Industrial


"Niseakashia" - *Robinia*

In 2009, two contract beamlines for industrial application were in operation. The Toyota beamline BL33XU, which is the first beamline in SPring-8 with a tapered undulator, was designed for the dynamic observation of chemical reactions through the XAFS technique. The Frontier Soft Matter Beamline (FSBL) BL03XU was established by the Advanced Softmaterial Beamline Consortium consisting of 19 research groups from both commercial corporations and universities.

On the other hand, the industrial application of SPring-8 in 2009 was largely influenced by the "Lehman Shock", and the number of companies using SPring-8 decreased from 190 to 171 in 2008. In 2009A (the first term of the fiscal year 2009), the number of non-proprietary proposals at public beamlines by companies was as many as that in 2008B (the second term of the fiscal year 2009). However, proprietary proposals markedly decreased in 2009A. In particular, measurement service proposals in 2009A drastically decreased to 22% of that in 2008B. The recovery of the number of proprietary proposals to the normal level occurred in 2009B.

In the present issue, five topics were chosen to represent the works carried out in Industrial Applications. In particular, we focused on outputs using X-ray imaging techniques in this issue, since the last two issues mainly introduced topics obtained by diffractometric or spectroscopic techniques.

Applications

The first topic by Koike *et al*. is about the application of microcomputed tomography (μ-CT) at BL47XU for the development of laser fusion technology for splicing optical fibers. It was clarified that origin of splicing loss was the presence of small inclusions detected by μ-CT at BL47XU. Considering that the result of X-ray fluorescence analysis at BL19B2 elucidated the inclusion to be zirconium compounds, a new splicing process was developed to reduce inclusions.

In the second topic, I am very happy to introduce the output obtained at newly established contract beamline BL03XU. Senoo *et al*. revealed that silica particles of 45 and 110 nm diameters are uniformly dispersed without any aggregation in transparent plastic substrates by SAXS observations at BL03XU and BL08B2.

In the third topic, Sano *et al*. proposed the technique for detecting fatigue cracks inside materials by CT observation at BL19B2. A newly developed holder, which loads tension on specimens to open fatigue cracks, was introduced to visualize inside cracks.

Matsui *et al*. introduced equipment for CT installed at the Hyogo prefectural contract beamlines BL08B2 and BL24XU. The high-speed CT with an acquisition time of 0.144 s should be a very powerful technique for industrial applications.

The technique for elucidating the inner strain of individual steel grains was proposed by Kajiwara *et al*. in the last topic. It was clearly observed that the responses of strain to external stress differed from grain to grain. These four topics show that X-ray imaging is very useful in industrial application for characterizing various types of material.

Ichiro Hirosawa