Beamline ID19: a versatile station for time-resolved hard X-ray microimaging

Alexander Rack

European Synchrotron Radiation Facility, Grenoble, France
alexander.rack@esrf.fr

The ESRF is the worldwide leader in parallel-beam synchrotron radiation (SR) X-ray imaging. Especially beamline ID19 has become a reference instrument for SR-based X-ray phase contrast microtomography and -radiography. A substantial evolution of the present ID19 beamline is aiming to optimize it for multiscale applications of parallel and coherent imaging techniques as well as the use of polychromatic radiation for (ultra-)short exposure times, i.e. time-resolved imaging.

The potential of hard X-ray imaging to tackle scientific questions especially related to materials sciences can be substantially increased when the dimension time is accessible. Nowadays, unprecedented temporal resolution with hard X-ray imaging can be reached at synchrotron light sources thanks to high-speed CMOS cameras: the latest generation allows in combination with fast scintillators to separate individual bunches from the storage ring.

This presentation will summarise the advantages and possibilities of beamline ID19 and its experimental infrastructure to benefit from imaging using short pulses along recent example studies such as gas gun for impact or a split hopkinson pressure bar.