

INDUSTRIAL



"Nankinhaze" - Chinese tallow tree

A great strength of SPring-8 is the fact that this facility is highly focused on increasing the number of users from industry. Whereas most overseas facilities are focused on protein structure analysis and long-term large-scale businesses, SPring-8 is more pragmatic about its development. In fact, SPring-8 has a good track record of developing industrial applications in various fields, such as electronics, materials, energy, chemical, and environment-related companies, and was used by more than 170 companies in 2007. Applications in areas directly related to everyday life, such as cosmetics, hair care, and dental drug products, have also recently increased. The most important factor contributing to our success in attracting a wide range of industries is the implementation of various utilization propulsion programs at public beamlines, which have been improved continuously. In particular, the dramatic increase in the number of research experiments for industrial users in 2005 was clear due to the Strategic Use of Advanced Large-scale Research Facilities (SUALRF) program (FY2005-FY2006), supported by the Ministry of Education, Culture, Sports, Science and Technology.

APPLICATIONS

The system for industrial use needs more flexibility regarding the carrying out of experiments, such as allowing the immediate use of a beamline after the submission of a proposal and regular use at short intervals. Thus, after the SUALRF program was completed, JASRI implemented a new utilization propulsion program from FY2007 at public beamlines: the Priority Research Proposal (priority field: industrial application). In this program, to better reflect the needs of industrial users, the application system was also improved. For example, in deference to those companies who have indicated that applications twice a year do not match their development cycles, applications can now be submitted 4 times a year for the use of some public beamlines dedicated to industrial research. In view of the patenting process, which is very important for companies, the publication of results in this program will also be postponed for up to two years when a postponement request is accepted. When the postponement ends, companies have an obligation to submit a report to JASRI on the consequences of the postponement.

As of December 2007, SPring-8 accommodates two public beamlines dedicated to industrial use. One is the Engineering Science Research I (BL19B2) beamline, a standard bending magnet beamline, for grazing-incidence X-ray scattering, X-ray reflectivity measurements, powder X-ray diffraction, and X-ray imaging experiments. The other is the Engineering Science Research II (BL14B2) beamline, a brand-new bending magnet beamline dedicated to XAFS measurements. In addition to the two public beamlines, there are three contract beamlines under companies' operation in SPring-8: Industrial Consortium ID (BL16XU), Industrial Consortium BM (BL16B2), and Pharmaceutical Industry (BL32B2). In addition, Hyogo BM (BL08B2) and Hyogo ID (BL24XU), contract beamlines under the local government, are running independent programs for industrial use.

In the present issue, eight topics have been chosen to represent the outstanding work carried out in the various fields of industrial applications from 2006A through 2007A. The topical experiments introduced here were performed using the following techniques: hard X-ray photoelectron spectroscopy (HAXPES; BL47XU), X-ray magnetic circular dichroism and photoemission electron microscopy (XMCD-PEEM; BL25SU and BL17SU), grazing-incidence X-ray diffraction (GIXD; BL19B2), infrared microspectroscopy (BL43IR), X-ray section topography (BL24XU), X-ray microtomography (BL20XU), and X-ray tomography (BL19B2).

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