JOURNAL OF SYNCHROTRON RADIATION
ISSN 1600-5775

# Current events

## 1. European XFEL inaugurated and has first users

The European XFEL, the largest and most powerful X-ray laser in the world, was officially inaugurated on 1 September 2017. Research ministers and other prominent guests from across Europe joined the European XFEL Managing Directors to officially start the research operation of the facility with the first two experiments.

Professor Dr Johanna Wanka, German Minister for Education and Research, stressed the importance of the new international research facility: "The establishment of the European XFEL has created a unique cutting-edge research facility, which promises ground-breaking insights into the nanocosmos. The foundations for tomorrow's innovations are laid by today's basic research."

European XFEL Managing Director Professor Dr Robert Feidenhans'l said: "We are proud to be opening the strongest X-ray laser in the world and start doing science together with our user community. The European XFEL is a unique facility that will open the door to new areas of science." And Professor Dr Helmut Dosch, Chairman of the DESY Board of Directors, added: "What started as a vision and was set in motion at DESY more than 20 years ago has now become a reality: the world's most powerful laser for X-ray light. Now scientists from around the world will conduct research at this most advanced high-speed camera for the nanocosmos in the world, and I wish them many exciting results, both fundamental and revolutionary."

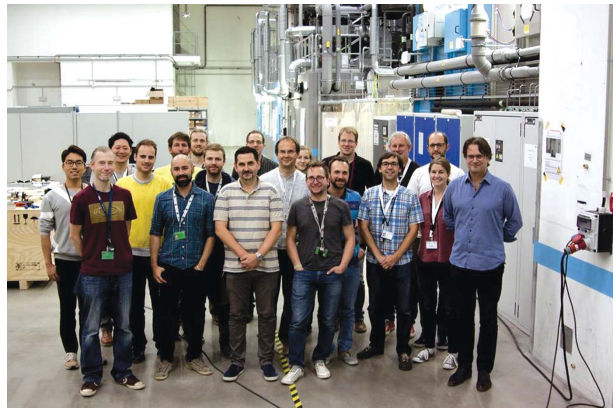
The first two instruments available for users in the underground experiment hall are the FXE (Femtosecond X-ray Experiments) instrument and the SPB/SFX (Single Particles, Clusters and Biomolecules and Serial Femtosecond Crystallography) instrument.

The FXE instrument will enable the research of extremely fast processes. It will be possible to create 'molecular movies' showing the progression of chemical reactions which, for example, will help improve our understanding of how catalysts work, or how plants convert light into usable chemical energy. The first seven experiments conducted at FXE highlight the range of methods available at the instrument and the diversity of topics of study possible. Experiments will include using different spectroscopy methods to track ultrafast reactions and electron movement in model molecules, probing organic light-emitting diodes, and investigating the recombination of nitrogen and oxygen in the muscle tissue protein myoglobin.

The SPB/SFX instrument will be used to gain a better understanding of the shape and function of biomolecules, such as proteins, that are otherwise difficult to study. Several of the seven first experiments at this instrument will focus on method development for these new research opportunities at European XFEL or ways to reduce the amount of precious sample used for the examination of biological processes. Other groups will be studying biological structures and processes such as the Melbourne virus and the water splitting process in photosynthesis.

The construction and operation of the facility is entrusted to the European XFEL GmbH, a non-profit company that cooperates closely with the research centre DESY and other organizations worldwide.





The first user group at the FXE instrument.

The first user group at the SPB/SFX instrument.

At present, 11 countries have signed the European XFEL convention: Denmark, France, Germany, Hungary, Italy, Poland, Russia, Slovakia, Spain, Sweden and Switzerland. The UK is in the process of joining. For more information on the European XFEL go to https://www.xfel.eu.

### 2. Diamond and SPring-8 light sources celebrate anniversaries

In October, the world synchrotron community gathered at the historic Himeji Castle in Hyogo Prefecture in Japan to mark the occasion of the 20th anniversary of user operations at the SPring-8 synchrotron. Over 500 guests joined industry leaders and politicians from Japan, and directors of the majority of the world's major synchrotrons to mark the occasion.

There were photographs on display of all the synchrotrons that sent directors or representatives to the event. "It was an opportunity for those of us who manage synchrotron facilities to congratulate SPring-8 on the milestone and get together to discuss the application of synchrotron science to meet future challenges", said Professor Andrew Peele, Director of the Australian Synchrotron. "Synchrotron science using X-rays and infrared light continues to be a powerful and invaluable tool in investigating the nature of materials for practical applications."

The SPring-8 synchrotron, the world's largest third-generation synchrotron, opened to national and international users from industry, academia and government in 1997. The synchrotron radiation facility operates with a beam energy of 8 GeV and has 62 beamlines.

Also in October, Diamond Light Source marked ten years since Her Majesty Queen Elizabeth II and Prince Philip, Duke of Edinburgh, officially opened the facility.

For the past ten years Diamond has exceeded expectations with 2017 marking 6000 peer-reviewed journal articles, academic and industrial users now exceeding 9000 visits a year, and a total of 60000 visitors ranging from undergraduates and graduates, secondary school students, to members of the public.

Professor Andrew Harrison, current CEO at Diamond observed: "With these achievements in mind, all I can say is that I am humbled and proud to be at the head of such a great project, made possible by the dedication of our current and former staff, contractors and user community from academia and industry. Let us not forget we are here as the result of the vision of the UK Government and the Wellcome Trust had to invest together 15 years ago. We are all looking forward to an even brighter future!".

Views of SPring-8 (left) and Diamond Light Source (right) from above.