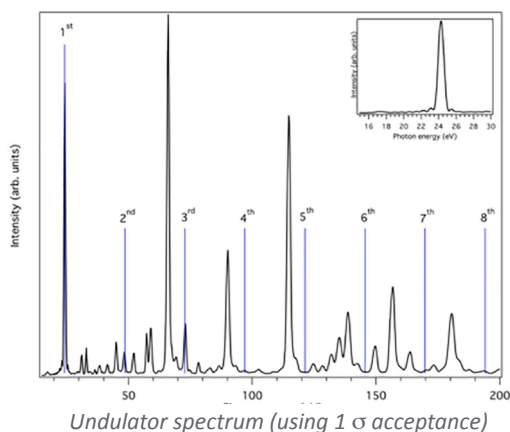


# Facility Update

## Bloch in commissioning

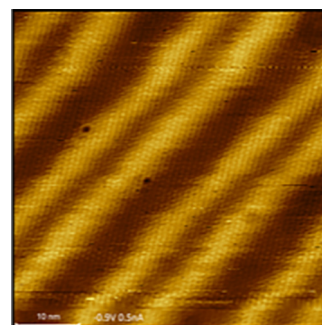
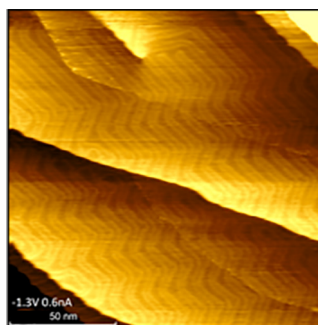
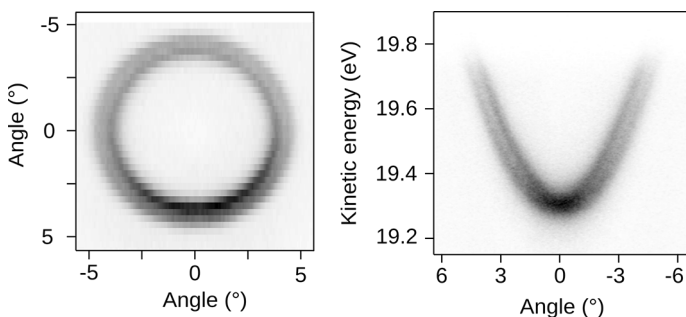
The Bloch beamline on the 1.5 GeV ring of MAX IV has now entered a commissioning phase. This beamline is designed for the preparation and study of novel materials, offering a powerful combination of ARPES (angle resolved photoemission spectroscopy), spin-resolved ARPES, core-level spectroscopy, low energy electron diffraction and scanning tunneling microscopy (STM).

Photons are produced by an in-house built 'Apple II' 84mm quasi-periodic, elliptically polarizing undulator (qEPU) with full control of the light polarization.



A combination of a cNIM and a cPGM monochromator (Toyama) with 4 interchangeable gratings results in a photon energy range of 10-1000 eV. Presently, an 800 lines/mm grating (cPGM) and a 4000 lines/mm grating (cNIM) are installed. The two remaining cPGM gratings, a 92 lines/mm for high flux and a 2400 lines/mm for ultimate energy resolution (1 meV below 100 eV) will be installed in Q3 2018. The expected size of the light spot at the sample position is 40x10  $\mu\text{m}$  (HxV). Higher order light suppression is achieved by a combination of a gas filter, solid state filters and the qEPU.

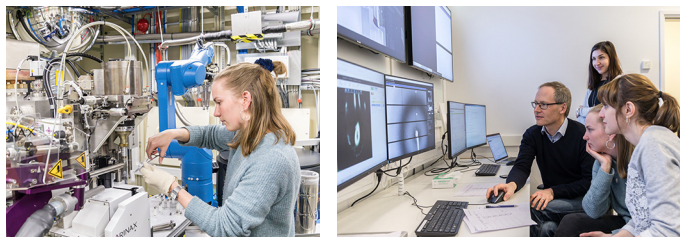
First light into the ARPES end station was achieved in the beginning of April 2018. The undulator and the ARPES end station is under commissioning. Preliminary results are encouraging, and indicate that with proper commissioning the beamline and the end station will achieve the targeted level of performance. The Spin ARPES end station is in the design stage and is expected to be delivered in Q4 2018. The end station will be provided by PREVAC Sp. z o.o, with an electron analyser combined with a 3D VLEED spin detector from Specs GmbH.



Atomic resolution STM images of the 'herringbone' reconstruction of Au(111)

## BioMAX in operation

Recently, the first MX beamline of MAX IV, BioMAX, started regular user operations. Although the beamline is still under commissioning, users are welcome to perform their research using this new member of the most productive European MX-beamlines. With average data collection times between 10-20 seconds, the beamline has already reached a good base performance level, which will soon increase substantially after the new sample changer is made available. Software maturation of the newly developed MXCuBe3 user interface and beamline controls is happening on a daily basis.



User group from Aarhus University doing experiments at BioMAX

Regular operation has led so far to 114 visits from users, who submitted 36 highly ranked scientific proposals. Altogether our users have collected 2,999,731 diffraction images from 1213 crystals, resulting in 943 complete data sets.

The BioMAX team together with MAX IV are looking forward to open the facility to a constantly increasing number of users. Therefore, we launched recently our third user-call for the beam period between October 2018 and June 2019.

