The Institute for Molecular Science (IMS) is one of the world's core research facilities for molecular science and is also a center for inter-university joint research in Japan. It sets an extremely wide range of research goals, from understanding the behavior of individual molecules to that of collective molecular processes on the scale of life forms and in space. Currently, the IMS is engaged in four areas of research: Theoretical and computational molecular science, Photo-molecular science, Materials molecular science, and Life and coordination-complex molecular science. In addition to these research divisions, IMS has seven Research facilities and centers; UVSOR Facility, Laser Research Center for Molecular Science, Instrumental Center facilitated with various molecular detectors, for example, 920MHz and 800MHz NMR, and Equipment Development Center. A new research Center for Integrated MOlecular Systems (CIMOS) has just started from April, 2013, in order to develop the highly functional molecular systems, which have the function of such as molecular rhythms, sensing and response, and even self-repair. IMS also operates the Research Center for Computational Science and Okazaki Institute for Integrative Bioscience (OIIB), jointly with National Institute of Physiology and National Institute for Basic Biology in the same campus.

This Annual Review 2013 is a summary of research activities performed in IMS during September 2012–August 2013. The individual research groups at IMS are making steady progress in basic research on molecular structures, reactions and functions demonstrating "novel molecular capabilities," as reported in this Review. In addition to these individual activities, IMS conducts the six special programs in the institute basis; (i) a computational chemistry program of TCCI (Theoretical and Computational Chemistry Initiative) as a part of CMSI (Computational Materials Science Initiative) in HPCI (High Performance Computational Infra), (ii) Nano science project, called Nano Technology Platform from July 2012. (iii) Extreme photonics in collaboration with RIKEN, (iv) COE of molecular and materials simulations as a joint program of NINS, (v) Quantum Beam Development Program in collaboration with Kyoto University and Nagoya University (completed in March 2013), and (vi) Networked Laboratories for the Frontiers of Photon Science and Technology in collaboration with Japan Atomic Energy Research Institute, Osaka University and Kyoto University. With two IMS own international programs for Asia, namely, EXODASS (EXchange prOgram for the Development of Asian Scientific Society) and Asian Core, IMS has invited active young scientists from various East Asian countries to carry out collaborative researches. EXODASS Program is the post-JENESYS starting from 2011, and aims to provide the opportunity for young researchers (*e.g.*, master's and doctoral students and postdoctoral researchers) from Asian countries to stay in IMS laboratories related to the basic research for environmental and energy problems. Asian Core program also has now become IMS own project, continuing to strengthen the tie among the four key institutes of Chemical Physics in Asia, namely, KAIST in Korea, IAMS in Taiwan, ICCAS in China and IMS in Japan.

Professor Kuwajima retired at the end of March 2013 and has become our emeritus professor. Three associate professors, Professor Kimura, Professor Tada and Professor Nagata were promoted to full professors of Osaka, Nagoya and Meijo Universities, respectively. We are grateful to all four professors for their great contribution to IMS.

IMS is continuing to employ a new scientific perspective with the newly founded CIMoS research center, mentioned above, and by proposing a new center for "precision molecular measurement and control." We do expect your advice and support for creating this new era of molecular science.

September, 2013

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Director-General, Institute for Molecular Science