

JSR – XFELs, DLSRs and beamline articles

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The past years have seen spectacular advances in the technical development and use of accelerator-based light sources. For example, the extremely bright femtosecond flashes generated by X-ray free-electron lasers (XFELs) now make serial protein nanocrystallography and intriguing time-resolved spectroscopy experiments possible, enabling researchers to enter completely unknown territories in key areas relevant to pharmacy, energy storage, catalysis and materials engineering. It is difficult to keep up with the dazzling speed with which the currently operating XFEL and XUV-FEL facilities FLASH (Hamburg, Germany), LCLS (Stanford, USA), SACLA (Hyogo, Japan) and FERMI (Trieste, Italy) move forward, providing their users with highly controlled X-ray pulses, sophisticated beamlines and advanced pixelated detectors. With the advent of more XFELs in the coming years, namely the European XFEL (Hamburg, Germany), PAL-XFEL (Pohang, Republic of Korea) and SwissFEL (Villigen, Switzerland), science breakthroughs will grow in number at an accelerated pace. It is a strong wish of the Main Editors of the *Journal of Synchrotron Radiation (JSR)* and of the Editor-in-Chief of IUCr journals, Samar Hasnain, that *JSR* plays a significant role in these fascinating developments by attracting papers describing XFEL technology and science. We want to increase our visibility in this area by publishing special issues of the journal on XFEL topics. Our colleague Editor Ilme Schlichting has now taken the initiative for a first special XFEL issue, which is expected to appear in 2015. We are also attracting Co-editors working at XFEL laboratories (recently Makina Yabashi and Masaki Yamamoto).

Synchrotron radiation facilities based on electron storage rings are making major advances as well. By changing the storage ring lattice into a so-called multi-bend achromat (MBA) magnet lattice, one may boost the source brilliance by one to three orders of magnitude. MBA lattices were proposed as early as the 1990s but their technical realization was too risky at the time. This situation has now changed; the feasibility of the MBA lattice has been demonstrated at MAX-lab (Lund, Sweden). The MAX IV facility, presently under construction, will be the first with an MBA lattice. Then SIRIUS (Campinas, Brazil) and a sizeable number of other facilities will follow at the end of the decade or early in the next decade. *JSR* has covered these developments in detail in the special issue *Diffraction-Limited Storage Rings and New Science Opportunities* (Volume 21, Part 5, September 2014 issue). In that volume one can read how a strongly enhanced brilliance enables for example a much faster imaging of extended objects than before. Four-dimensional imaging on the time scale of milliseconds will be possible, which is complementary to the much faster imaging times of smaller objects at an XFEL. For the first time we may be able to bridge the so-called ‘imaging gap’ between the macroscopic world and the nano-world. *JSR* has the ambition to become the premier publication medium for authors describing MBA-enabled technology and science.

Even with all these fascinating light source developments yet to be fully implemented, *JSR* has seen over the past years a growing number of submissions

and in 2013 even a 37% increase in impact factor to 3.022. We are proud of this trend but, as stated above, we see potential for a further increase of the journal's visibility. In this connection we would like to remind our readers of the possibility to submit 'Beamline Articles' (see *Notes for Authors*). These brief articles provide details of beamlines or beamline components available to users at synchrotron and XFEL facilities around the world. They provide an overview to allow potential users to understand the beamline capabilities, act as

an archival reference for research performed on the beamline, and serve as a standard reference cited by beamline users. We welcome the submission of 'Beamline Articles'!

We thank the readers of the *Journal of Synchrotron Radiation* for their continued interest in the journal topics, the authors for publishing in our journal, and the Co-editors and reviewers for their great services to the community. We wish you all a scientifically rewarding year 2015.