



Introduction to advanced electronic chemicals

Cite this: *Ind. Chem. Mater.*, 2025, 3, 507 Ruixia Liu, *^a Rong Sun *^b and Guoqiang Yang *^c

DOI: 10.1039/d5im90014j

rsc.li/icm

With the rapid development of global science and technology, the electronics industry has become an important force to promote the development of modern

society. From semiconductor chips to high-performance display panels, from 5G communication to artificial intelligence, every breakthrough in the electronics industry is inseparable from the support of high-quality electronic chemicals. As special chemicals and supporting materials for the electronic information industry, the performance and quality of electronic chemicals directly affect the performance, reliability and production efficiency of electronic products. As the electronics industry moves toward high-end, intelligent and miniaturized

development, the requirements for the precise design and synthesis of key materials for electronic chemicals, trace impurity control, functionality and stability have become increasingly stringent, which are also the key technical bottlenecks in the industry and have become focal points of global scientific research and industrial competition.

This special issue focuses on the design and preparation technology of key materials for electronic chemicals, featuring 12 research papers and review articles authored by R&D teams with

^a Institute of Process Engineering, Chinese Academy of Sciences, Beijing 100190, P. R. China.

E-mail: rxliu@ipe.ac.cn

^b Shenzhen Institutes of Advanced Electronic Materials, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen 518055, P. R. China.

E-mail: rong.sun@siat.ac.cn

^c Key Laboratory of Photochemistry, Institute of Chemistry, University of Chinese Academy of Sciences, Chinese Academy of Sciences, Beijing 100190, China.

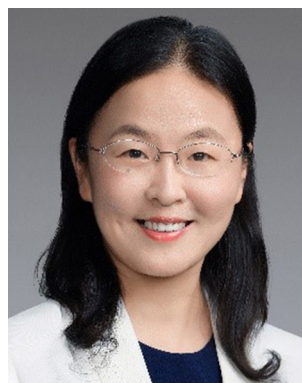
E-mail: ggyang@iccas.ac.cn



Ruixia Liu

Excelsent Young Scholars in 2022. Prof. Liu mainly engages in the design of catalysts, and technology for the synthesis of oxygen-containing high-value chemicals and electronic chemicals.

Ruixia Liu received her BSc degree from Qufu Normal University in 2005 and PhD degree from the Changchun Institute of Applied Chemistry, Chinese Academy of Sciences in 2010. She works in the Institute of Process Engineering, Chinese Academy of Sciences (2014–now) as the group leader of “Green Catalysis”. She has won the “Introduction of one hundred talents” in 2014 and the “National Science Fund for



Rong Sun

2024), and is repeatedly ranked among Stanford University's Top 2% World's Top Scientists. She pioneered the establishment of the highly organized R&D team focusing on core technologies of key materials for advanced IC packaging. Under her leadership, the full-closed-loop R&D platform for advanced IC packaging materials has been commissioned covering from physical & chemical tests, analytical tests, and pilot tests to application tests.

Rong Sun currently serves as the Director of the Institute of Advanced Materials Science and Engineering at Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, and the Dean of Shenzhen Institute of Advanced Electronic Materials. She is a member of the Expert Committee for Shenzhen's 15th Five-Year Plan, a Senior Member of IEEE, a Clarivate Analytics Global Highly Cited Researcher (2022–



rich research experience in related fields. It highlights representative research progress in the design, preparation, separation and purification of typical electronic chemicals such as photoresists, packaging materials, electronic special gases, and ultra-high-purity wet electronic chemicals. By compiling a series of high-quality research papers, this issue brings

together the latest research achievements in the field, providing a platform for researchers to showcase and exchange ideas. It facilitates in-depth discussions on fundamental theories and cutting-edge technologies, promotes the innovation and development of electronic chemicals, and provides important theoretical support and technical guidance for their industrial applications.

Here, we would like to express our sincere gratitude to all the authors, reviewers and editorial team of *Industrial Chemistry & Materials*, as well as to the annual meeting of the China Association for Science and Technology, the Chemical and Engineering Society of China and Sinopec Nanjing Chemical Industry Co., Ltd. for their strong support.



Guoqiang Yang

Guoqiang Yang received his BS degree (1985) from Peking University and a PhD degree (1991) from the Institute of Photographic Chemistry, Chinese Academy of Sciences. He has worked in the Institute of Photographic Chemistry as an associate professor, in the Kyoto University of Japan (1992–1993) as a post-doctoral researcher of Japan Society for the Promotion of Science, in the École Nationale Supérieure de Chimie de

Mulhouse, Université de Haute-Alsace, France as a visiting professor (1995, 2001, 2003), and in the University of Illinois at Urbana-Champaign as a post-doc research associate (1996–1999). Since 1999 he has been working in the Institute of Chemistry, Chinese Academy of Sciences as a full professor, and had served as the deputy director of the institute, director of the Key Laboratory of Photochemistry and director of Key Laboratory of Molecular Reaction Dynamics. He was the vice president of the Chinese Photochemistry Association, and vice president of the Asian and Oceanian Photochemistry Association. From 2015–2024, he was the vice president of the University of Chinese Academy of Sciences. He has published 310 research papers and has authorized 51 patents. His research interests include photo-functional materials, the electronic structure of the luminescent materials, novel fluorescent probes and high resolution photoresists.

