

# Preface

This issue presents the highlights of research crops harvested at six-year-old SPring-8. In FY2003, SPring-8 started a new scheme to support two national scientific projects: the Protein 3000 Project and the Nanotechnology Researchers Network Project launched by MEXT (Ministry of Education, Culture, Sports, Science and Technology) in 2002.

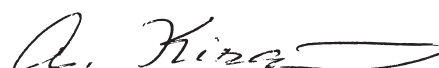
Protein-structure analysis, or structure biology, is a potential research field in utilization of SPring-8. If you look at the list of topics in the SPring-8 Homepage, you will find the dominance of topics of this field. Now, 12 beamlines (out of 46 operating beamlines) are available for this purpose: some are dedicated and some shared for other purposes.

The Nanotechnology Support Program can probably be connected with most fields of materials science, although the funds for the Project are allocated to the limited number of proposals. One of the fields on which SPring-8 puts emphasis is the precision powder diffraction. The sophisticated analysis method combined with precision data available at SPring-8 reveals the electronic structure of molecules or crystals with a small amount of a sample. This method casts light to structure determination of new materials which are usually obtained in a small amount in a form of powder or microcrystal.

The report on a study of a mechanism of an intelligent catalyst for automobiles, featured in Environmental Science in the previous issue, gave engineers a solid confidence that they can convince their company to install the catalyst on commercial cars.

A particle composed of five quarks were first discovered at SPring-8 on a laser inverse Compton beamline, which is called here Laser Electron Photon (LEP). It was fortunate for SPring-8 to operate such a beamline. This peculiar beamline is not for synchrotron radiation in a usual sense and even its existence might harm the quality of synchrotron radiation. Technology of SPring-8 has made LEP compatible with other SR beamlines.

Top-up operation started in May 2004. Many users appreciate it very much with expectation that precision would be improved by constant emission. The report on the technical aspects for realizing the top-up operation is also contained in this volume.



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