Materials Science:

As a powerful probe for structural study, beamlines at SPring-8 has been widely recognized so far in Materials Science. A number of internationally top-class research groups have achieved successful results at the cutting-edge of Materials Science. This year, eight outstanding papers have been selected as Research Frontiers in the research field of Materials Science I, Structure. Magnetism is one of the most attractive and challenging research fields in Synchrotron Radiation Science. In the past few years, Dr. H. Ohsumi (RIKEN) has developed magnetic scattering diffractometry by using the high quality diamond X-ray phase retarder at SPring-8. The collaboration with Dr. H. Takagi' s group has lead to success in the research on the magnetism of the 5*d* metal, Ir, in Sr_2IrO_4. This is a milestone success research on magnetism in synchrotron radiation science. Other topical research has also been carried out on the novel superconductor, LaFeAsO, and fulleride superconductor Cs_3C_{60}, to uncover the mechanism of superconducting behavior. Dr. K. Tashiro of Professor T. Aida' s group revealed the molecular arrangement in a newly developed columnar liquid crystalline assembly by amphiphilic molecular design enabling us to understand its prominent electron transport property.

In recent years, the utilization of SPring-8 facilities by international users has been increasing. As a result, "Fulleride Superconductors are Three-Dimensional Members of the High-T_c Family" by Professor Kosmas Prassides and Professor Matt Rosseinsky (UK), "Nature of Structural Transformations in the B_2O_3 Glass under High Pressure" by Professor Vadim V. Brazhkin (Russia) and "Angular Anomaly in the Dynamic Structure Factor of Graphite close to Bragg Reflections" by Professor Lucia Reining (France) have been selected as outstanding research frontiers this year.

Nano applications of structural measurement are also another trend these days. "Analyses on Crystalline Structures of Carbon Nanowalls by Grazing-incidence X-ray Diffraction using Synchrotron Light Source" by Professor M. Hori (Nagoya University) and "X-ray Diffractometry for the Structure Determination of a Submicrometer-scale Single Powder Grain" by Dr. S. Kimura (JASRI) may open the door to a new research field of photon science in SPring-8.

Masaki Takata

STRUCTURE

"Seiyoukinshibai" - *Aaron's Beard or St. Johnswort*