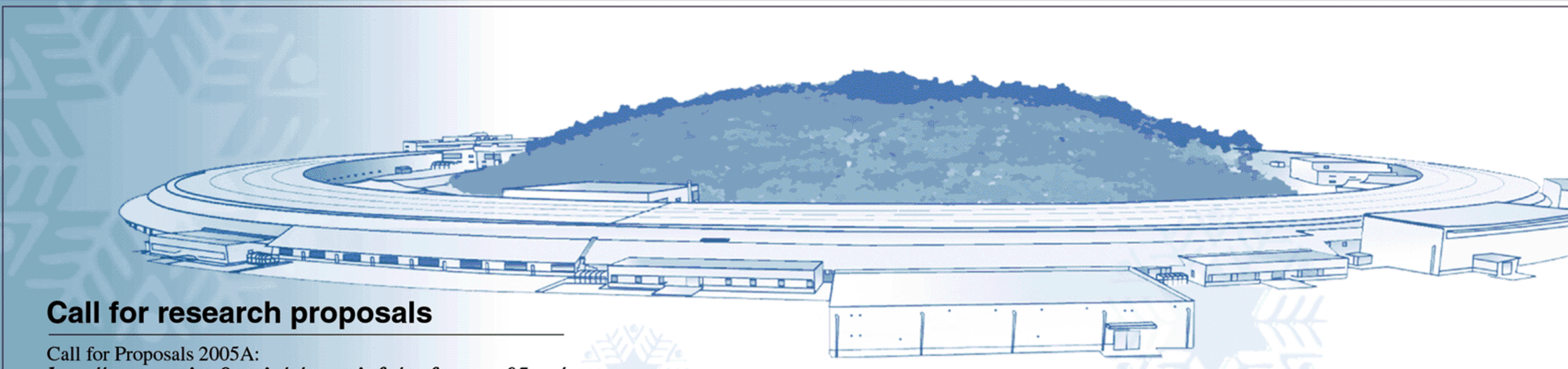


Call for research proposals

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

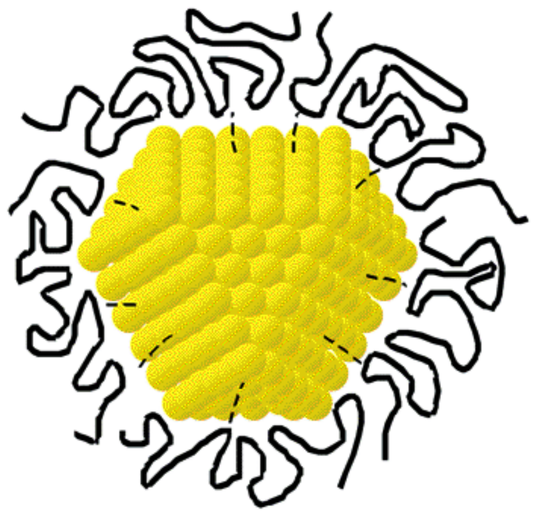
BL01B1	XAFS
BL02B1	Single Crystal Structure Analysis
BL02B2	Powder Diffraction
BL04B1	High Temperature and High Pressure Research
BL04B2	High Energy X-ray Diffraction
BL05SS	Accelerator Beam Diagnosis
BL08W	High Energy Inelastic Scattering
BL08B2	Hyogo BM
BL09XU	Nuclear Resonant Scattering
BL10XU	High 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 Photon
BL35XU	High Resolution Inelastic Scattering
BL37XU	Trace Element Analysis
BL38B1	R&D (3)
BL38B2	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



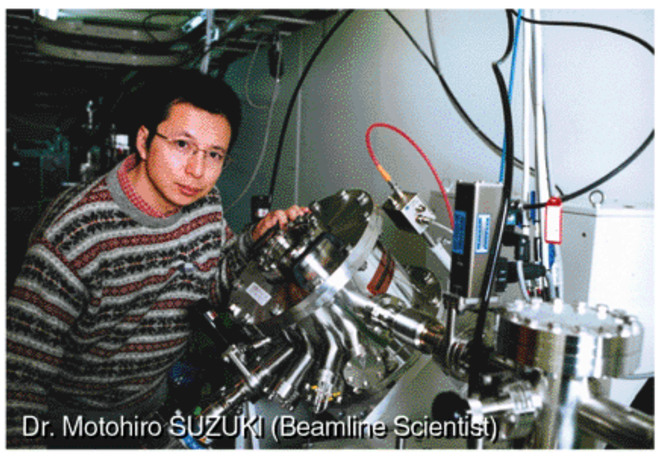
Gold nanoparticles with a mean diameter of 1.9 nm, protected by polyallyl amine hydrochloride (PAAHC-Au)

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.

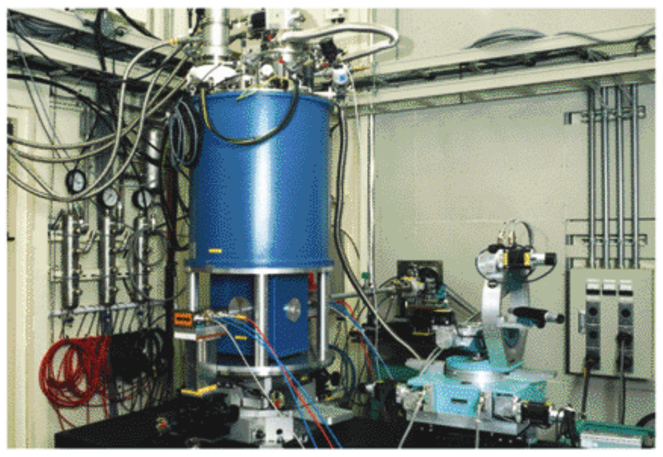
[Reprinted figure with permission from Y. Yamamoto, T. Miura, M. Suzuki, N. Kawamura, H. Miyagawa, T. Nakamura, K. Kobayashi, T. Teranishi, and H. Hori; Phys. Rev. Lett. 93, 116801 (2004). Copyright 2004 by the American Physical Society.]

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.



Vacuum Chamber for a Diamond X-ray Phase Retarder



XMCD Spectrometer with a 10 T Superconducting Magnet

SPring-8 **www.spring8.or.jp**