Preface

The Institute for Chemical Research (ICR) was launched in 1926 as the first research institute at Kyoto University, and celebrates its 90th Anniversary in 2016. The philosophy at the time of its foundation was to "Excel in the Investigation of Basic Principles of Chemistry and Their Applications," and studies on special medicinal substances, organometallic chemistry, incendiary reagents, and other topics were undertaken at nine research laboratories. Over its lifetime, the ICR has continuously produced out standing research achievements. Today, the organization is in five research divisions: Synthetic Chemistry, Materials Chemistry, Biochemistry, Environmental Chemistry, and Multidisciplinary Chemistry and three research centers on Beam Science, Elements Science (IRCELS), and Bioinformatics. About 120 faculty members, 210 graduate students and 60 researchers are engaged in research activities in 30 laboratories in total supervised by full-time professors. Further, five laboratories are supervised by visiting professors.

The research within the ICR encompasses the fields of chemistry, physics, biology, and informatics. The chemical studies core covers fields including physical chemistry, inorganic chemistry, organic chemistry, materials chemistry, and biochemistry. The graduate schools encompassing the laboratories accept students in diverse fields of science, engineering, agriculture, pharmaceutical sciences, medicine, and informatics. These laboratories are spearheading leading-edge research, and yielding outstanding results in their own and related research areas with publications such as: *1) Synthesis and Isolation of a Stable Germabenzenylpotassium, the First Heavier Congener of Phenyl Anion, 2) Isolation of the Simplest Hydrated Acid in Endohedral Fullerene, 3) Blue Organic Light-emitting Diodes Realizing External Quantum Efficiency over 25% Using Thermally Activated Delayed Fluorescence Emitters, 4) Cytosolic Antibody Delivery by Lipid-sensitive Endosomolytic Peptide, 5) Loosening of Lipid Packing Promotes Oligoarginine Entry into Cells, and 6) Fast Domain Wall Motion in the Vicinity of the Angular Momentum Compensation Temperature of Ferrimagnets*, all achieved last year. The legacy of our founding philosophy continues to the present day and describes the essence of our research activities. The ICR has entrusted its members, with this vision in mind, to choose and pursue research topics at the forefront of advanced chemistry with bottom-up paradigms. Sustainable and sustained growth of the human race is a key issue of this century, and we must reform our country from various perspectives. Hence, the ICR encourages its members to be actively involved in research projects and to value the development of unique interdisciplinary research projects, in order to contribute to the future of our society from materials-related fields.

Inside of the university, the ICR collaborates with other research institutes and centers as a key member of Kyoto University Research Coordination Alliance (KURCA), which was launched in 2015. Outside of the university, the ICR collaborates with domestic and international universities and research organizations (with 70 official international collaboration agreements as of January 1, 2018) and functions as a Joint Usage/Research Center proclaiming the Frontier and Interdisciplinary Research Core for Deepening Investigation and Promoting Collaboration in Chemistry-oriented Fields supported by MEXT (2016–2021); its activity during the former term received high commendation on the term-end assessment in 2016. In addition, the ICR collaborates with the Research Institute for Sustainable Humanosphere and the Institute of Advanced Energy at Kyoto University to start another MEXT-supported joint research project on bio-inspired smart materials as of April 1, 2015. Furthermore, the ICR—IRCELS in particular—is making a significant contribution to the MEXT Project of Integrated Consortium on Chemical Synthesis (2016–2021), in collaboration with the Catalysis Research Center at Hokkaido University, the Research Center for Materials Science at Nagoya University, and the Institute for Materials Chemistry and Engineering at Kyushu University. We also fully strive to foster and secure young researchers through these activities. For instance, we provide an in-house annual grant system named "ICR Grant for Encouraging Promoting Integrated Research." The strong collaboration basis so far constructed in-house and with outside researchers ensures that the Institute will continue to serve as a core of global research propellers in chemistry-oriented fields. With this consideration, we would appreciate your continued encouragement and support.

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