Call for research proposals
Call for Proposals 2005A:
http://www.spring8.or.jp/e/user_info/c_f_prop-05a-e/
Call for Nanonet Proposals 2005A:
http://www.spring8.or.jp/e/user_info/c_f_nano05A-e/

Beamlines at SPring-8

BL01B1 XAFS
BL02B1 Single Crystal Structure Analysis
BL02B2 Powder Diffraction
BL04B1 High Temperature and High Pressure Research
BL04B2 High Energy X-ray Diffraction
BL05SS Accelerator Beam Diagnosis
BL08W High Energy Inelastic Scattering
BL08B2 Hyogo BM
BL09XU Nuclear Resonant Scattering
BL10XU High Pressure Research
BL11XU JAERI Materials Science II
BL12XU NSRRC ID
BL12B2 NSRRC BM
BL13XU Surface and Interface Structures
BL14B1 JAERI Materials Science I
BL15XU WEBRAM
BL16XU Industrial Consortium ID (SUNBEAM-ID)
BL16B2 Industrial Consortium BM (SUNBEAM-BM)
BL17SU RIKEN Coherent Soft X-ray Spectroscopy
BL19LXU RIKEN SR Physics
BL19B2 Engineering Science Research
BL20XU Medical and Imaging II
BL20B2 Medical and Imaging I
BL22XU JAERI Actinide Science II
BL23SU JAERI Actinide Science I
BL24XU Hyogo ID
BL25SU Soft X-ray Spectroscopy of Solid
BL26B1 RIKEN Structural Genomics I
BL26B2 RIKEN Structural Genomics II
BL27SU Soft X-ray Photochemistry
BL28B2 White Beam X-ray Diffraction
BL29XU RIKEN Coherent X-ray Optics
BL32B2 Pharmaceutical Industry
BL33LEP Laser-Electron Phonon
BL35XU High Resolution Inelastic Scattering
BL37XU Trace Element Analysis
BL38D1 R&D (3)
BL38D2 Accelerator Beam Diagnosis

BL39XU Magnetic Materials

BL40XU High Flux
BL40B2 Structural Biology II
BL41XU Structural Biology I
BL43IR Infrared Materials Science
BL44XU Macromolecular Assemblies
BL44B2 RIKEN Structural Biology II
BL45XU RIKEN Structural Biology I
BL46XU R&D (2)
BL47XU R&D (1)

XRM2005:
The 8th International Conference on X-ray Microscopy, XRM2005, will be held at the Egret Himeji, Hyogo, Japan, from July 26 to 30, 2005.
http://xrm2005.spring8.or.jp/

The First Direct Observation of Ferromagnetism in Gold Nanoparticles

Dr. Y. Yamamoto and Prof. H. Hori (Japan Advanced Institute of Science and Technology, JAIST) in collaboration with SPring-8 researchers, recently provided the first direct evidence of ferromagnetism in gold nanoparticles. Detection of the small ferromagnetic signal from the gold, without background from other materials, was possible using the element specific X-Ray Magnetic Circular Dichroism (XMCD) setup at the Magnetic Materials Beamline, BL39XU. The findings in this study will substantially contribute to understanding of the fundamental magnetism in nanoscale metal particles. In the context of industrial applications, they provide a guideline for the design of novel magnetic nanoparticle materials, including patterned magnetic recording media of extremely high density.


Magnetic Materials Beamline, BL39XU

BL39XU, an undulator beamline, is dedicated to hard X-ray spectroscopy and diffractometry requiring control of the X-ray polarization state. The major applications of the beamline are X-ray magnetic circular dichroism (XMCD) spectroscopy and resonant/non-resonant X-ray magnetic scattering in 3d transition metals and compounds, rare-earth elements, and 5d metals. The most important feature of BL39XU is the tunability in X-ray polarization states; horizontal/vertical linear, right/left circular, or arbitrary elliptical polarizations are available using diamond phase plates. The experimental station is equipped with the two-axis diffractometer with a polarization analyzer, and the XMCD spectrometer. Available sample environments are 20 - 300 K and 2 T using the electromagnet with a closed-cycle helium refrigerator. For further high-field and low-temperature environments, the 10 T superconducting magnet system is ready for use. A helicity-modulation technique at 40 Hz for precise XMCD measurements is routinely used. This technique allows extremely high quality XMCD spectra obtained in a short acquisition time.

Dr. Motohiro BL39XU (Beamline Scientist)

Vacuum Chamber for a Diamond X-ray Phase Retarder

XMCD Spectrometer with a 10 T Superconducting Magnet