

# PUSHING THE LIMITS.

## Beamline P06 at PETRA III – a perfect tool for nano science

The hard X-ray Micro/Nano-Probe beamline P06 at PETRA III provides advanced visualisation with micro/nanoscale spatial resolution using different X-ray techniques:

- X-ray fluorescence (XRF)
- X-ray absorption spectroscopy (XAS)
- X-ray diffraction (XRD)
- imaging (absorption, phase contrast)
- small angle scattering (SAXS)

Coherent X-ray diffraction imaging (CXDI) applying ptychographic scanning schemes enables X-ray microscopy with even higher spatial resolution down to the low nanometer range. Experiments cover various fields of science, like materials science, biology, environmental science and chemistry.

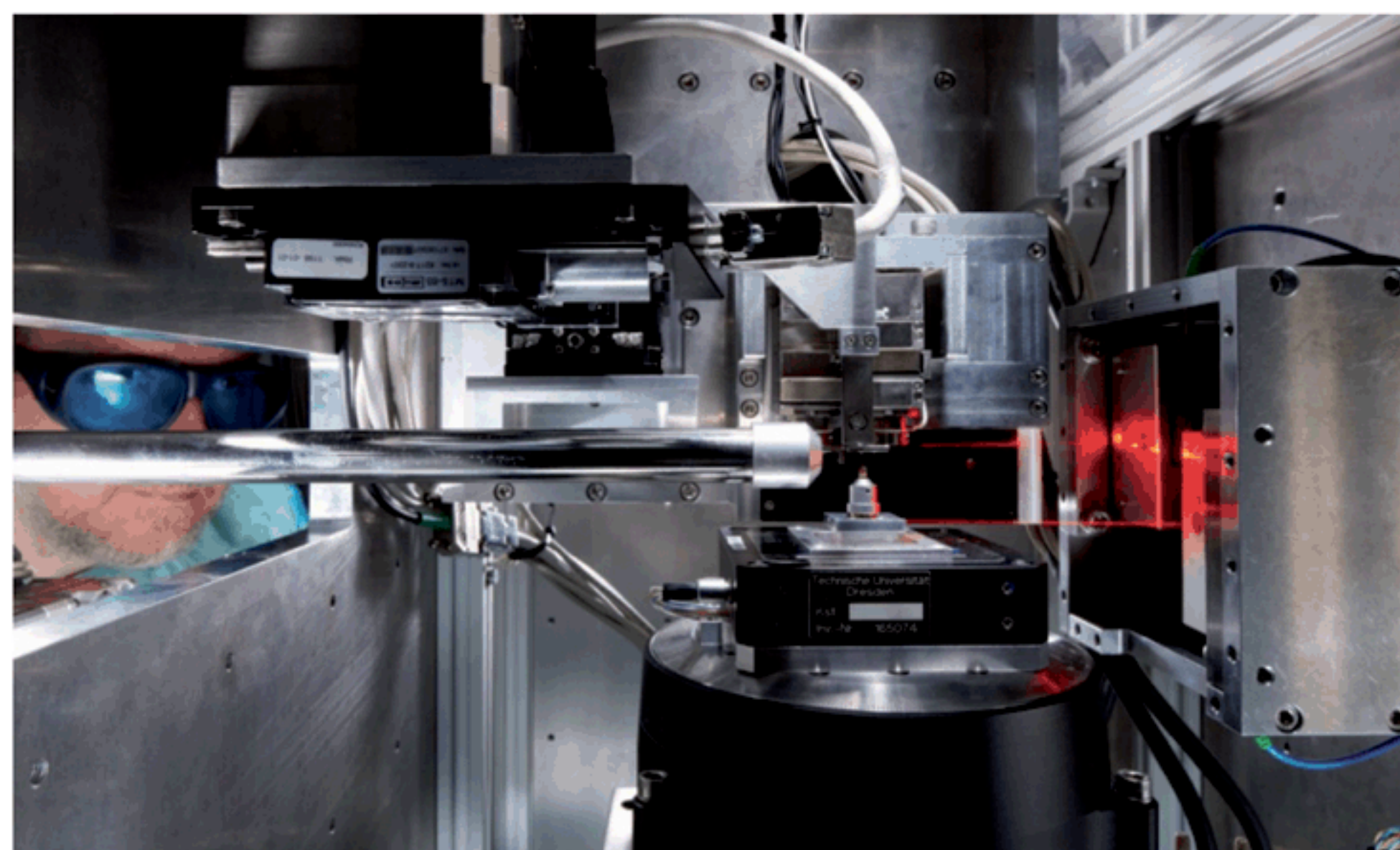
The beamline houses two different experiments in separate hutches: The Nanoprobe is open for user applications. The commissioning of additional beamline optics (broad-band monochromator, pre-focusing) is in progress, available experimental techniques are micro-SAXS/WAXS.

The Microprobe is currently under commissioning. Depending on the feasibility of the individual experiment, proposals for the microprobe will be considered.

Currently the beamline uses Nanofocusing lenses (NFL), Compound refractive lenses (CRL), KB-mirror systems and Fresnel zone plates as focusing optics.

### Contact:

- [www.desy.de](http://www.desy.de)
- [hasylab.desy.de](http://hasylab.desy.de)



Another “focus” of the beamline, tackled in close cooperation with the group of Christian Schroer from TU Dresden, is to develop even more advanced optics to squeeze the X-ray spot size down to one nanometre in the future.

### Beam parameters of P06 Microprobe:

- Energy range: 5-23 keV (KB mirrors) 15-90 keV (CRL)
- Focus size: 250 x 250 nm<sup>2</sup> 10<sup>11</sup> ph/s (KB mirrors) and 500 x 1500 nm<sup>2</sup> 10<sup>10</sup> ph/s (CRL)
- Working distance: > 150 mm

### Beam parameters of P06 Nanoprobe:

- Energy range: 5-10 keV (FZP) 10-30 keV (NFL)
- Focus size: 25 x 25 nm<sup>2</sup> 10<sup>8</sup> ph/s (FZP) and 80 x 80 nm<sup>2</sup> 10<sup>7</sup> ph/s (NFL) without pre-focusing
- Working distance: > 2 mm

