



Founded in 1926 as the first research institute of Kyoto University, the Institute for Chemical Research (ICR) will celebrate its 100th anniversary in 2026, two years from now. As the 36th Director of the Institute with such a long history, I have taken on the responsibility to carry on the traditions and achievements of the Institute and to develop the Institute into the future.

Our Institute has the founding vision of "excelling in the investigation of the basic principles of chemistry and their applications". With this philosophy in mind, the Institute has consistently embarked on diverse and innovative pioneering research by flexibly and actively adapting to the changing times. In the course of an era that is about to enter its 100th year, significant advances in science and technology have drastically changed people's living environment, and the chemistry we aim at and the chemistry society demands have also changed significantly. In line with these changes, our institute has developed cutting-edge research by broadening perspectives and strengthening collaborations based on our own curiosity and drive for improvement. Today, we can design and synthesize novel chemical compounds at atomic and molecular levels, and analyze the structures and properties using state-of-the-art quantum beams and informatics. In this way, our Institute contributes to the development of society through a wide range of sciences, including chemistry, physics, biology, and information technology. In order to carry out such broad fields of science, ICR currently organizes 5 research divisions -Synthetic Chemistry, Materials Chemistry, Biochemistry, Environmental Chemistry, and Multidisciplinary Chemistryand 3 research centers -Advanced Research Center for Beam Science, International Research Center for Elements Science, and Bioinformatics Center. In total, about 450 members, including 25 professors, 28 associate professors, and 49 assistant professors, 53 research associates, 70 staff members, and 231 graduate students, are currently working and studying at the ICR.

The research results in 2024 were wonderful. Some of

the outstanding results are as follows. (1) Intrinsic visible plasmonic properties of colloidal $PtIn_2$ intermetallic nanoparticles were found. (2) Small multimodal thermometry with detonation-created multi-color centers was achieved in detonation nanodiamond. (3) Novel N₂-type superatomic molecules were synthesized. (4) Ferroelectric free-standing hafnia membranes with metastable rhombohedral structure were successfully obtained. (5) Tetrapodal hole-collecting monolayer materials based on saddle-like cyclooctatetraene core for inverted perovskite solar cells were synthesized.

ICR collaborates with other research institutions through MEXT projects including the Inter-University Collaborative Projects "Integrated Consortium on Chemical Synthesis", Large-scale Scientific Research Project "Spintronics Research Network of Japan", and "Quantum Leap Flagship Program (Q-LEAP)". ICR is a member of the Kyoto University Research Coordination Alliance and is organizing a research unit for the realization of sustainable society. We are also conducting an international Joint Usage/Research Center (iJURC) "Global Frontier and Interdisciplinary Research Core for Deepening Investigations and Promoting Collaboration in Chemistry-oriented Fields". ICR continues to make efforts to promote both domestic and international collaborative research and the training of young researchers.

Looking at the rapid changes in the world situation, we can see that we have entered a new era. The research activities of our Institute are also entering a new era after a period of turmoil. We believe that strengthening the presence of our Institute at the international level and training the next generation of young people who will play an active role in the world are essential tasks on which we should focus. We hope that this Annual Report will serve to update you on the progress of our research activities and globalization. We are committed to the further development of both our research and the Institute. We sincerely appreciate your continued encouragement and support.

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N. Shimakawa

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