

Establishment of Condensed Matter Research Center within Institute of Materials Structure Science

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The Institute of Materials Structure Science (IMSS) of the High Energy Accelerator Research Organization (KEK) has proposed the establishment of Condensed Matter Research Center (CMRC: a tentative name) and invited public participation of the leader of CMRC. I have decided to apply for the position and earned the honor as the leader in July 2008. CMRC is due to begin the activity in April 2009 after a preparation period.

In IMSS, Photon Factory (PF) provides photons with a wide energy range (VUV, soft and hard x-rays) and unique instruments. X-rays are very powerful to understand nano-scale materials structure (atomic positions and electron distribution), while VUV and soft x-rays give the information about the electronic structure of materials. We need both pieces of knowledge to study the basic structure of materials. KEK also provides forefront sources for neutrons and muons in the J-PARC facility jointly with Japan Atomic Energy Agency (JAEA). We understand the importance of the complementary use of photon, neutron, and muon when we want to get the deeper understanding of materials. The mission of CMRC is to make forefront and pioneering researches in strategically selected areas of materials science using these multi-probes. It is also important for the scientific achievement to collaborate with dominant universities and research institutions, especially, SPring-8 and JAEA.

We are now planning the scientific programs, which will be strongly developed at CMRC. The best programs will be selected from a broad range of scientific disciplines. They are reviewed and approved by the advisory committee for CMRC, which will be newly organized. The committee advises the ongoing operations and strategic planning of CMRC. In this stage we are thinking four material systems for the programs: 1. functional materials in strongly correlated electron systems where the keywords are charge, spin, orbital orderings and frustration, 2. magnetic surface and interface structure used in spintronics, 3. functional soft-matter and bio-matter of living organism, 4. Materials under extreme conditions like high pressure and strong magnetic field. We would like to take world leadership in these important areas for condensed matter studies by attracting external funding and cooperation with the user community.