

Science



Associate Professor *Department of Chemistry*
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Various biological phenomena are cooperated with water-molecules, such as the stabilization of three-dimensional structures of bio-molecules by selective solvation, or molecular recognitions between bio-molecules by orientating water-molecules. However, heretofore, there has not been any method capable of visualizing its cooperation at atomic or molecular-scale under biological environment. Therefore, our group have developed a novel technique for probing liquid-

molecules with atomic resolution, and succeeded in visualizing local hydration structures strongly dependent on atomic or molecular species of bio-molecules. Our group focuses on creating innovative measurement principles, and finding unknown Nanometer-scale or Angstrom-scale worlds in materials. In order to develop novel scientific instruments, we need knowledge and experience in various fields, not only in chemistry and physics but also in mathematics, biology, electronics, information communication technology and so on. If you are interested in creating innovative scientific instruments, come study with us.



International Student United Kingdom of Great Britain and Northern Ireland

Matthew King

I came to Kobe University after finishing my studies in Manchester, aiming to do my doctorate here in Particle Physics. Kobe is proving a good place to live, in addition to the standards of the university; the city being sandwiched between the mountains and the sea means that it's not as imposing as others whilst still having many of the advantages.

The project I am joining is ATLAS, one of the LHC

detectors in CERN, which has recently been receiving a great deal of media coverage. The experiment is designed to observe collisions between extremely high energy protons in the hope of recreating and observing the conditions present shortly after the Big Bang and thus further understanding the physical processes that occurred in those moments. I will only be working on a very small part of the overall detector but it is still exciting to be part of such an ambitious experiment.

Faculty of Science

The Faculty of Science consists of mathematics, physics, chemistry, biology, and earth and planetary sciences. We conduct education and research on fundamental issues in the field of natural sciences, and foster student's creative attitude toward research as well as the ability to directly contribute to society. Students are always encouraged to set their academic goals and endeavor to explore the realities of sciences. For this reason, the Faculty of Science seeks to promote close exchanges between teachers and students, which contributes to the development of fundamental scientific research through mature scientific attitude.

Over 110 teaching staff covers the education for the full quota of 140 undergraduate students every year.

After the 4-year undergraduate course, 70-80% of students proceed to the graduate school, some become high school teachers, and the remaining have a job at public offices including of government, and at private companies.

Graduate School of Science

The Graduate School of Science offers 2-year Master's degree and 3-year Doctoral programs. The school, consisting of mathematics, physics, chemistry, biology, and earth and planetary sciences departments, currently has 240 students studying for the master's degree, and 90 students studying for the doctoral degree. After completing the Master degree's program, many of the students go on to work for private companies as well as in public sectors, utilizing their highly advanced knowledge in the natural science fields. The doctoral program aims at training future researchers who will work at

universities, or research institutes. The students are encouraged to contribute to the development of natural sciences as well as to master fundamentals of research. After completing the Doctoral program, students are granted the Doctor of Science, or the Doctor of Philosophy.

The Graduate School of Science closely links with the following research centers that constitute Kobe University Organization of Advanced Science and Technology: Biosignal Research Center, Research Center for Environmental Genomics, Molecular Photoscience Research Center, Research Center for Inland Seas, and Research Center for Urban Safety and Security. Many professors and associate professors of these centers also teach at the Graduate School of Science, providing high-grade educations using advanced facilities. In addition, the graduate school cooperates with Japan Synchrotron Radiation Research Institute, RIKEN, Shionogi & Co., Ltd., Research Institute of Natural Sciences of Okayama University of Science, National Institute of Advanced Industrial Science and Technology, and

Japan Agency for Marine-Earth Science and Technology. Visiting professors and associate professors from these institutes also contribute to the education of the graduate students.



The Center for Planetary Science (CPS) led by Prof. Yoshitsugu Nakagawa

of the Dept. of Earth and Planetary Sciences, aims to promote cooperation in education and research activities between planetary scientists from different institutions worldwide. It is also meant to provide an environment for multidisciplinary communities where people can assemble, exchange, and accumulate interdisciplinary knowledge and vast information to promote their research in planetary sciences. Importantly, the center will greatly contribute to the education of students not only in the Graduate School of Science of Kobe University but also in any divisions of other universities. CPS activities are supported by the MEXT Global COE program entitled "Foundation of International Center for Planetary Science".

Undergraduate Program

Departments	Research Groups
Mathematics	<ul style="list-style-type: none"> •Analysis •Algebra and Geometry •Applied Mathematics
Physics	<ul style="list-style-type: none"> •Theoretical Physics •Particle Physics •Condensed Matter Physics
Chemistry	<ul style="list-style-type: none"> •Physical Chemistry •Inorganic Chemistry •Organic Chemistry
Biology	<ul style="list-style-type: none"> •Biomolecular Organization •Biosignal Transduction •Biodiversity
Earth and Planetary Sciences	<ul style="list-style-type: none"> •Earth Sciences •Planetary Sciences

Doctoral Program (five years) and Master's Degree Program (two years)

Divisions	Areas
Mathematics	<ul style="list-style-type: none"> •Analysis •Algebra and Geometry •Applied Mathematics
Physics	<ul style="list-style-type: none"> •Theoretical Physics •Particle Physics •Condensed Matter Physics
Chemistry	<ul style="list-style-type: none"> •Physical Chemistry •Inorganic Chemistry •Organic Chemistry •Materials Structure Science
Biology	<ul style="list-style-type: none"> •Biomolecular Organization •Biosignal Transduction •Biodiversity •Developmental Biology •Molecular Pharmacology
Earth and Planetary Sciences	<ul style="list-style-type: none"> •Earth Sciences •Planetary Science •Quaternary Environment Sciences •Atmosphere-Ocean Environment Sciences

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