

PREFACE



It is my great pleasure to share our research highlights based on the Photon Factory (PF) users' program during fiscal 2018 (April 2018 - March 2019). Since the PF users' program started in 1983, more than 17,000 research papers have been published. We are proud to have produced a considerable number of papers describing breakthroughs in broad research areas of materials science, chemical science, earth science, life science, and instrumentation and techniques. I hope that this latest issue of PF Highlights will lead to new discoveries in scientific studies.

The PF ring with the beam energy of 2.5 GeV is the oldest and the PF-AR ring of 6.5 GeV is the third oldest of the nine storage rings in operation in Japan. However, only the PF, PF-AR and SPring-8 storage rings have a beam energy exceeding 2 GeV. The PF has led the way in X-ray science as a key facility in Japan for more than 35 years. X-ray science in the PF is also important in combination with other quantum beams such as neutron, muon, and slow positron beams. These quantum beams have been widely used for academic research via several collaboration programs at the Institute of Materials Structure Science (IMSS), one of the 17 Inter-University Research Institutes.

We have several review committees for our projects in photon science and materials structure science using quantum beams. In March 2019, we held the first meeting of the KEK Scientific Advisory Committee, which reported the following recommendation for the PF:

It is clear that new science at light sources may not always require the brightest and most coherent sources. Rather, as was highlighted in the presentations, there is room for a range of facilities. The PF is well placed to make this evaluation and, based on it, deliver what is needed. It needs to prioritize its areas to develop.

The industry program represents more than an income stream. It is a tool for engaging new users and enhances community outreach. It also highlights to funders a return on investment that is tangible to the community. With this in mind the PF should review its partnership program and extend it to other areas of science. From a purely financial perspective this will offset the reliance on additional income from its crystallography service business.

Multi beamline access at light source facilities is increasing worldwide as a result of demands of multidisciplinary large-scale scientific projects. The PF represents a comparatively large user base within KEK and as such multi beamline access could take on a unique dimension. The KEK quantum beam platform represents an exceptional worldwide opportunity. Synergies between the photon and neutron beam user base might be a good starting point and novice users should be encouraged through a targeted education program and elements of a linked proposal system.

Considering these comments, we started discussing what we and users need from the PF in the short, medium and long term, in leading photon science and in enhancing our quantum beam combination research platform.

Finally, it is with great sadness that we report the passing away of Kazutake Kohra, Professor Emeritus of KEK, on 30 January 2019 at the age of 97. He was the founding director of the PF, which was commissioned in 1982. The realization and success of the PF would have been impossible without his remarkable leadership. We would like to extend our deepest sympathies to his family.

Nobuhiro Kosugi
Director of IMSS

A handwritten signature in black ink, appearing to read 'Nobuhiro Kosugi'.