可持续利用提供了新的技术支撑。

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通讯作者: 陕西师范大学苗荣副教授

全文链接: <https://doi.org/10.1002/anie.202514295>

Rhodamine-based compounds play crucial roles in numerous fields such as chemical sensing, bioimaging, laser

dyes, and fluorescence labeling. A key structural feature of these molecules is the dynamic equilibrium between the lactone (closed-ring form) and zwitterionic (open-ring form) states. Conventional research has predominantly focused on the zwitterionic form due to its tunable fluorescence properties and absorption band in the visible region. However, typical rhodamine derivatives often suffer from small Stokes shifts and aggregation-caused quenching (ACQ), which significantly limit their performance, particularly in solid-state applications. Therefore, developing new rhodamine systems that exhibit large Stokes shifts and efficient solid-state emission is of great importance.

This work introduces a donor–acceptor engineering strategy to activate fluorescence emission from the closed-ring form of rhodamine, achieving an unprecedented Stokes shift (>280 nm) and overcoming ACQ. Specifically, by

replacing the N,N-diethyl group with an indole moiety (donor) and converting the spirolactam into a phenylsulfonamide (acceptor), we synthesized a new class of rhodamine derivatives that exhibit reversed open–closed ring fluorescence behavior compared to conventional rhodamines. Single-crystal X-ray diffraction confirmed the closed-ring configuration. Structural analysis revealed that the incorporation of indole and phenylsulfonamide results in a three-dimensional molecular geometry, which inhibits close packing and thus excitonic coupling, leading to bright fluorescence in the solid state. Some of the compounds showed solid-state absolute quantum yields exceeding 25%. Density functional theory calculations revealed that the new fluorophores exhibit intramolecular charge transfer (ICT) characteristics opposite to those of rhodamine B, with moderate ICT strength corresponding to the bright state, while strong ICT leads to fluorescence

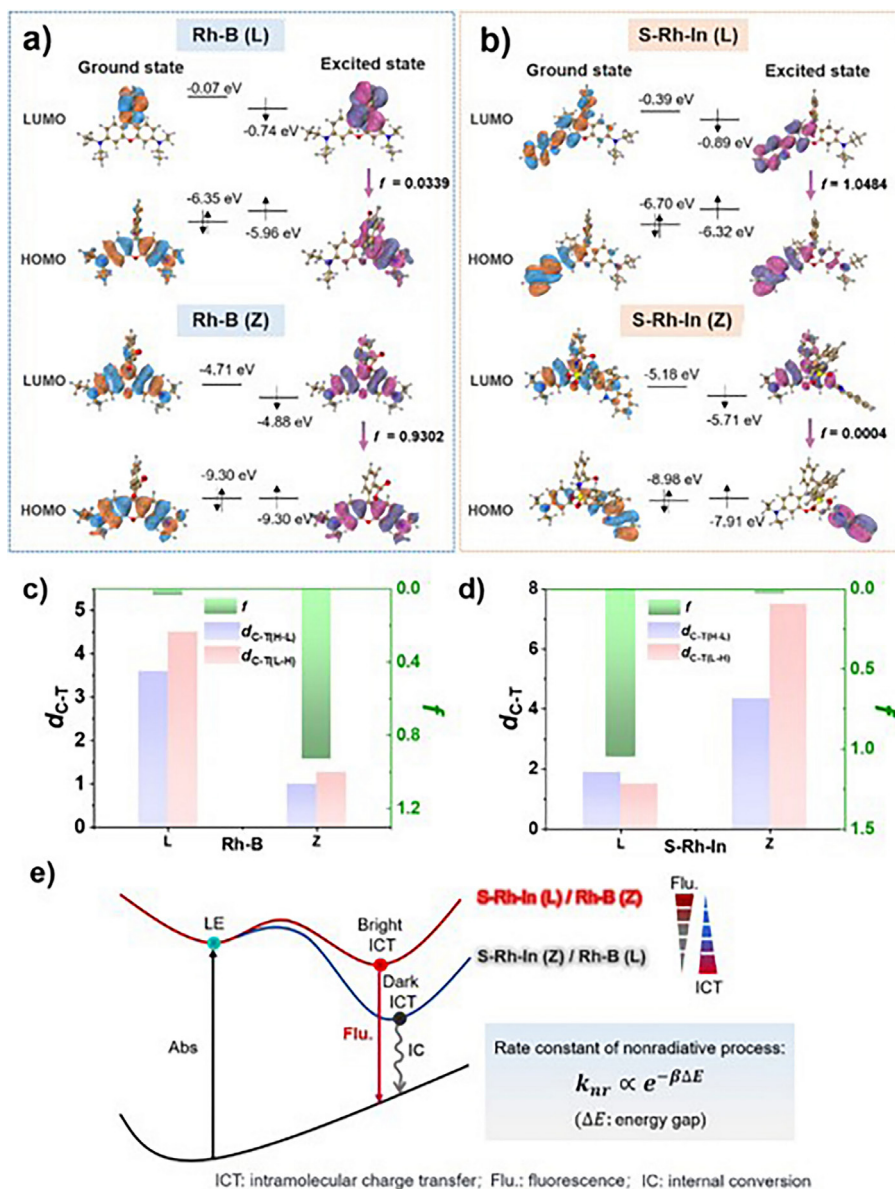


图3. 开环态(Z)与闭环态(L)下Rh-B(a)和S-Rh-In(b)的前线分子轨道示意图。Rh-B(c)和S-Rh-In(d)在L/Z态下的电荷转移距离(d_{C-T})与振子强度(f)计算结果。(e) Rh-B与S-Rh-In的雅布隆斯基能级图,展示了亮态与暗态分子内电荷转移(ICT)过程。

Figure 3. Frontier orbitals of Rh-B (a) and S-Rh-In (b) in the open form (Z) and closed form (L). Calculated C-T distance (d_{C-T}), and oscillator strength (f) in L/Z of Rh-B (c) and S-Rh-In (d). e) Proposed Jablonski diagram for Rh-B and S-Rh-In, showing the bright ICT and dark ICT states.

quenching.

Leveraging the unique photophysical properties of these novel rhodamine compounds, we proposed a closed-loop plastic recycling approach: using the closed-ring form for fluorescence tracking, while acid-treated (open-ring) labeled non-recyclable plastics can be repurposed

as security inks. This strategy offers an innovative application of rhodamine dyes in the plastic circular economy, providing new insights into engineering rhodamine-based fluorescence and contributing to plastic sustainability.

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Full Text Link: <https://doi.org/10.1002/anie.202514295>

Article

Cryopolymerization-assisted production of covalent organic framework aerogels

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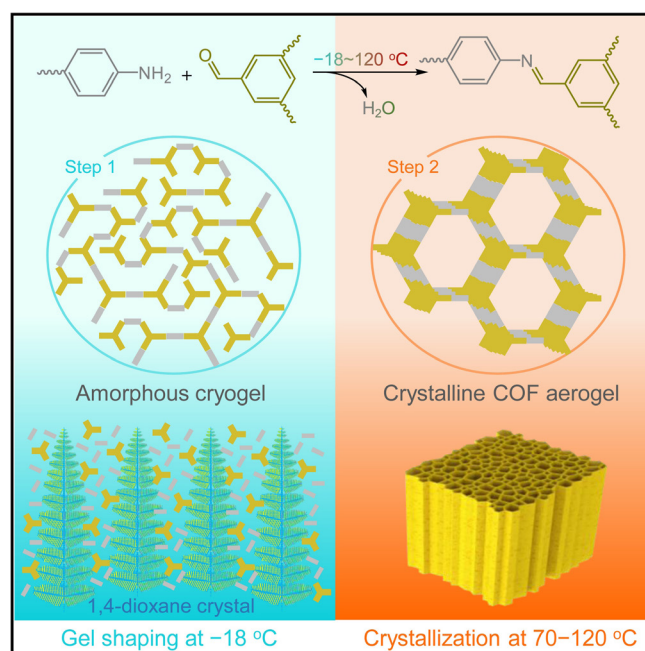
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低温聚合辅助共价有机框架气凝胶制备

Lin Zhu, Luyao Ding, Jinglin Kong*, Yu Fang, and Zhongshan Liu*. Cell Rep. Phys. Sci.

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近年来,气凝胶作为共价有机框架(COF)成型加工的一种材料形态受到广泛关注,但如何获调控其通孔结构、批量化生产具有高机械性能强的COF气凝胶仍面临很多问题。

传统的醛-胺反应条件往往在室温温度以上,本工作发现醛-胺聚合反应在零下-18 °C的低温冷冻状态下

也能高效进行。受此现象和冷冻铸造技术的启发,首次建立了冷冻聚合辅助制备COF气凝胶的普适性方法(图1),实现了具有定向大孔结构和高机械强度的COF气凝胶的批量化制备。具体步骤如下:

(1) 低温聚合成型:将质量浓度为5%的单体溶于含少量乙酸的1,4-

二氧六环,通过单向冷冻技术使溶剂凝固形成冰晶模板,单体在冰晶间隙中发生聚合,形成无定形冷冻凝胶;

(2) 高温晶化转化:将冷冻凝胶转移至反应釜中,加入合适的溶剂(与传统溶剂热法制备COF粉末的条件一致,无需繁琐的优化过程),在70-120 °C下晶化处理,将无定形凝胶

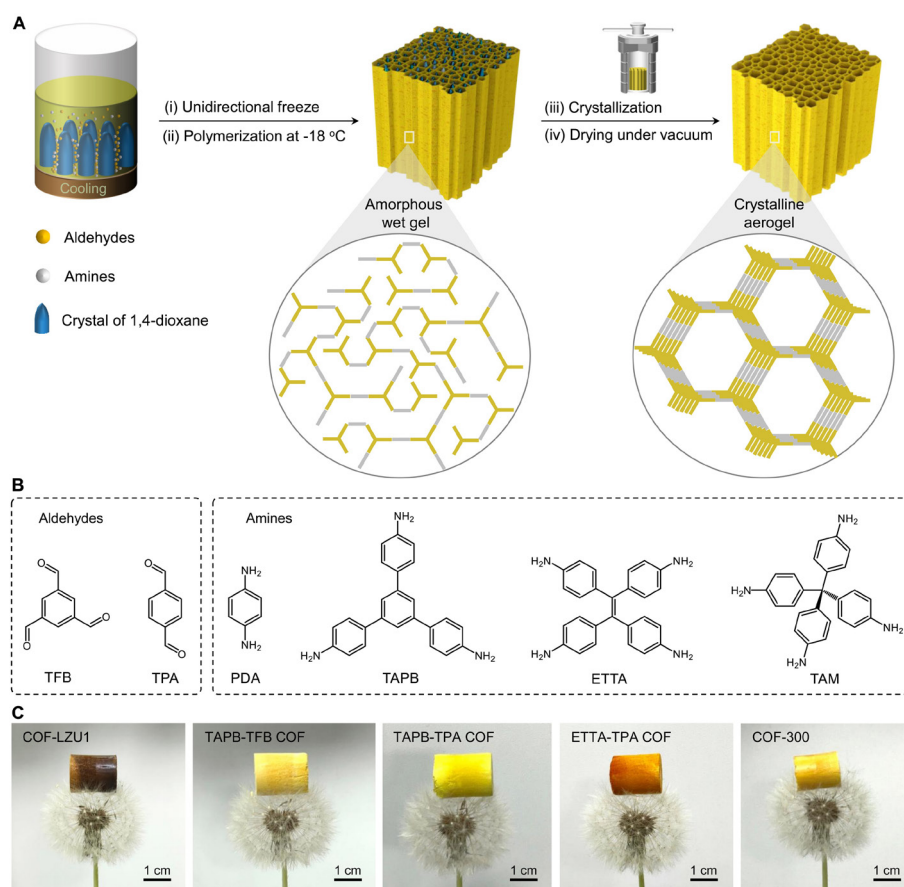


图 1. 冷冻聚合辅助制备 COF 气凝胶示意图

Figure 1. Schematic illustration for cryopolymerization-assisted production of COF aerogels

转变为晶态气凝胶。得益于凝胶的定向大孔结构，通过简单的真空干燥即可得到晶态 COF 气凝胶。

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The shaping of covalent organic frameworks into aerogels have attracted attention recently, tackling problems of their poor processability. But how to modulate through-porous structure and produce COF aerogels with high mechanical stability is an ongoing challenge.

The aldehyde-amine polymerization reaction has been performed at room

temperature up to 120 °C to synthesize imine-linked COFs. Indeed, this reaction can proceed at subzero temperatures. Inspired by this finding and leveraging the freezing casting technique, we for the first time built a cryopolymerization-assisted production (CryoPAP) method for COF aerogels. The as-synthesized COF aerogels possess aligned macroporous structures, and show an enhanced mechanical strength.

The CryoPAP method follows a two-step process, realizing the shaping and crystallization separately. Briefly, a homogenous mixture of monomers and 1,4-dioxane (5:95, in weight, containing 0.1 M acetic acid) is frozen using a unidirectional freezing technique. Monomers confined between 1,4-dioxane

crystals, which serve as a template, polymerize to form a cryogel. Then, the cryogel is immersed in a mixture for amorphous-to-crystalline transformation. After washing and drying under vacuum, a COF aerogel is obtained. One significant benefit of the CryoPAP method is its simple drying under vacuum, avoiding the use of supercritical carbon dioxide drying or freeze-drying instruments.

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A Critical Temperature–Pressure Window for Attaining a Giant Piezoelectric Voltage Coefficient in Poly(vinylidene fluoride)

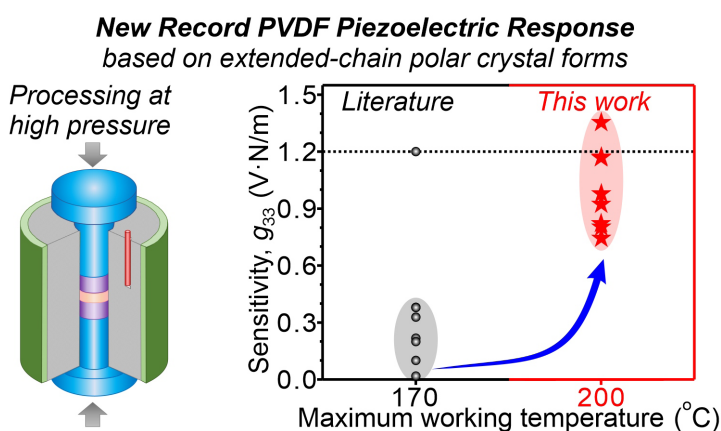
Shu-Gui Yang,* Zheng-Yang Zhang, Liang-Qing Zhang,* Jiaming Cui, Jun Lei, Feng Liu, Xiang-bing Zeng, and Goran Ungar*

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具有高压电电压系数聚偏氟乙烯的加工温度 – 压力窗口

Shu-Gui Yang,* Zheng-Yang Zhang, Liang-Qing Zhang,* Jiaming Cui, Jun Lei, Feng Liu, Xiang-bing Zeng, Goran Ungar*. *Macromolecules* 2025, 58 (18), 9887–9896



高的压电电压系数（灵敏性）和高的熔融温度（工作温度）是聚偏氟乙烯（PVDF）作为高性能柔性传感器应用的关键。众所周知，PVDF 的压电响应随着非中心对称极性晶相的相对含量 ($X_{\beta+\gamma}$) 增大而增大，同时也伴随着伸直链晶相相对含量 (F_{ECC}) 的增加而增大。

在本工作中，我们采用压力淬火的方法研究了压力范围（100–600 MPa），温度范围（160–250 °C）下 PVDF 不同晶相（ α ， β ， γ ）和不同结晶形态（折叠链晶和伸直链晶）的

结晶行为。我们呈现了通过高压六方中介相制备 PVDF 高 $X_{\beta+\gamma}$ 和 FECC 的温度 – 压力窗口，相应的温度 – 压力条件远比平衡态六方中介相的温度 – 压力区间温和，其温度和压力比平衡态六方中介相的三相点低了近 100 °C 和 100 MPa。通过采用压力淬火的方法，高温熔体快速降低至平衡态六方中介相的三相点以下，跳过了熔融结晶，直接进入了高度超压且超过冷的亚稳态中介相。在这个超压和超过冷的亚稳态中介相，PVDF 片晶可以快速生长并增厚，最终形成 β 和 γ 晶的伸

直链晶。因此，通过这个温度 – 压力加工窗口，我们制备了高性能的压电响应 PVDF 材料。PVDF 压电电压系数高达 $1.35 \text{ V} \cdot \text{m} \cdot \text{N}^{-1}$ 。同时，PVDF 因伸直链晶的形成，熔融温度提升了近 30 °C，其应用温度范围大幅提升。本工作为发展高灵敏和宽工作温度范围的 PVDF 基压电传感器提供了思路。

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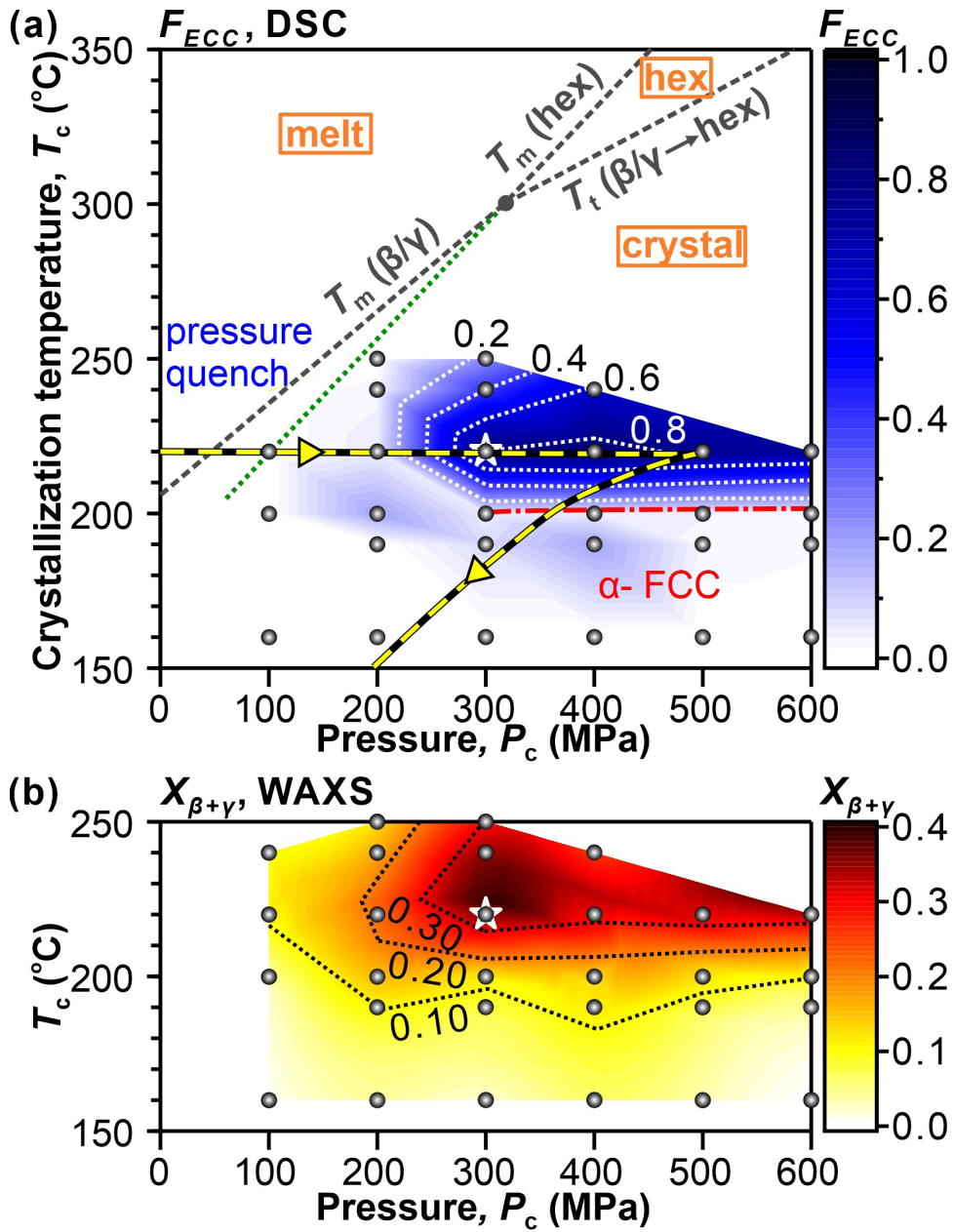


图1. 聚偏氟乙烯伸直链晶相对含量, F_{ECC} (a) 和极性晶相结晶度, $X_{\beta+\gamma}$ (b) 的温度-压力窗口, 结晶温度范围 (160 °C–250 °C), 压力范围 (100 MPa–600 MPa)。

Figure 1. Contour maps of ECC fraction, F_{ECC} (a), and polar forms crystallinity, $X_{\beta+\gamma}$ (b), of PVDF crystallized at different temperatures (160 °C–250 °C) and pressures (100 MPa–600 MPa).

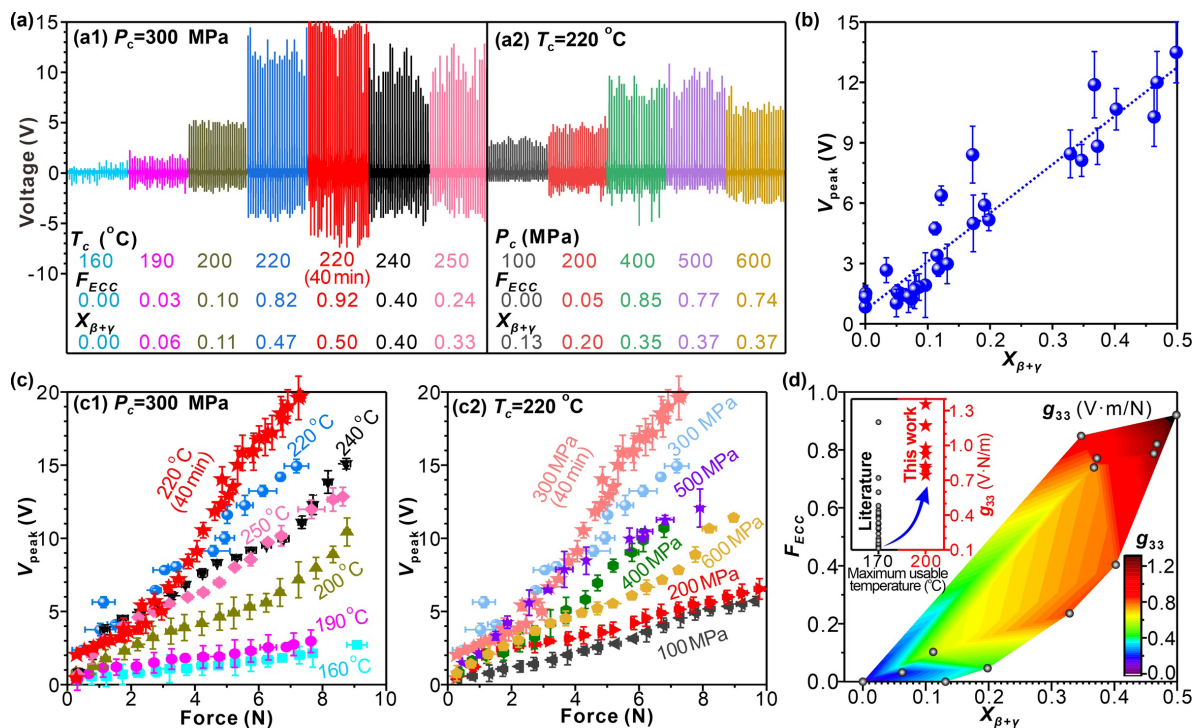


图 2. 不同压力和温度条件下聚偏氟乙烯结晶样品的压电性能。
Figure 2. Piezoelectric performance of high-pressure crystallized PVDF.

A large piezoelectric voltage coefficient (representing the sensitivity) and a high melting temperature (determining the operating-temperature range) are important for broadening the range of application of poly(vinylidene fluoride) (PVDF) sensors. It is known that the electric response to mechanical stress of PVDF increases with increasing fraction of noncentrosymmetric (or “polar”) β and γ crystal forms ($X_{\beta+\gamma}$), as well as with increasing fraction of extended-chain crystals (F_{ECC}).

In this work we investigate the development of different crystal forms (α , β , γ) and morphologies (extended and folded-chain crystal) through pressure-quenching and subsequent crystallization of PVDF over a wide range of temperatures (160–250 °C) and

pressures (100–600 MPa). We describe a temperature–pressure (T – P) window for achieving both high $X_{\beta+\gamma}$ and high F_{ECC} through intervention of the high-pressure hexagonal mesophase. Importantly, we show that high $X_{\beta+\gamma}$ and F_{ECC} can be achieved under considerably milder conditions, 100 °C and 100 MPa below the equilibrium T – P range of the mesophase. By rapidly pressure-quenching the melt significantly below the triple-point temperature, direct melt-crystallization is bypassed, and the system enters a heavily superpressed and supercooled metastable range of the mesophase. This enables the lamellae of the mesophase to grow and thicken, subsequently transforming to largely extended-chain β and γ forms. Thus, a T – P processing window opens up, leading to a marked increase in the

piezoelectric response. This way, we achieved a record PVDF piezoelectric voltage constant g_{33} of $1.35 \text{ V} \cdot \text{m} \cdot \text{N}^{-1}$. Moreover, the chain extension involved also raises the melting point of the polymer by ~ 30 °C, making the sensors usable at higher temperatures. This study offers guidance for the development of high-sensitivity PVDF-based piezoelectric sensors for applications across a broad temperature range.

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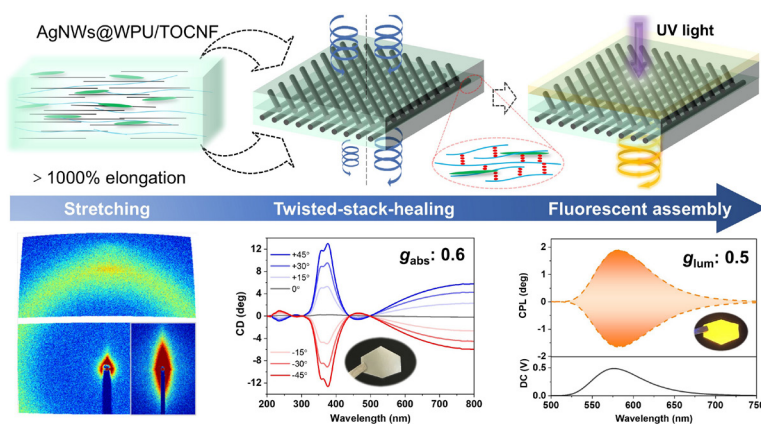
Journal of Materials Chemistry C

Programmable chiroptical multilayer films assembled from self-healing stretchable elastomers for information encryption †

Panyi Xi,^a Yu Cao, ^a Tanyi Tan,^a Xichong Ye ^{*ab} and Feng Liu ^{*abc}

基于自愈和可拉伸弹性体组装的可编程手性光学多层薄膜用于信息加密

Panyi Xi, Yu Cao, Tanyi Tan, Xichong Ye* and Feng Liu*. J. Mater. Chem. C, 2025, DOI: 10.1039/d5tc01653c



相较于传统刚性手性二维材料，软等离子体薄膜通过将各向异性的等离激元结构与柔性聚合物基体相结合，能够实现外力诱导下的圆二色性 (CD) 或圆偏振发光 (CPL) 的高效调控。近年来，将单轴取向排列与多层扭转堆叠相结合的方法，为光学活性材料制备提供了一种可扩展且高效的途径。然而，如何通过聚合物结构设计与高效制备手段协同实现高度有序的等离

子体纳米结构，仍是当前面临的关键挑战，而结构有序性正是获得优异手性光学活性的核心因素。

本工作中，我们利用超高拉伸倍率 (>1000%) 的水性聚氨酯 (WPU) 作为基材复合 Tempo 氧化纤维素纳米纤维 (TOCNF) 与银纳米线 (AgNWs) 在轴向拉应力下获得单层结构完美的取向排列，随后通过水汽诱导的氢键重组将双层取向杂化膜 (AgNWs@

WPU/TOCNF) 按照一定的偏转角度层层组装。自愈合的双层组装膜表现出显著的光学活性，椭圆度超过 13° ，吸收不对称因子 (g_{abs}) 超过 0.6。此外，通过进一步与荧光层的自愈合组装，基于选择性吸收理论，获得了显著的 CPL，发光不对称因子 (g_{lum}) 高达 0.5。WPU 基质所固有自愈合能力使得多层薄膜融合成连续的整体结构，消除界面缺陷，并显著提高器件稳定性和循

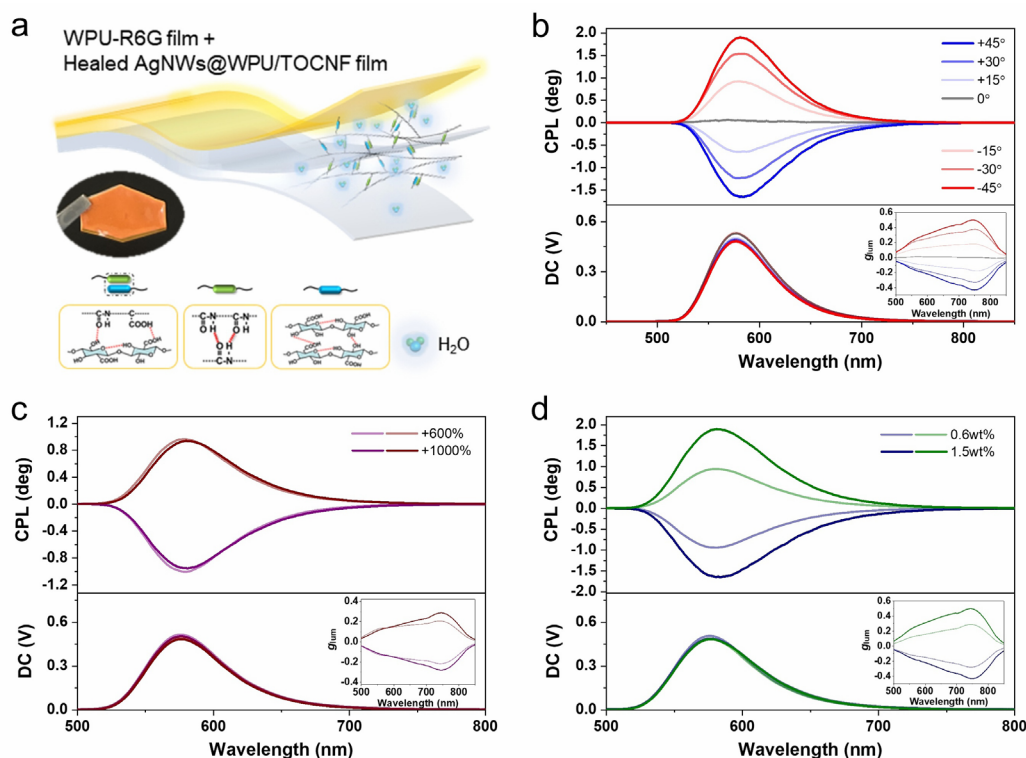


图 1. 多层光学活性薄膜的 CPL 性能及机械刺激下的信号调控。

Figure 1. CPL performance of the multilayer chiroptical films and the signal regulation under mechanical stimulation.

环性。此外，该柔性薄膜能够通过改变外部机械刺激有效调节 CD/CPL 信号的正负，椭圆度及波长。最后，利用多层薄膜的可编程 CD 特性，展示了一种多级信息深度加密/解密过程。总而言之，该工作为构建柔性手性光学材料及器件提供了一个多功能和可扩展的平台，且在柔性光子学、信息加密传输和可穿戴光学设备方面显示出广阔的应用前景。

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Compared with traditional rigid chiral 2D materials, soft plasmonic films can efficiently regulate circular dichroism (CD) or circularly polarized luminescence (CPL) under external force by combining anisotropic plasmonic structures with flexible polymer matrices. In recent years, the combination of uniaxial alignment and multilayer twisted stacking has provided an expandable and efficient approach for the preparation of optically active materials. However, how to achieve highly ordered plasmonic nanostructures through the synergy of polymer structure design and efficient preparation methods remains a key challenge at present, and structural orderliness is the core factor for

obtaining excellent chiral optical activity.

In this work, we utilized waterborne polyurethane (WPU) with an ultra-high stretch ratio (>1000%) as the substrate to composite with Tempo-oxidized cellulose nanofibers (TOCNF) and silver nanowires (AgNWs), achieving a perfect unidirectional alignment of the single-layer structure under axial tensile stress. Subsequently, the bilayer-oriented hybrid films (AgNWs@WPU/TOCNF) were assembled layer by layer at a certain deflection angle through water vapor-induced hydrogen bond reorganization. The self-healing bilayer assembled films exhibited significant optical activity, with an ellipticity exceeding 13° and

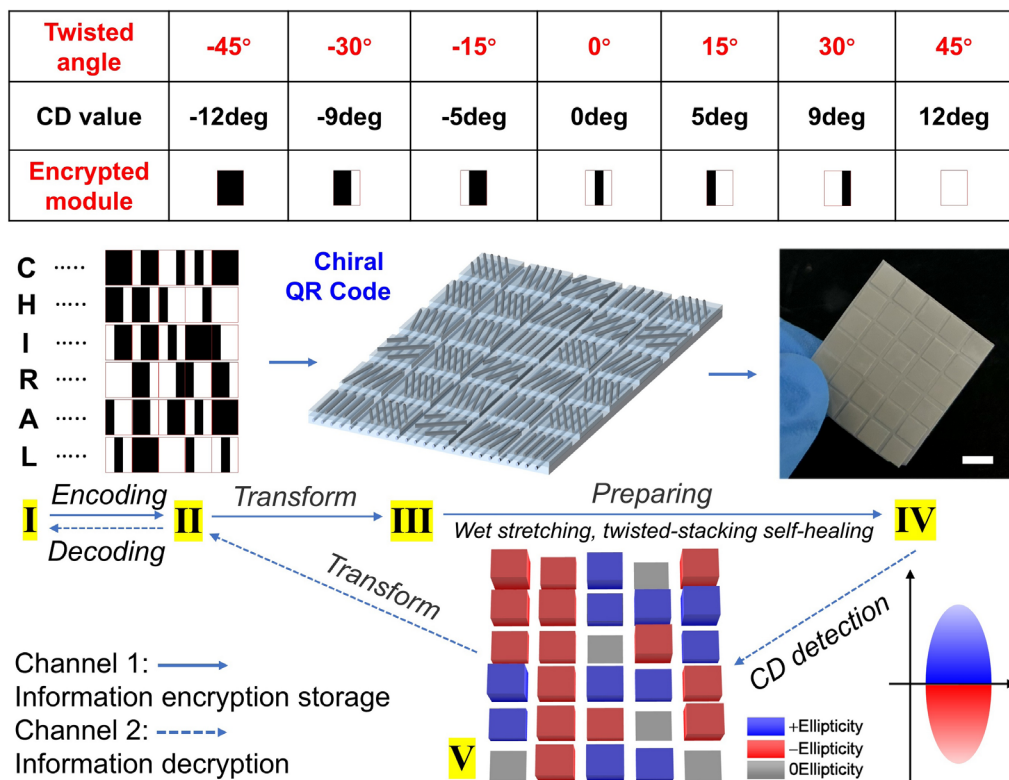


图 2. 基于光学活性可编程薄膜的信息加密及解密过程示意图。

Figure 2. Scheme of information encryption and decryption process based on chiroptical programmable films.

an absorption asymmetry factor (g_{abs}) over 0.6. Furthermore, through self-healing assembly with the fluorescent layer, based on the selective absorption theory, significant CPL was obtained, with the luminescence asymmetry factor (g_{lum}) reaching up to 0.5. The inherent self-healing ability of the WPU matrix enables the multilayer films to fuse into a continuous integral structure, eliminating interface defects and significantly enhancing device stability and cyclability. Additionally, this flexible film can effectively regulate the positive/negative,

ellipticity and wavelength of the CD/CPL signals by changing external mechanical stimuli. Finally, by taking advantage of the programmable CD characteristics of the multilayer films, a multi-level information deep encryption/decryption process was demonstrated. In summary, this work provides a multifunctional and scalable platform for constructing flexible chiroptical materials and devices, and shows broad application prospects in flexible photonics, information encryption transmission, and wearable optical devices.

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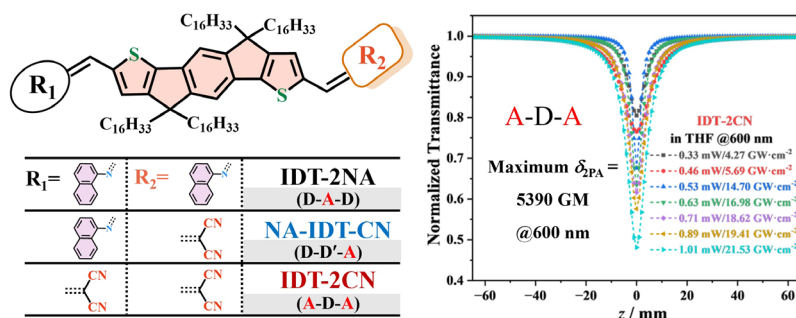
Diverse roles of indacenodithiophene in push-pull chromophores for enhanced two-photon absorption and efficient nonlinear optical limiting

Yijia Chen^a, Wendan Luo^a, Ke Liu^b✉, Taihong Liu^a✉, Liping Ding^a, Yu Fang^a

推-拉电子效应调控茚并二噻吩的双光子吸收及光限幅性能研究

Yijia Chen, Wendan Luo, Ke Liu*, Taihong Liu*, Liping Ding, and Yu Fang. Chin. J. Struct. Chem., 2025, DOI: <https://doi.org/10.1016/j.cjsc.2025.100704>

► Diverse functional roles and structure-property relationships



■ Multipolar molecular motifs

■ Excited-state dynamics

✓ Enhanced two-photon absorption

✓ Optical limiting applications

光学特性调控与推-拉电子结构之间的关联性在分子科学、材料科学以及非线性光学领域备受关注。通过末端基团修饰, IDT 衍生物可实现丰富的结构可调性, 从而精确调控分子能级、吸收光谱及电荷传输特性等。为加深对 IDT 类衍生物构效关系的理解, 其分子对称性、推-拉效应调控其光物理特性研究具有重要意义。

本文对比考察了系列具有不同末端修饰基团的茚并二噻吩 (IDT) 衍生物

(IDT-2NA、NA-IDT-CN 和 IDT-2CN) 的光物理性质, 归纳了不同推-拉电子效应对其双光子吸收及激光光限幅性能的影响规律。具体来讲, 因末端修饰基团推-拉电子能力差异, IDT 基团在三种衍生物中分别扮演着不同的受体 (A) 和供体 (D) 角色。具有 D-A-D 推-拉电子结构的 IDT-2NA 衍生物在 THF 溶液中的最大吸收波长为 459 nm, 溶剂效应不明显。与对称型 IDT-2NA 以及具有 A-D-A 推-拉

电子特征的 IDT-2CN 衍生物不同, 具有 D-D'-A 推-拉电子结构的非对称型 NA-IDT-CN 衍生物的稳态光学性质则表现出显著的溶剂效应, 荧光发射波长随着溶剂极性增大红移近 105 nm。DFT 理论计算与静电势分析结果证实了不同推-拉电子能力的末端修饰基团对该系列 IDT 衍生物电子局域分布和跃迁能级结构的显著影响。基于飞秒开孔 Z 扫描技术, 系列 IDT 衍生物在 540 至 900 nm 宽波段内均具有较强的双光子吸收 (2PA) 能力。IDT-2CN 衍生物的最大双光子吸收波长为 600 nm, 对应双光子吸收截面值为 5390 GM。值得说明的是, 由于光子波动性, 单光子吸收跃迁需要符合波函数宇称性 (parity) 原则, 跃迁前后基态和激发态的轨道对称性发生改变 (偶态 $g \leftrightarrow$ 非偶态 u), 与分子结构和能级轨道对称性直接相关。对于中心对称分子体系的 2PA 跃迁过程, 终态轨道对称性不发生改变 ($g \leftrightarrow g$ 或 $u \leftrightarrow u$), 即其始态和终态具有相同的波函数宇称性。因此, 对称型 IDT-2CN 的第一单重激发态能级 S_1 对于单光子吸收是允许的, 而对于双光子吸收是禁阻的; 因此 IDT-2CN 的最大双光子吸收波长 600 nm 的跃迁能级对应 $S_0 \rightarrow S_2$ 的单光子跃迁能级。另一方面, 飞秒瞬态吸收光谱证实了分子内电荷转移对激发态动力学和双光子吸收增强的显著影响。基于双光子吸收增强和反饱和和吸收机制, 进一步评估了系列 IDT 衍生物潜在的激光光限幅应用。本工作为 IDT 衍生物推-拉电子效应对光物理性质的影响关系考察提供了研究基础, 并为其非线性光学应用提供了理论参考。

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Correlation between tunable optical properties and push-pull structural characters have attracted extensive

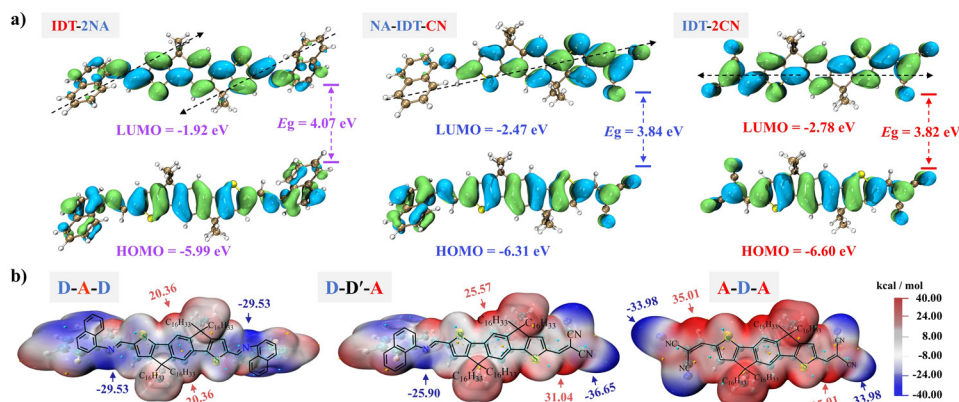


图 1. 具有不同分子结构的 IDT 衍生物的分子轨道能级和分子静电势分布图。

Figure 1. Frontier molecular orbital distributions and ESP maps of the IDT derivatives with different molecular motifs.

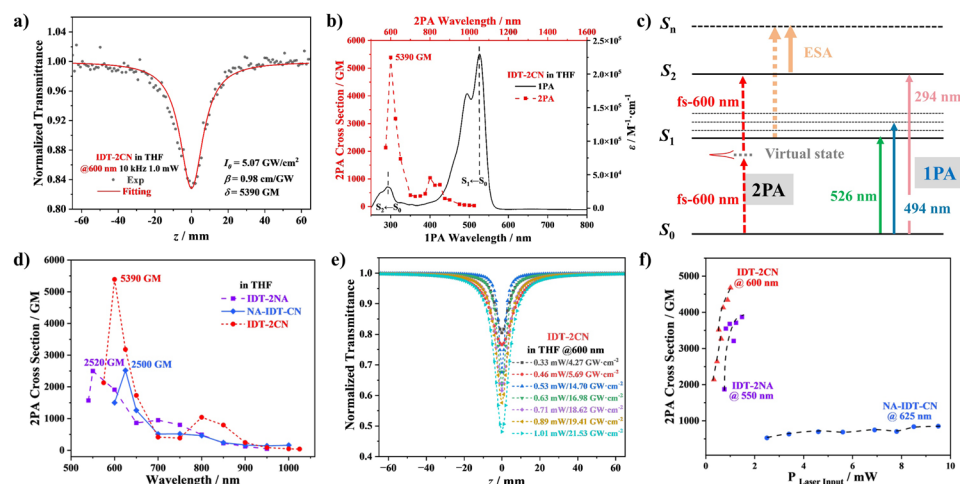


图 2. 系列茚并二噻吩 (IDT) 衍生物的非线性光学性质

Figure 2. Nonlinear optical properties of the IDT derivatives.

attention in material science and nonlinear optics. Here, several indacenodithiophene (IDT) derivatives denoted as IDT-2NA, NA-IDT-CN, and IDT-2CN with different terminal substituents were investigated comparatively to demonstrate their intrinsic structure-property relationships. Interestingly, the IDT core act diverse roles as acceptor (A) and donor (D) in the obtained three derivatives. Symmetric IDT-2NA with a D-A-D architecture showed an absorption maximum around 459 nm in THF. Contrary to the symmetric analog IDT-2CN with a reverse A-D-A feature, NA-IDT-CN with a different D-D'-A motif characterized an obvious solvent polarity effect.

Theoretical calculation and electrostatic potential results confirmed the terminal substituents with different electronic conjugation play vital roles in affecting the resultant photophysical properties. Utilizing the femtosecond open-aperture Z-scan technique, significant two-photon absorption (2PA) capabilities were obtained ranging from 540 to 900 nm. The 2PA cross section (δ_{2PA}) maximum about 5390 GM of centrosymmetric IDT-2CN exhibited at 600 nm. Distinct excited-state dynamics with the help of femtosecond transition absorption supported the effective intramolecular charge transfer which account for enhancing δ_{2PA} values. Their potential optical limiting

applications based on the 2PA mechanism were further evaluated. The limiting thresholds were found to be 2.79-3.35 mJ/cm² for the three IDT derivatives with a sequence of IDT-2CN<IDT-2NA<NA-IDT-CN. The distinct structural motifs and effective 2PA capabilities in the current work may provide reliable insights into the push-pull IDT chromophores for advanced nonlinear optical applications.

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Article

Assessment issues on electrochemical catalysis for water splitting

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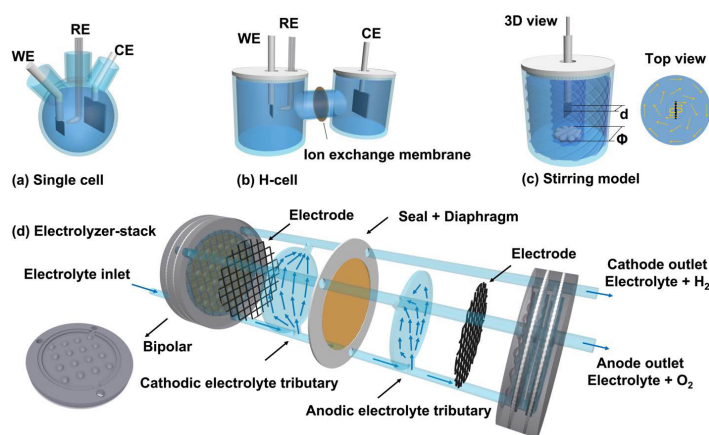
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电解水制氢催化中的评估问题

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the inadequate understanding and the non-standard measurements result in inaccurate activity evaluation. Especially at present, water electrolysis aims to deal with higher-current-density scenario, and the exaggeration for catalysts heavily mislead to unnecessary trial and error in the real application. The dynamic lineage sweep voltammetry, as a universal estimation method to evaluate the activity of material, is discussed, including the issues on electrochemical assessment and the possible factors to inaccuracy. Accordingly, we cast our own opinions and suggestions in practice, such as building the reasonable electrolytic cell system, including the electrode position, size, electrolyte, cell types, scan rate, stirring, selection of the counter and reference electrodes, etc. The IR compensation on resistance and conversion of specific activity are also mentioned. We suggest that the researchers should operate in a standardized manner and obtain the authentic data, without intentionally hiding the tricky experiment settings.

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近些年来, 研究人员已经开发了多种可用于电解水制氢的高效催化剂, 然而, 由于对电化学测试的认识不足和测量的不准确性, 导致活性评估可信度不高。特别需要指出的是, 当下电解水制氢催化预满足更高电流密度的应用场景要求, 对催化剂性能的夸大评估, 将严重误导实际应用, 造成不必要的试错成本增加。其中, 动态扫描伏安法作为最常见的评测方法之一, 我们对其测试中的问题和可能导致不准确的因素进行了系统讨论。结合真是应用场景, 在基本电解池评估体系搭建中, 要确保合理的电极位置、

尺寸、电解质、电解池类型、扫描速率、搅拌、对电极和参比电极的选择等条件。还提到了电阻补偿和比活性的转换。我们建议研究人员遵循标准化的方式操作并获得真实的数据, 而不要故意隐藏某些特殊的实验参数设置以夸大其催化表现。

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 全文链接: <https://cae.usp-pl.com/index.php/cest/article/view/376>

A number of catalysts have been developed for electrochemical water electrolysis in the last decades, however,

基于苯并噻二唑的席夫碱型三分体制备及神经性毒剂模拟物检测

张宇玉, 于敬华, 刘太宏*

基于苯并噻二唑的席夫碱型三分体制备及神经性毒剂模拟物检测

Zhang Yuyu, Yu Jinghua, Liu Taihong*. Environmental Chemistry, 2025, 44, (6), 2314-2321. DOI: 10.7524/j.issn.0254-6108.2025042002

神经性毒剂具有剧毒性和毁灭性效应, 被禁止化学武器组织 (OPCW) 列入附表化合物清单。开发快速、灵敏的神经性毒剂分析技术和研制原位、在线适用的便携式检测装备, 对于保障国家安全和公众生命健康具有重要的战略意义。本工作设计制备了一种含苯并噻二唑和四苯乙烯基团的席夫碱型荧光三分体敏感物质 TCNB, 利用紫外-可见吸收光谱和荧光光谱技术对其光物理性质和传感行为进行了系统探究。TCNB 在四氢呋喃溶液中的最大吸收波长为 414 nm, 荧光发射波长为 637 nm, 以及绝对荧光量子产率约为 12.5%。神经性毒剂模拟物氯磷酸二乙酯 (DCP) 的存在会引发 TCNB 溶液在 637 nm 处的荧光强度线性增强; 同时紫外灯下溶液颜色由橙黄色迅速变至血红色。基于荧光光谱变化, TCNB 溶液体系对 DCP 的检出限为 $0.77 \mu\text{mol} \cdot \text{L}^{-1}$; 同时选择性和抗干扰能力良好。高分辨质谱和核磁滴定辅助解析了该席夫碱型荧光探针对神经性毒剂的可能传感机理。该工作作为神经性毒剂的液相灵敏检测和可视化识别提供了技术参考。

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全文链接: <https://doi.org/10.7524/j.issn.0254-6108.2025042002>

Nerve agents, listed in the Chemical Weapons Convention schedules by the Organization for the Prohibition of Chemical Weapons (OPCW), exhibit high toxicity and devastating effects. Developing rapid, sensitive, and in-situ

analysis technologies and portable devices hold significant strategic importance for safeguarding national security and public health. Herein, a Schiff base type fluorophore triad (TCNB) incorporating benzothiadiazole and tetraphenylethene units was synthesized and applied in the fluorescence detection of nerve agent simulants. Its photophysical properties and sensing behaviors were systematically investigated using UV-vis absorption and fluorescence spectroscopy techniques. TCNB in tetrahydrofuran exhibited the maximum absorption and fluorescence emission wavelengths at 414 nm and 637 nm ($\Phi_F=12.5\%$), respectively. The presence of a nerve agent simulant, diethylchlorophosphate (DCP), induced a linear enhancement in fluorescence intensity at 637 nm (coefficient $R^2=0.994$),

accompanied by a visible color change from orange-yellow to reddish under UV irradiation. Based on the fluorescence spectral variations and $3\sigma/k$ formula, the detection limit of TCNB for DCP was calculated to be $0.77 \mu\text{mol} \cdot \text{L}^{-1}$ in THF. Plausible sensing mechanism of the Schiff base type fluorophore toward nerve agents was validated through HRMS and NMR titration experiments. Our finding establishes a technical basis for the sensitive and visualization detection of nerve agent simulants.

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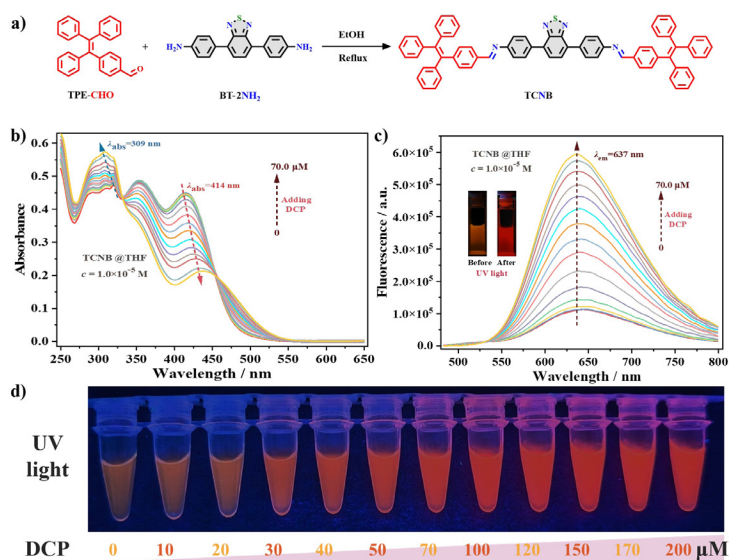


图 1. 荧光敏感物质 TCNB 合成路线及其对 DCP 的紫外-可见吸收光谱响应和荧光光谱变化
Figure 1. Synthesis route for TCNB and UV-vis absorption and fluorescence variations of TCNB toward DCP

吉林大学汪大洋教授应邀作报告

Prof. Wang Dayang from Jilin University invited to give a report



2025年9月2日下午，吉林大学汪大洋教授应邀来新概念传感器与分子材料研究院访问，并作题为“Van der Waals Emulsions: the particle size effect is the blind spot of Pickering emulsions in hindsight”的学术报告。

汪大洋教授的报告聚焦亲水性纳米颗粒在油水界面稳定乳液的新机制。传统皮克林乳液稳定机制依赖于固体颗粒在界面的吸附能，因此高度亲水的颗粒因接触角过小难以有效稳定乳液。汪大洋教授团队发现，通过调节体系 pH 值使带电颗粒与油滴之间的静电排斥力趋近于零，使强亲水性纳米颗粒能高效保持数月稳定水包油乳液，这主要是由于油滴与包裹颗粒之间的范德华吸引力，这一机制显著区别于传统皮克林乳液稳定理论中“能

垒主导”认知，为乳液制备与稳定技术提供了新思路。

报告会由彭军霞教授主持，研究院师生 30 余人参加了报告会。

On September 2, 2025, Prof. Wang Dayang from Jilin University was invited to visit the Institute of New Concept Sensors and Molecular Materials and presented a report titled “Van der Waals Emulsions: The Particle Size Effect as the Blind Spot of Pickering Emulsions in Hindsight”.

Prof. Wang's report focuses on a novel mechanism for stabilizing emulsions at the oil-water interface using hydrophilic nanoparticles. Traditional Pickering emulsion stabilization relies on the adsorption energy of solid particles at the interface, making highly hydrophilic particles ineffective for

emulsion stabilization due to excessively small contact angles. Prof. Wang's team discovered that by adjusting the pH value of the system to reduce electrostatic repulsion between charged particles and oil droplets to near zero, strongly hydrophilic nanoparticles can efficiently maintain stable oil-in-water emulsions for months. This is primarily due to van der Waals forces between oil droplets and encapsulated particles. This mechanism significantly diverges from the “energy barrier-dominated” understanding in traditional Pickering emulsion stabilization theory, offering new insights for emulsion preparation and stabilization technology.

The session was hosted by Prof. Peng Junxia, with over 30 faculty members and students from the institute in attendance.

俄罗斯伊万诺沃国立化工大学校长发来感谢信

Letter of appreciation from rector of Ivanovo State University of Chemistry and Technology received

近日，俄罗斯伊万诺沃国立化工大学校长 Natalia E. Gordina 教授给房喻院士发来感谢信，代表伊万诺沃

立化工大学和俄罗斯科学院克里斯托夫溶液化学研究所对其率代表团访问陕西师范大学新概念传感器与分子材

料研究院，参加第四届应用表面与胶体化学前沿论坛期间受到的热情接待表示感谢。

Gordina 教授在信中表示非常荣幸能在第四届应用表面与胶体化学前沿研讨会上展示其研究成果。该研讨会是该领域规模最大的科学活动之一，研讨会讨论的议题具有重要意义。同时祝愿房喻院士再创佳绩，期待双方继续开展富有成效的合作。

Recently, Prof. Natalia E. Gordina, rector of Ivanovo State University of Chemistry and Technology, sent a letter of appreciation to Prof. Fang Yu, expressing gratitude for the warm hospitality extended during her delegation's visit to the Institute of New Concept Sensors and Molecular Materials at Shaanxi Normal University and their participation in the Fourth Workshop on Frontier of Applied Surface and Colloid Chemistry, on behalf of Ivanovo State University of Chemistry and Technology and the G.A. Krestov Institute of Solution Chemistry of the Russian Academy of Sciences.

Prof. Gordina wrote in the letter that it was a great honor for them to present their research findings at workshop, which stands as one of the largest scientific gatherings in the field, addressing topics of significant importance. She also extends her best wishes for Prof. Fang Yu's continued success and looks forward to further fruitful collaboration between both parties.



安徽滁州市委一行来访

CPC Chuzhou Municipal Committee visitors received



2025 年 9 月 17 日上午，安徽省滁州市委滁州市委副书记金力一行到访陕西师范大学新概念传感器与分子材料研究院，并与房喻院士进行了座谈交流。

副院长丁立平教授带领来宾参观了综合展厅，介绍了研究院的基本情

况、发展理念、科研方向、技术优势、研究成果等。

滁州市委常委、组织部部长周文芳、来安县委书记张传宗等陪同来访，陕师大化学化工学院院长刘成辉教授、杨鹏教授、研究院杨小刚副院长等参加了座谈。

On September 17, 2025, Jin Li, deputy secretary of the CPC Chuzhou Municipal Committee, led a delegation to visit the Institute of New Concept Sensors and Molecular Materials at Shaanxi Normal University, and held a meeting with Prof. Fang Yu.

INCSMM vice dean Prof. Ding

Liping guided the visitors through the exhibition room, introducing the institute's basic profile, development philosophy, research directions, technological strengths, and research achievements.

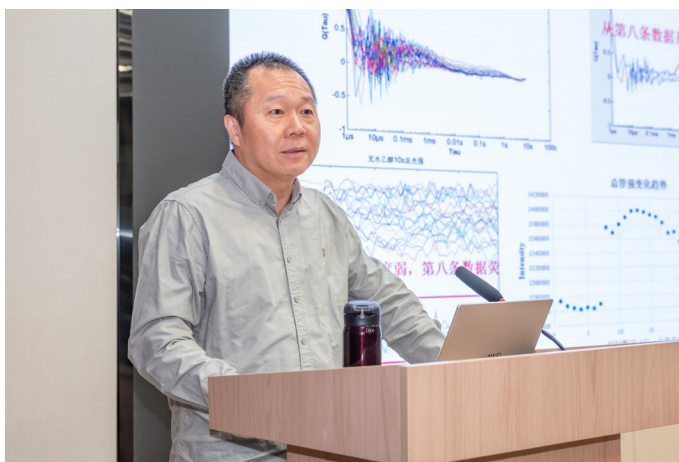
Among the visitors were Zhou

Wenfang, member of the Standing Committee of the CPC Chuzhou Municipal Committee and head of the Organization Department, and Zhang Chuanzong, secretary of the CPC Lai'an County Committee. SNNU School of

Chemistry and Chemical Engineering dean Prof. Liu Chenghui, Prof. Yang Peng, Prof. Ding Liping and INCSMM vice dean Mr. Yang Xiaogang attended the meeting.

中国科学院大学黄韶辉教授应邀作报告

UCAS Prof. Huang Shaohui invited to give a report



2025年9月19日上午,中国科学院大学黄韶辉教授应邀在陕西师范大学新概念传感器与分子材料研究院交流荧光相关光谱(FCS)技术与应用,并作题为“荧光相关光谱单分子荧光技术原理及在分子互作纳米颗粒表征和液液相分离等领域的应用”的报告。

荧光相关光谱学是美国科学院和工程学院两院院士 Watt W. Webb 教授与同事在上世纪 70 年代创建的。经过半个多世纪的发展,该技术已被广泛应用于生物学、医学、化学、材料学、光物理学、微纳科学等研究领域。黄韶辉教授团队开发的 FCS 模块与奥林巴斯显微镜的深度整合,突破显微镜的空间分辨率限制,在微小检测体积(即共聚焦光斑约飞升)的样本内从时间维度上测试荧光信号随时间的波动规律进行相关分析,从而定量分析分子浓度、荧光亮度/寡聚态、扩散系数/粒径、相互作用等特性。目前该技术样机已安装在研究院传感与材

料研发、测试与评价平台,可预约使用。

报告会由刘太宏副教授主持,研究院师生 40 余人参加了报告会。

On September 19, 2025, Prof. Huang Shaohui from the Chinese Academy of Sciences was invited to exchange on fluorescence correlation spectroscopy (FCS) technology and its applications at the Institute of New Concept Sensors and Molecular Materials at Shaanxi Normal University, and presented a report titled “Principles of Single-Molecule Fluorescence Technology in Fluorescence Correlation Spectroscopy and Its Applications in Molecular Interaction Nanoparticle Characterization and Liquid-Liquid Phase Separation”.

Fluorescence Correlation Spectroscopy (FCS) was pioneered in the 1970s by Prof. Watt W. Webb, a member of both the National Academy of Sciences and the National Academy of Engineering in the U.S., along with his colleagues. After more than half a century of development, this technology

has been widely applied in research fields such as biology, medicine, chemistry, materials science, optical physics, and micro/nano science. The FCS module developed by Prof. Huang's team achieves deep integration with Olympus microscopes, overcoming spatial resolution limitations. Within minute detection volumes (corresponding to confocal spots of approximately 1 μm), it performs correlation analysis of fluorescence signal fluctuations over time. This enables quantitative assessment of molecular concentration, fluorescence intensity/oligomerization state, diffusion coefficient/ particle size, interactions, and other properties. The prototype of this technology is now installed at the institute's Sensing and Materials R&D, Testing, and Evaluation Platform and is available for testing.

The report was chaired by Assoc. Prof. Liu Taihong, with over 40 faculty members and students from the institute in attendance.

计划财务处来研究院开展财务工作调研座谈

Meeting with Planning and Finance Office on financial work held



2025年9月22日下午, 陕西师范大学计划财务处处长王耀明带领副处长刘杰、相关科长及业务骨干一行7人来到新概念传感器与分子材料研究院, 与副院长丁立平、杨小刚, 研究院办公室左振男老师、冯伟老师和研发工程师、学生代表等一起开展财务工作专题调研座谈。

计财处听取了在财务报销、经费预算管理方面遇到的实际问题与具体需求, 并就提出的疑问进行了解答。与会师生结合自身体验, 对优化财务

流程、提升服务质量提出了建设性意见和建议。

On September 22, 2025, Wang Yaoming, director of the Planning and Finance Office at Shaanxi Normal University, led a delegation of seven members including deputy director Liu Jie, relevant section chiefs, and key staff members to the Institute of New Concept Sensors and Molecular Materials, and held a topical meeting on financial work with vice deans Ding Liping and Yang Xiaogang, along with faculty members

Zuo Zhennan and Feng Wei from INCSMM Administrative Office, and representatives of R&D engineers and students.

The Planning and Finance Office visitors listened to practical issues and specific needs encountered in areas such as financial reimbursement and budget management, and addressed the questions raised. Faculty and students in attendance offered constructive suggestions for optimizing financial processes and enhancing service quality based on their personal experiences.

吉林省能源局绿色能源转化处一行来访

Jilin Energy Bureau Green Energy Conversion Division visitors received



2025年9月23日上午，吉林省能源局绿色能源转化处高继仁处长、吉林省绿色能源产业服务中心周伟主任一行到访陕西师范大学化学化工学院和新概念传感器与分子材料研究院，并与化学化工学院院长刘成辉教授、副院长丁立平教授、王增林教授、薄鑫副研究员围绕氢能领域的校企合作

进行了交流座谈。

On September 23, 2025, director Gao Jiren of the Green Energy Conversion Division at the Jilin Provincial Energy Bureau and director Zhou Wei of the Jilin Provincial Green Energy Industry Service Center visited the School of Chemistry and Chemical Engineering

and the Institute of New Concept Sensors and Molecular Materials at Shaanxi Normal University, and met with SCCE dean Prof. Liu Chenghui, vice dean Prof. Ding Liping, Prof. Wang Zenglin, and Assoc. Prof. Bo Xin to discuss university-enterprise collaboration in the field of hydrogen energy.

COMSOL 公司蔡吉量工程师应邀作报告

COMSOL engineer Cai Jiliang invited to give a report



2025年9月25日上午，COMSOL公司资深电磁应用工程师蔡吉量先生应邀在陕西师范大学新概念传感器与分子材料研究院报告厅作题为“COMSOL助力超结构与器件创新设计”的专题报告。

超材料与超结构作为当前人工设计材料的前沿领域，正以前所未有的方式推动着电磁波与光波操控技术的发展，在光学、射频、太赫兹等领域展现出巨大的应用潜力。本次报告介绍了如何借助 COMSOL 多物理场仿真平台，实现对超结构的高效设计与性能分析，并探讨了其在光学、射频、

太赫兹等多个领域的创新应用。

报告会由研发工程师罗艳彦主持，研究院师生40余人参加了报告会。

On September 25, 2025, Mr. Cai Jiliang, senior electromagnetic application engineer at COMSOL, was invited to give a report titled “COMSOL Enabling Innovative Design of Metamaterials and Devices” at the Lecture Hall of the Institute of New Concept Sensors and Molecular Materials at Shaanxi Normal University.

Metamaterials and metasurfaces, as cutting-edge fields in current engineered materials, are advancing the manipulation

of electromagnetic and optical waves in unprecedented ways, demonstrating immense application potential in optics, radio frequency, terahertz, and other domains. This report introduces how the COMSOL Multiphysics simulation platform enables efficient design and performance analysis of metasurfaces, while exploring their innovative applications across optics, radio frequency, terahertz, and multiple other fields.

The report was chaired by R&D Engineer Luo Yanyan, with over 40 faculty members and students from the institute in attendance.

活中的现实问题一样没有纯粹定性的判断，也没有唯一的解决路径。这便是化学带给我最为宝贵的财富。不论是在化学世界中探索，还是在现实世界中生活，一定不能局限在二元对立的观念中——只知对与错、是与非，而要用多面观念去审视每一个客观事实、谋划每一次应对措施、领悟每一回经验教训。随着自己的不断成长，我学会了与复杂握手言和，也学会对未来说“别怕”。相信携带着“变化之学、中庸之道”的自己，在未来探索纷繁复杂的大千世界时，能够更从容自信地应对困难与挑战，无畏前路，战胜鲸波。

房老师曾说，要把学生当孩子带，多设身处地地为他们着想，少一些严苛的要求，多给孩子们自由发展的空间，但也不能沦为放任不管的溺爱。在与房老师的交流过程中，我真切地体会到他所说的话。作为卓越教师实验班的一员，我很幸运进入房老师的实验室从事轻质高强材料的应用工作，并有机会向他汇报实验工作和项目进展。记得有一次他在实验室跟其他老师讲，“本科生的事情很重要，我们要重视与他们的交流。”房老师从未给我们“00后”本科生张贴过任何标签，认为年轻人代表着创造力和未来的希望。即便他早已取得很高的成就、踏上很高的平台，仍打心眼里平视我们每一位学生。房老师的教诲简单而深刻，他平易近人的个性、循循善诱的教导、爱生如子的姿态，都给了我许多思考的火花，使我对卓越教师有了更加深入的理解。

“卓越”二字，是对教师“卓尔不群，越而胜己”的期许，但不能仅用“学识扎实”“课堂高效”等可量化的条目评价。在我看来，卓越教师首先要有一颗甘于奉献的仁爱之心，要有致力报国的教育情怀与理想信念，要将“桃李满天下”作为自己的终身目标，立志通过坚守教育事业报效祖国，切身体察学生急难愁盼。坦率地讲，每一位父母都想让自己的孩子有所成

就，而每一个人的成功都离不开老师在成长路上的引领与帮助。如果一位老师只是为了拿到薪水而周而复始地照本宣科，于其自身会觉得工作枯燥乏味、虚度光阴，对学生而言更是阻滞成长、贻误未来。

如今，我已如愿成为一名教师。但我深知，初登讲台的我距离卓越教师还有很长一段路要走。还记得我也曾是校园里嬉笑打闹的少年，而如今曾经看不懂的疑难题目也已成为信手拈来的典例。教育切忌急功近利，这就需要身为教师的我以高度的责任心对待教育事业，将青涩与懵懂尽快转化为担当与使命，用更加成熟稳重的姿态去面对学习与工作中的各种挑战。

回想自己求学路上遇见的一位位老师，从章竹君先生“学生的事情比天大”到房喻院士“教育是一项神圣的事业”，再到张莎莎师姐“成为像我老师一样的老师”，我仰慕的师者榜样传承赓续，生动诠释着陕师大“西部红烛两代师表”精神品格。我也将坚守教育战线，不断提升自己的专业素养与教学能力，学着我的老师教我的样子，在工作岗位上传递爱心与勇气，让青春的灵魂跃入人海闪闪发光，让下一代有勇气插上梦想的翅膀，在平凡而不凡的讲台上哺育万千桃李。

（作者系2024届化学专业本科毕业生，文章刊载于《陕西师大报》2025年9月15日第4版）

Those luminous figures of our time are no different from the sun, moon, and stars that accompany us. Just as starlight only becomes visible when night falls, we only become aware of their presence at specific moments. As we turn the pages of this era, we clearly see the annotations left by their flickering starlight. Yet these brilliant celestial bodies are not beyond reach; the ripples stirred by their gravitational pull will guide us toward a brighter future.

In the fall of 2021, my class had

the privilege of visiting Prof. Fang Yu's laboratory. Upon first meeting him, I was immediately struck by his warm and benevolent demeanor, reminiscent of a caring elder. The sight that greeted me was equally profound: the laboratory corridor walls were densely covered with academic papers, invention patents, and letters of appreciation. He recounted with pride the development journey of his explosive detector, a project he had dedicated over two decades to perfecting. Prof. Fang's tenacious spirit deeply moved me. I found myself eager to learn more about him and draw closer to this remarkable mentor.

Later, I heard more about Prof. Fang's story, that during his studies in Europe in the last century, his heart remained devoted to the advancement of science in his homeland. After completing his postdoctoral research, he declined offers from a foreign research institution and returned to the campus of Shaanxi Normal University, located in the ancient lands of the Zhou and Qin dynasties. Since his return, Prof. Fang Yu has dedicated decades to spearheading the development of explosives, film-based fluorescent sensors, and detection equipment. He has delved into the research of gel propellants and high-energy-density materials, making significant contributions to solving critical bottleneck technologies without seeking personal gain. As I came to understand him more deeply, his image in my mind gradually became clearer. Shortly thereafter, Prof. Fang Yu was elected as an academician of the Chinese Academy of Sciences. Over forty years of teaching and scholarly pursuit, coupled with tens of thousands of hours of dedicated research, earned him recognition within the academic community. How proud I am that my school has produced the university's first academician who began his career here! How fortunate I am to have had that first encounter with him.

Prof. Fang often says that academic disciplines possess an extraordinary power to shape individuals. Chemistry can cultivate a thorough and meticulous way of thinking, the courage to explore without fear of failure, and a broad and unique

perspective. Throughout my studies in chemistry, I have continually reflected on what my chosen discipline has imparted to me. In essence, the journey of exploring the chemical world embodies a cognitive sequence progressing from simplicity to complexity, from rudimentary to advanced understanding. It also reflects the cognitive process of “identifying problems > synthesizing insights > experimental verification > refinement and correction > application and advancement.”

As my studies and reflections deepened, I discovered that chemistry is actually filled with many ambiguous and seemingly contradictory facts - such as the absence of absolute acids and alkali, and the lack of a unified theory capable of explaining the structure of all substances... The mindset constantly forming in my mind made me realize: the methodology of problem-solving in chemistry has given me a clear understanding that the challenges in the material world are not like multiple-choice questions on an exam with only one correct answer. Instead, they resemble real-life problems in everyday life - there are no purely qualitative judgments, nor is there a single, definitive solution path. This is the most valuable treasure chemistry has bestowed upon me.

Whether exploring the world of chemistry or navigating the real world, one must never be confined by binary oppositions - seeing only right and wrong, good and evil. Instead, we must examine every objective fact, devise every response, and grasp every lesson through multifaceted perspectives. As I continue to grow, I have learned to embrace complexity and tell the future, “Fear not”. I believe that by embracing the “science of change and the way of moderation”, I will navigate the intricate tapestry of the world with greater composure and confidence. Fearless on the path ahead, I shall conquer the turbulent waves.

Prof. Fang once said that teachers should treat students like children, putting themselves in students’ shoes more often, and impose fewer strict demands and

give them more space to develop freely, but this shouldn't devolve into neglectful indulgence. Through my interactions with Prof. Fang, I truly came to understand the meaning behind his words. As a member of the Outstanding Teacher Experimental Class, I was fortunate to join Prof. Fang's lab working on applications of lightweight high-strength materials, and had the opportunity to report my experimental work and project progress to him. I recall one time when he told other faculty members in the lab, “Undergraduate matters are important; we must value our communication with them”. Prof. Fang never labeled us “Gen-Z” undergraduates, believing young people represent creativity and the hope for the future. Even having achieved great success and reached lofty platforms, he genuinely treats every student as an equal. Prof. Fang's teachings are simple yet profound. His approachable nature, patient guidance, and fatherly care sparked countless moments of reflection, deepening my understanding of what it means to be an outstanding educator.

The term “excellence” embodies the aspiration for educators to be “exceptional and surpassing themselves”, yet it cannot be measured solely by quantifiable criteria such as “solid academic knowledge” or “high-efficiency classroom instruction”. In my view, an outstanding teacher must first possess a compassionate heart willing to dedicate themselves, a patriotic passion for education, and unwavering ideals. They should embrace the lifelong goal of nurturing students who spread their talents far and wide, committing to serve the nation through steadfast devotion to education while genuinely empathizing with students' urgent needs and concerns. Frankly speaking, every parent desires their child to achieve greatness, and every individual's success relies on the guidance and support of teachers throughout their formative years. If a teacher merely recites from textbooks day in and day out solely for a paycheck, they will find their work tedious and a waste of time. For students, such an approach stifles growth and jeopardizes their future.

Today, I have fulfilled my dream of

becoming a teacher. Yet I know full well that as a newcomer to the podium, I still have a long way to go before reaching the level of an outstanding teacher. I still recall being one of those carefree, playful youths on campus. Yet today, those once-perplexing problems have become familiar examples I can effortlessly draw upon. Education must never be rushed for quick results. This demands that I, as a teacher, approach my vocation with the utmost sense of responsibility. I must swiftly transform my youthful inexperience and naivety into a profound sense of duty and mission, confronting the various challenges in both learning and work with a more mature and steadfast demeanor.

Reflecting on the teachers I encountered throughout my academic journey - from Prof. Zhang Zhujun's conviction that “students' matters are more important than anything else”, to Prof. Fang Yu's belief that “education is a sacred vocation”, to my senior classmate Zhang Shasha's aspiration to “become a teacher like my own mentor” - I see a lineage of admirable educators whose legacy continues. They vividly embody the spirit of Shaanxi Normal University's “Two Generations of Exemplary Teachers in the West”, symbolized by the “Western Red Candle”. I too will remain steadfast on the front lines of education, continuously honing my professional expertise and teaching skills. Following the example my teachers set for me, I will carry love and courage into my work. I will let the spirit of youth leap into the sea of humanity and shine brightly, empowering the next generation to find the courage to spread their wings of dreams. From the ordinary yet extraordinary lectern, I will nurture countless students.

(The author is a Class 2024 graduate with a bachelor's degree in chemistry. This article was published in the *Shaanxi Normal University News* on September 15, 2025, Page 4.)