

PREFACE

It is my great pleasure to share our research highlights based on the Photon Factory (PF) users' program during the fiscal year 2019 (April 2019 – March 2020). Since the PF users' program started in 1983, about 19,000 research papers have been published. We are proud to have produced a considerable number of papers describing breakthroughs in broad 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 launched its new organization on April 1, 2019, to strengthen its facility and research capabilities. While many synchrotron-radiation facilities have been built or planned around the world, the PF has been reborn by returning to its roots. The first mission of the PF is to provide new techniques and young people to lead synchrotron-radiation science through research and development. The second mission is to promote various researches related to materials and life as an advanced infrastructure facility.

If the 1980s marked the dawn of synchrotron-radiation science, we need to move in a new direction to make the 2020s a second dawn. In the world, low emittance synchrotron-radiation facilities are becoming more and more common, but this is also placing greater technical constraints on operating their light sources. We will increase the flexibility of our light sources and open up new research areas by our only one and number one beamlines with characteristic synchrotron-radiation beams.

Specifically, as a short-term plan, we will upgrade the PF ring as soon as possible. We would also like to construct or renovate beamlines, such as a dedicated R&D beamline and a medical imaging beamline using a large interferometer with a vertical wiggler. As a long-term plan, we are working on a new synchrotron-radiation facility to significantly improve the flexibility of light sources. In the next issue of PF Highlights, we hope to introduce the conceptual design of the "Hybrid Ring", which is a candidate for our new facility. We will conduct R&D in the upgraded PF and refine the conceptual design by exchanging opinions with users.

Finally, it is with great sadness that we report the passing away of Taizo Sasaki, Professor Emeritus of KEK, on 20 September 2019 at the age of 95. He was the second director of the PF. The success of the PF would not have been possible without his remarkable leadership. We would like to extend our deepest sympathies to his family.



Nobumasa Funamori
Director of Photon Factory

