Materials Science:

"Sakura"- Cherry Blossom

STRUCTURE

An increasing variety of materials has come to Materials Science in SPring-8. This year, two structural studies have been selected for superconducting materials. One is the phase transition research of the well-known fulleride superconductor, Cs_3C_{60}, providing tactics to design the atomic arrangement of a superconductive fulleride. The other is the research about the morphological dependence of superconductivity of a novel promising material, $FeSe_{1-x}$ thin films. Recent years have been marked by the expanding morphological approaches to create characteristic functional properties. The research on the morphotropic phase boundary in ferromagnets by Sen Yang and the study of nano-oriented crystals of iPP with ultrahigh performance crystallized by extreme melt elongation by Kiyoka Okada are major and quite important achievements for the new trend of materials science in SPring-8.

The recent increase in photoinduced reaction research should also be noted. This year, three studies are selected: "Symmetry switch of cobalt ferrocyanide framework by alkaline cation exchange" by Yutaka Moritomo, "Photoindued guest trapping and conversion by photoresponsive nanoporous crystal" by Ryotaro Matsuda and "How do phase-change materials crystallize so fast?" by Noboru Yamada. This is closely related to the improvement of the experimental performance of beamlines for the laser pump and probe diffraction experiment. In addition, the 3D imaging researches using high brilliance, high parallel beam and/or coherence of light source are also increasing.

The materials science in SPring-8 is now undergoing a great change from structural characterization toward sophisticated strategies building advanced material design.

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