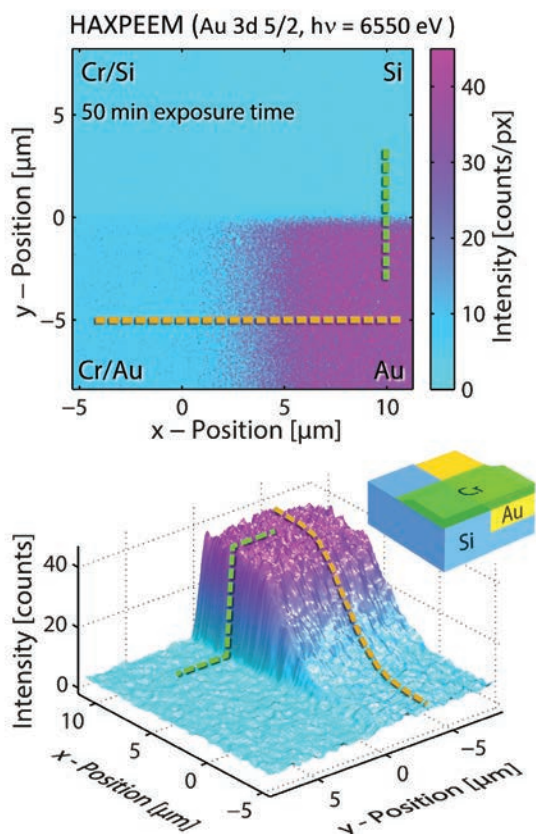


# HAXPEEM

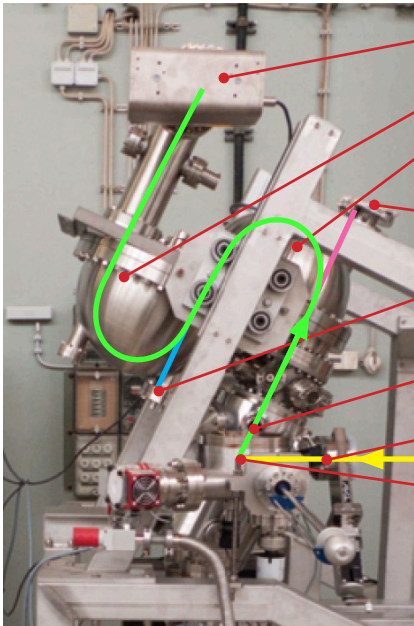
## 3D-HAXPES UP TO 10 keV

- Imaging HAXPES (3D-HAXPES)
- High Resolution Energy filtered PEEM
- Momentum Microscopy /  $\mu$ -ARPES
- Small Area Spectroscopy
- Energy Range from 0 to 10 keV
- Aberration Compensated Imaging Double Sphere Filter (patented)
- Based on the NanoESCA III Design
- High Transmission
- True 2D Event Counting



Ref.: M.Patt, C. Wiemann, N. Weber, M. Escher, A. Gloskovskii, W. Drube, M. Merkel, C. M. Schneider, Rev. Sci. Instrum., **85**, 1137 (2014)

# HAXPEEM: Essentials



- imaging detector (energy filtered)
- 2<sup>nd</sup> hemisphere
- 1<sup>st</sup> hemisphere
- imaging detector (PEEM image)
- channeltron detector
- path of photo electrons
- synchrotron light
- sample position

## Field of view (FoV)

Real space 6 ... 800  $\mu\text{m}$   
 k-space  $> \pm 3.0 \text{ \AA}^{-1}$

## Lateral resolution

NanoESCA III mode  $< 40 \text{ nm}$  (20 nm achieved)  
 HAXPEEM @ 6.5 keV  $< 500 \text{ nm}$  (410 nm achieved)  
**k-space resolution**  $0.05 \text{ \AA}^{-1}$  (0.008  $\text{ \AA}^{-1}$  achieved)

## Kinetic energy range

NanoESCA III mode 0 ... 200 eV (0 ... 1600 eV opt.)  
 HAXPEEM mode 0 ... 10 keV

## Energy resolution

NanoESCA III  $< 25 \text{ meV}$  @ 0 ... 200 eV  
 $< 50 \text{ meV}$  @ 0 ... 1.6 keV  
 HAXPEEM  $< 100 \text{ meV}$  @ 0 ... 10 keV

1<sup>st</sup> dedicated HAXPEEM up to 10 keV operated @ PETRA III, Hamburg

- Manually driven iris field aperture** FoV range 0...200  $\mu\text{m}$
- Piezo driven contrast aperture (CA)** 5 aperture sizes, x/y adjustable
- Position read out for IS stage and CA** accuracy 10  $\mu\text{m}$
- 2D event counting for single electron detection**  $2 \times 10^5$  counts/sec max. count rate
- Integrated x/y sample stage (IS stage)** piezo driven, x/y:  $\pm 4 \text{ mm}$  (option)
- LHe cooled sample stage** On request

