

A special issue for the 20th anniversary of National Center for Nanoscience and Technology

Qing Dai¹ (✉), Guangjun Nie^{2,4} (✉), Zhiyong Tang^{3,4} (✉), and Yuliang Zhao^{2,4} (✉)

¹ CAS Key Laboratory of Nanophotonic Materials and Devices, National Center for Nanoscience and Technology, Beijing 100190, China

² CAS Key Laboratory for Biomedical Effects of Nanomaterials and Nanosafety, CAS Center for Excellence in Nanoscience, National Center for Nanoscience and Technology, Beijing 100190, China

³ CAS Key Laboratory of Nanosystem and Hierarchical Fabrication, CAS Center for Excellence in Nanoscience, National Centre for Nanoscience and Technology, Beijing 100190, China

⁴ University of Chinese Academy of Sciences, Beijing 100049, China

© Tsinghua University Press 2023

National Center for Nanoscience and Technology (NCNST), China, established in December 2003, is co-founded by the Chinese Academy of Sciences (CAS) and the Ministry of Education as an institution dedicated to fundamental and applied researches in the field of nanoscience and technology, especially those with important potential applications. NCNST is operated under the supervision of the Governing Board and aims to become a world-class research center, as well as public technological platform and young talents training center in the field, and to act as an important bridge for international academic exchange and collaboration.

The NCNST currently has three CAS Key Laboratories: the CAS Key Laboratory for Biological Effects of Nanomaterials and Nanosafety, the CAS Key Laboratory for Standardization and Measurement for Nanotechnology and the CAS Key Laboratory for Nanosystem and Hierarchical Fabrication. In 2020, the CAS Key Laboratory of Nanophotonic Materials and Devices started construction. Besides, there are Division of Nanotechnology Development, Nanofabrication Laboratory, Intelligent Nanosensing Laboratory and Theoretical Laboratory. The NCNST has co-founded 19 collaborative laboratories with Tsinghua University, Peking University, and Chinese Academy of Sciences.

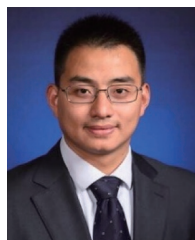
Management departments of NCNST consist of General Administration Office, Science and Technology Management, Major R&D Programs Management, Human Resource Management, Education department, S&T development and promotion Management, Finance and Assets Management, Administration Management. The National Technical Committee 279 of Standardization Administration of China (SAC/TC279) on Nanotechnology, the Special Professional Committee on Research

Laboratory of China National Accreditation Service for Conformity Assessment, and the Chinese Society of Nanoscience and are affiliated to the NCNST.

The NCNST offers 4 Master's degrees (in chemistry, materials, physics and biology) and 3 Doctoral degrees (in chemistry, materials and physics), and also sets postdoctoral research positions. Over the past twenty years, NCNST has made a series of important progress in basic research, applied basic research and technical support system, and its scientific and technological competitiveness has been significantly improved.

In 2014 the International Evaluation Committee highly applauded the significant achievements and outstanding contributions in nanoscience, and remarked that NCNST had risen to a position of "by far the best in China". In recent years the Nature Index showed that NCNST had been one of the "Top 10 Institutes of CAS". The high impact academic journal on nanoscience and nanotechnology, *Nanoscale*, is co-hosted by the NCNST and the Royal Society of Chemistry Publishing Group.

In this special issue dedicated to the 20th anniversary of NCNST, 46 reviews and articles are collected, in which the topic covers nanoparticle synthesis, large-area nano-structure fabrication, microfluidic synthesis, imaging at nanoscale, chiral assembly at nanoscale, ferromagnetism in carbon materials, molecular spintronics, simulations and experiments on peptide-peptide, protein-RNA, receptor-ligand interactions, and applications of nano-materials and nano-structures (ranging from ultrablack coating, gas sensing, electrochemical catalysis, lithium battery, solar cells, neuromorphic devices, bio-imaging, nano-vaccine, nano-drug delivery and therapy for hepatic carcinoma, breast cancer, glioblastoma and so on).



Prof Qing Dai received his Ph.D. degree from the University of Cambridge. In 2012, he joined NCNST as Distinguished Professor. He received the National Science Fund for Distinguished Young Scholars and the Science and Technology Award for Chinese Youth in 2019. He is currently Distinguished Professor at the Chinese Academy of Science and fellow of the Royal Society of Chemistry. In addition, he is Associate Editor of *Nanoscale* and Special Reviewer of several international famous Journals including *Nature* and *Nature Materials*.



Prof Guangjun Nie received his B.S. degree from Northeast Normal University in 1996, followed by an M.S. degree from Jilin University in 1999. In 2000, he was a Visiting Scholar of the Institute of Food Research, UK. In 2002, he obtained his PhD degree from the Institute of Biophysics, Chinese Academy of Sciences. From 2002 to 2008, he worked as a postdoctoral fellow at the Jewish General Hospital, McGill University, Canada. Professor Nie joined NCNST as a Principal Investigator in April 2008. His main interests are in nanomedicines and the design of biology-inspired materials to overcome the current barriers in tumor therapy.



Prof Zhiyong Tang is Director of NCNST and was elected CAS member in 2023. Prof. Tang obtained his Ph.D. degree in 2000 from Changchun Institute of Applied Chemistry (CIAC), Chinese Academy of Sciences (CAS), and obtained his B.S. and M.S. degrees in Department of Environmental Chemistry, Wuhan University in 1993 and 1996, respectively. As a Research Associate, he did the research in Dr. Roel Prins's research group, Institute for Chemical and Bioengineering, Swiss Federal Institute of Technology Zurich from 2000 to 2001. He also worked as a Research Fellow in Chemistry Department, Oklahoma State University, and in Dr. Nicholas A. Kotov's group, Department of Chemical Engineering, University of Michigan from 2003 to 2006. He joined NCNST as a Principal Investigator in November 2006. His research focused on fabrication, assembly and application of inorganic nanomaterials in the field of energy and catalysis.



Prof Yuliang Zhao was elected CAS member in 2017 and fellow of The World Academy of Sciences (TWAS) in 2018. Prof. Zhao graduated from Sichuan University in 1985, and received PhD at Tokyo Metropolitan University in 1999. Before moving to Chinese Academy of Sciences from RIKEN/Japan in 2001, he worked with RIKEN colleagues and discovered the Element 113 (Nh) which is the first new element that has been discovered by Asian scientists and added in the Periodic Table of the Element. Prof. Zhao has made exceptional contributions in discovery of the basic knowledge of biological effects of nanoscale materials *in vivo*, and many of our understanding of nanotoxicity discrepancy between *in vitro* and *in vivo* behaviours were derived from his work.