2012 Institute for Chemical Research, Kyoto University 京都大学化学研究所 Our Goal Is to Create Novel Fields of Research by Integrating the Wisdom in Our Various Research Fields. ICR at Kyoto University Continues Its Challenge to Reveal Novel Findings for the Human Society.





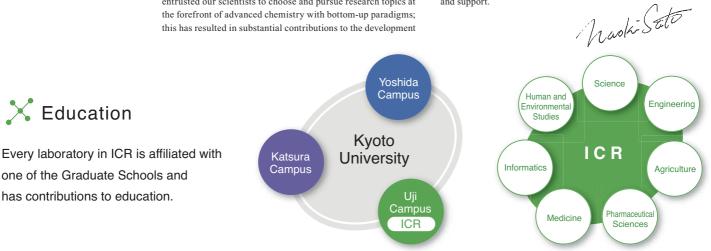
Director SATO, Naoki

Institute for Chemical Research, launched in 1926 as the first research institute at Kyoto University, commemorates its 86th anniversary this autumn, but its true roots date back to 1915 (Specialized center for chemical research founded at Kyoto Imperial University, College of Science for the study of special medicinal substance, "Salvarsan, "that is, arsphenamine). Our founding vision at the time of foundation above is to "Excel in the Investigation of Basic Principles of Chemistry and Their Applications." We have reached the current large-scale organization of five research divisions and three centers. Currently, about 100 faculty members, 210 graduate students and 50 researchers are engaged in research activities in 32 laboratories supervised by full-time professors. Further we have 5 laboratory.

The research within the Institute 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 to which our laboratories belong cover diverse fields of science, engineering, agriculture, pharmaceutical sciences, medicine, informatics, and human/environmental studies. These laboratories are spearheading leading-edge research, and yielding outstanding results in their own research areas. The legacy of our founding vision continues to the present day and describes the essence of our research activities. With this vision in mind, we have entrusted our scientists to choose and pursue research topics at the forefront of advanced chemistry with bottom-up paradigms; this has resulted in substantial contributions to the development of scientific technology. Such accomplishments are proof of our vision of freedom and a bottom-up approach in chemical research. Whether or not the human race maintain sustained growth is a key issue of this century. Moreover, we must recover from the Great East Japan Earthquake and reform our country from various perspectives in Japan. Hence, we encourage our scientists to be actively involved in research projects with bottom-up approach in mind, and to value the development of unique interdisciplinary research projects, in order to contribute to the future of our society from materialsrelated fields.

The Institute is currently collaborating with domestic/oversea universities and research organizations (with more than 50 official international collaboration agreements) and is functioning as a Joint Usage/Research Center proclaiming the Frontier/Interdisciplinary Research Core for Deeping Investigation and Promoting Cooperation in Chemistry-Oriented Fields supported by MEXT (2010-2016). In addition, the Institute participates in the MEXT Project of Integrated Research on Chemical Synthesis (2010-2016) as one of the key members of core research institutions. Besides, we also fully strive to fostering and securing of young researchers through these activities as well as graduate education mentioned above. The strong collaboration basis so far constructed in-house and also with outside ensures the Institute to serve as the core of global research propellers in chemistry-oriented fields.

Finally, we would appreciate your continued encouragement and support.



3 Campuses of Kyoto University

Education in the Graduate Schools



History Over the 80 years of its history, ICR has continued the challenge to uncover the basis of chemistry and answer the frontier quests.

1926	Institute for Chemical Research (ICR) was chartered with the founding philosophy, to "Excel in the Investigation of Basic Principles of Chemistry and Their Applications."	1999	Joint Research Laboratory Building was constructed.
1929	The Main Building of ICR was constructed in Takatsuki, Osaka.		
1949	ICR became the first affiliated institute of Kyoto University.	2000	Administration Departments of ICR and other institutes in Uji Campus were integrated.
1962	ICR established graduate schools to offer the advanced education for graduate students.	2001	Bioinformatics Center was established.
1964	The Division System was introduced. ICR organization was divided into19 research divisions and 1 satellite facility. Nuclear Science Research Facility was established in Awataguchi, Sakyo-ku, Kyoto.	2002	Laboratory of Proteome Informatics (SGI Japan) was endowed. (It has finished on March, 2005.)
1968	High-Voltage Electron Microscopy was located at Gokasho, Uji (Uji Campus). ICR was moved to Uji Campus.	2003	ICR was reorganized into 9 research divisions and 3 satellite facilities. International Research Center for Elements Science was established.
1971	Low-Temperature Laboratory was established.	2004	ICR was reorganized into 5 research divisions and 3 centers.
1975	Biotechnology Laboratory and Central Computer Facility were established.		Advanced Research Center for Beam Science was established. Uji Research Building was constructed.
1983	Nucleic Acids Laboratory was built.	2005	
1985	Biotechnology Laboratory was established.	2005	Laser Science Laboratory was built.
1988	Nuclear Science Research Facility was moved to Gokasho, Uji.	2007	The Alumni Association of ICR "Hekisuikai" was inaugurated.
	Accelerator Laboratory and Research Building were completed.	2009	Laboratory of Water Chemistry Energy (AGC) was endowed. (It has finished on March, 2012.)
1989	High-Resolution Electron Spectromicroscope was established.		
		2010	ICR started to function as a Joint Usage / Research Center.
1992	ICR was reorganized into 9 research divisions and 2 satellite facilities. Supercomputer Laboratory was established.	2011	Laboratory of Nano-Interface Photonics (SEI Group CSR Foundation) was endowed. Bioinfomatics Center was reorganized.
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This division sets its goals on (i) Design and creation of bioactive peptides/proteins controlling cellular and gene functions, (ii) Chemical understanding of the reaction mechanisms and physiological significance of biocatalysts, (iii) Unveiling the framework of regulatory network between genetic programs and environmental stimulus responses in higher plants, and (iv) Discovery of new bioactive organic molecules and their new use.

Prof UESUGI, Motonari (D Pharm Sc) Assist Prof SHIMOGAWA, Hiroki (D Sc)

Assist Prof TSUGE, Tomohiko (D Sc)

YASUDA, Keiko

Chemical Biology

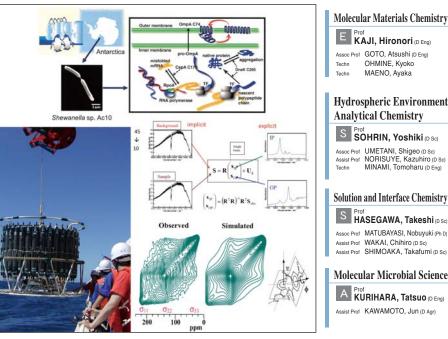
s for Cell Therapy



Division of **Environmental Chemistry**

This research group aims to contribute to the development of a sustainable society through fundamental studies such as structural characterization and dynamics of solutions and polymers, biogeochemistry in the hydrosphere, and biotechnology with useful enzymes and microorganisms.

Main research subjects are as follows: (1) Syntheses, structure, and functionality of well-organized or-ganic EL devices, organic solar-cells, and polymer materials. (2) Biogeochemistry of trace elements in the hydrosphere, Ion recognition. (3) Structural analysis of functionalized ultrathin films and mol-ecules at an interface using vibrational spectroscopy coupled with multivariate analysis, and intermolecular interactions in solution with nanoscale inhomogeneity and/or tunable reactivity. (4) Physiology of extremophilic microorganisms and their applications to production of useful compounds and bioremediations. Biochemistry of trace elements.

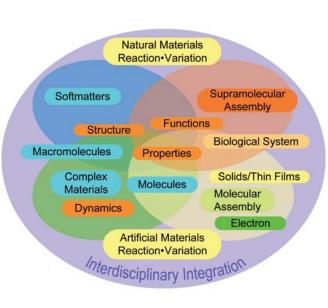


Division of Multidisciplinary Chemistry

Integration

Integrating viewpoints of science and engineering, we aim at developing basis in the interdisciplinary area among chemistry, physics, and biology. We will carry out fundamental, exploratory researches through cooperation with other divisions/centers in ICR to establish a novel aspect of the advanced materials science.

This division makes basic researches that aim to achieve molecular understanding of various phenomena of natural/artificial materials, develop an interdisciplinary integration view of natural science based on chemistry, and establish a new aspect of material science. The researches are being conducted with a multidisciplinary method-ology through collaboration within this division as well as with the other divisions/centers in ICR.



Assoc Prof MATUBAYASI, Nobuyuki (Ph D Assist Prof WAKAI, Chihiro (D Sc) Assist Prof SHIMOAKA, Takafumi (D Sc)

Molecular Microbial Science A KURIHARA, Tatsuo (D Er Assist Prof KAWAMOTO, Jun (D Agr)

Polymer Materials Science

E KANAYA, Toshiji (D Eng) Assoc Prof NISHIDA, Koji (D Eng) Assist Prof INOUE, Rintaro (D Eng)

Molecular Rheology

E WATANABE, Hiroshi (D Sc) Assoc Prof MASUBUCHI, Yuichi (D Eng Assist Prof MATSUMIYA, Yumi (D Eng) OKADA, Shinichi* Techn



Molecular Aggregation Analysis

S SATO, Naoki (D Sc) Assoc Prof ASAMI, Koji (D Sc) Assist Prof YOSHIDA, Hiroyuki (D Sc) Assist Prof MURDEY, Richard (Ph D)

Supramolecular Biology

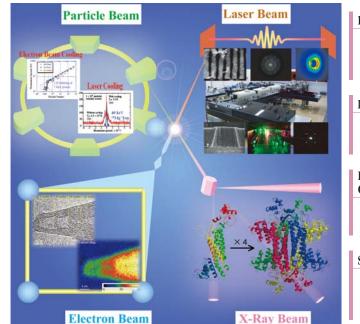
Interdisciplinary Chemistry for Innovation E TOSHIMITSU, Akio (D En



Advanced Research Center for Beam Science

Development of new capabilities with combination of various beams, Development of new methods for space-time analysis with extreme resolution. Multidimensional analysis of functional chemical materials oriented for application, and Preparation for collaborative research scheme.

The Advanced Research Center aims at creation of advanced material science in nano space/time scale by combining various beams (particle, laser, electron and X-ray beams) to understand and control nanospace/time phenomena from physical, chemical and biological aspects. The present subjects are researches on dynamics of particle beams and improvement of their characteristics, physics of intense short pulse laser-matter interactions and its applications, high-resolution dynamical structure visualization of nano-materials, analysis of chemical reaction pathways, and dynamical analysis of vital phenomena based on molecular structures





S NODA. Akira (D Sc) Assoc Prof IWASHITA, Yoshihisa (D So Assist Prof SOUDA, Hikaru TONGU, Hiromu



Laser Matter Interaction Science

SAKABE, Shuji (D Eng) Assoc Prof HASHIDA, Masaki (D Eng) Assist Prof TOKITA, Shigeki (D Eng)

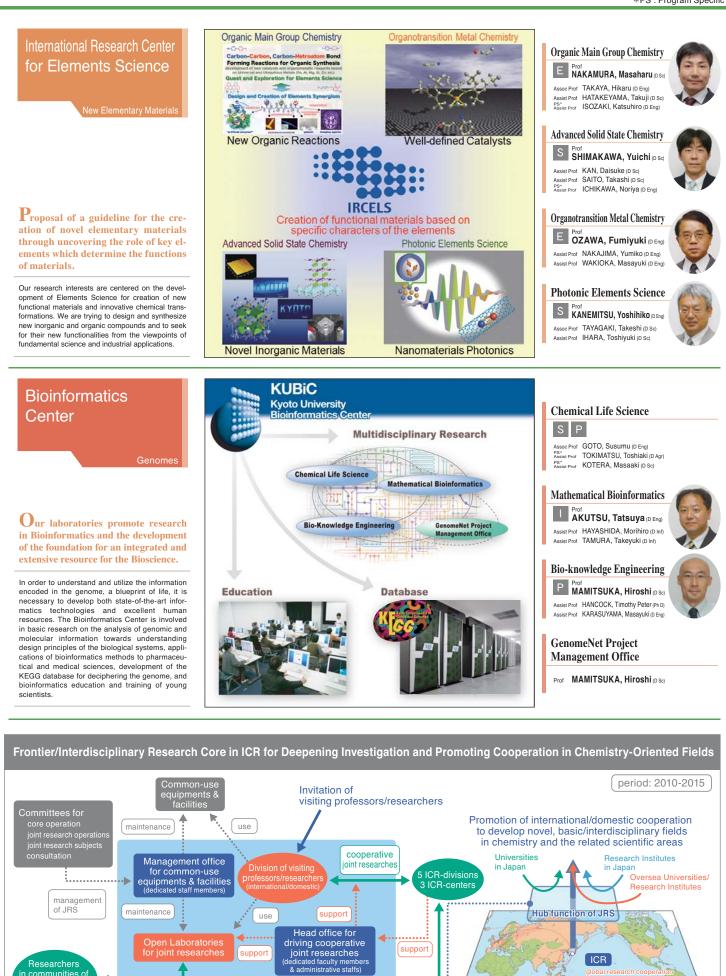


S KURATA, Hiroki (D Sc) Assist Prof OGAWA, Tetsuya (D Sc) Assist Prof NEMOTO, Takashi (D Sc)

Structural Molecular Biology

HATA, Yasuo (D Sc) Assoc Prof ITO, Yoshiaki (D Sc) Assist Prof FUJII, Tomomi (D Sc) Assist Prof YAMAUCHI, Takae (D Agr)





cooperative joint researches Joint Research Station (JRS)

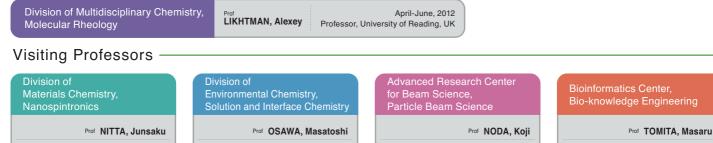
Researchers communities of chemistry and he related fields

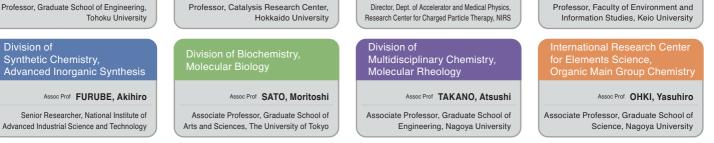
Platform of joint researches/research cooperation offering equipments/facilities/databases, human resources, and hub function

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 inquiry into profound knowled
long-term cultivation of human resources

Visiting Professor from International Country -





Endowed Research Section

Division of Nano-Interface Photonics (SEI Group CSR Foundation) has been opened in April 2011, donated by Sumitomo Electric Industries Group CSR Foundation. Our research aim is to open up new research field of nanomaterials science, by focusing on nano-interface as a platform to develop novel optical functionalities. We study optical properties of semiconductor nanomaterials, leading to new solar energy conversion technologies.

Nano-Interface Photonics (SEI Group CSR Foundation)

PS* Assoc Prof	YAMADA, Yasuhiro
PS* Assist Prof	OKANO, Makoto
Prof (Supporting Faculty Member)	KANEMITSU, Yoshihiko

Hakubi Project to Foster and Support Young Researchers, Kyoto University

Algorithmic Graph Theory with Applications to Bioinformatics

New Materials and Chemical Systems for Alternative Energy Conversion

PS* Assoc Prof	JANSSON, Jesp
PS* Assoc Prof	NAUMOV, Panch



Our Vision

The founding philosophy of the Institute for Chemical Research is to "Excel in the Investigation of Basic Principles of Chemistry and Their Applications." Research is grounded on the core values of freedom, independence, and harmony. As a key part of Kyoto University, the institute is committed to contributing to the harmonious development of the global community by solving fundamental chemical issues.

1. Research

We regard chemistry as a broad area of the natural sciences, and strive for balanced development: the platform of basic research into the true nature of matter serves as a foothold for more applied studies that strive to be flexible and responsive to the challenges of our global society.

2. Education

Through research in an integrated environment of world-class laboratories, we aim to train and develop talented people with broad experience and a high level of problem solving skills, capable of providing leadership towards the harmonious development of the global community.

3. Relationship with Society

As researchers and educators of chemistry, we endeavor to deepen our exchanges with local communities and the Japanese society. We envision contributing to solving global problems through active scientific exchange with international researchers and institutions. Lastly, we commit to our accountability to society through internal review and information disclosure.



X Visitors from Abroad in 2011



X Research Projects

As of April 2012

Research and Education Funding

Joint Usage / Research Center: Frontier/Interdisciplinary Research Core in ICR for Deepening Investigation and Promoting Cooperation in Chemistry-Oriented Fields

Representative from ICR : SATO, Naoki / Term : 2010-2015

MEXT Project of Integrated Research on Chemical Synthesis

Joint Project with CRC (Hokkaido Univ), RCMS (Nagoya Univ), IMCE (Kyushu Univ) Representative from ICR : OZAWA, Fumiyuki / Term : 2010-2015



Global COE Program

The Next Generation of Physics, Spun from Universality & Emergence - Developing Independent Researchers to Explore **New Frontiers-**



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Joint Program with Graduate School of Science (Division of Physics and Astronomy), Kwasan and Hida Observatories, YITP and Research Center for Low Temperature and Materials Sci Representative from ICR : SAKABE, Shuji / Term : 2008-2012

🔀 Human Resource in ICR

Facul	ty						Numb	ers in ()	Represent	Visiting Pr	ofes
Professor	Associate Professor		** Assistant Professor		Technician	PS* Researcher	Sub-total	** Researcher		Sub-total	т
30	19	1	40	6	9	12	117	23	36	59	1
(4)	(4)						(8)				(

*PS: Program Specific ** Including Researchers from Abroad As of July 1, 2012

Researchers(PD) from Abroad

Australia	1	Austria	1	Brazil	1	China, P. R.	4
France	1	Germany	1	India	2	Korea, R.	1
Poland	1	Taiwan	3	Vietnam	1	Total	17
						As of May 1	, 2012

Research Students, Fellows and Associates

	Research Fellow	Postdoctoral Fellow of JSPS	Research Associate	Total
3	2	2	8	15
				As of May 1, 2012

Graduate Students

Graduat	e Students			Numbers in () Represent Students from Abroad.					
	Science	Engineering	Agriculture	Pharmaceutical Sc.	Medicine	Informatics	Human & Envimmntl. Studies	Total	
Master's	40	56	11	16	1	3		127	
Course		(3)	(2)	(3)		(3)		(11)	
Doctoral	38	14	3	15	3	9	1	83	
Course	(1)	(3)	(2)	(4)	(2)	(3)		(15)	
Total	78	70	14	31	4	12	1	210	
Iotai	(1)	(6)	(4)	(7)	(2)	(6)		(26)	
	As of May 1, 2012								

Graduate Students from Abroad

China, P. R.	19	Egypt	1	Korea, R.	1	Philippines	1
Taiwan	3	Thailand	1			Total	26
As of May 1, 2012							

JSPS International Training Program

International Research and Training Program on **Bioinformatics and Systems Biology**

Program Director : MAMITSUKA, Hiroshi / Term : 2009-2013

Life Science Database Integration Projects

Key Technology Development for Data Integration and **Application to Emerging Fields**

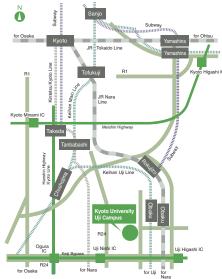
Research Leader : GOTO, Susumu / Term : 2011-2013

Genome-based Integrated Resource for Diseases, Drugs, and **Environmental Substances**

Research Leader : KANEHISA, Minoru (Specially Appointed Professor) / Term : 2011-2013



Institute for Chemical Research, Kyoto University Gokasho, Uji, Kyoto, Japan 611-0011 Tel: +81-774-38-3344 Fax: +81-774-38-3014 E-mail: koho@scl.kyoto-u.ac.jp



Access

From Obaku Station on the JR Nara Line: 7 min by walk (from Kyoto Station to Obaku Station: 20 min) From Obaku Station on the Keihan Uji Line: 10 min by walk (from Sanjo Station to Obaku Station: 35 min) From Kyoto-Minami IC: 20 min by car

From Uji-Higashi IC: 10 min by car / From Uji-Nishi IC: 10 min by car