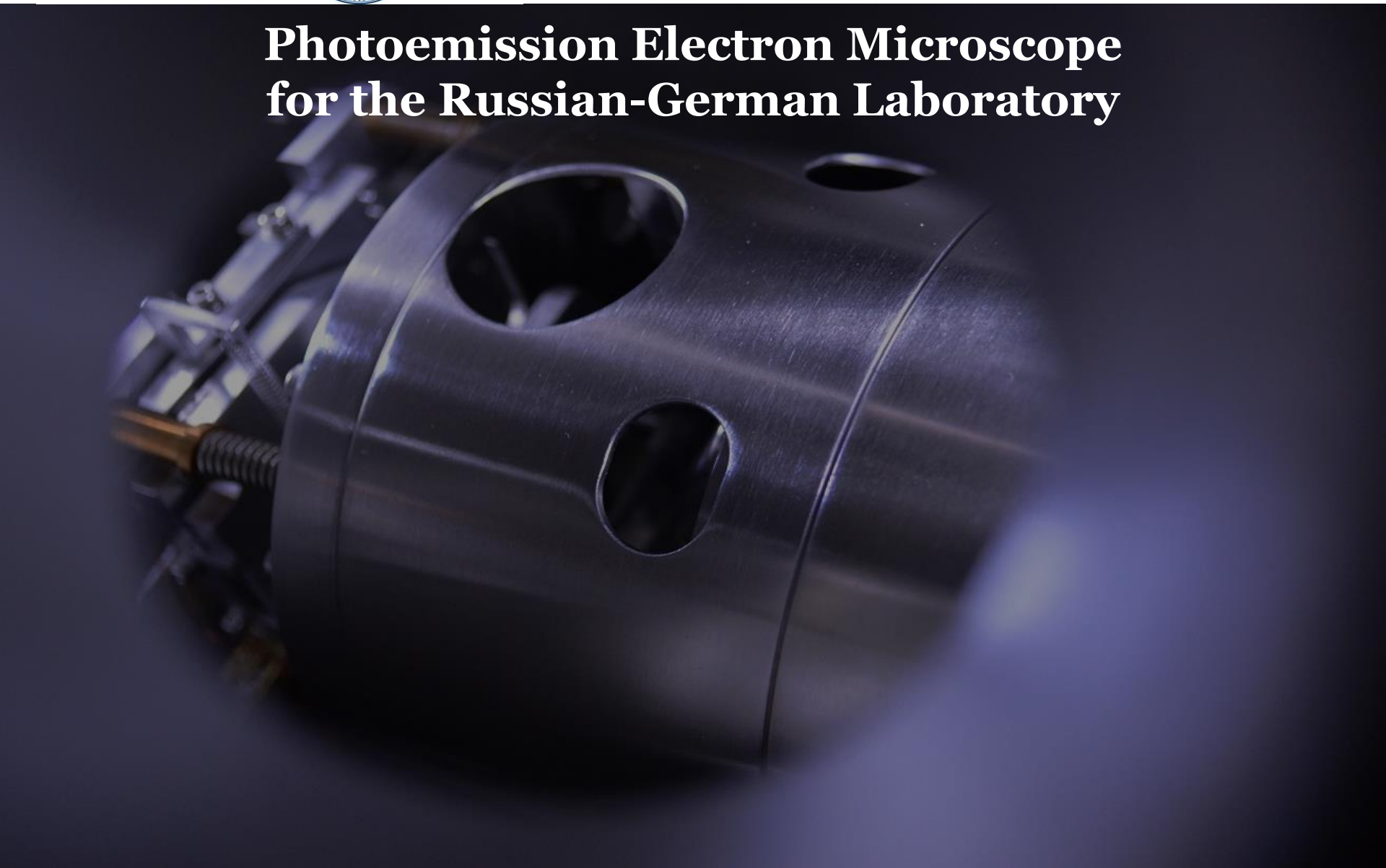
Freie Universität Berlin

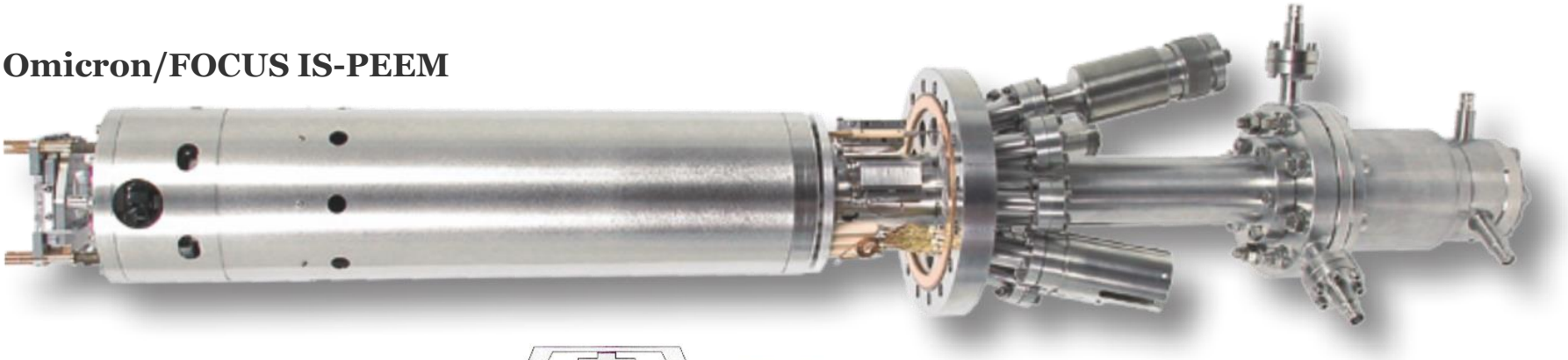
HZB Helmholtz Zentrum Berlin

Photoemission Electron Microscope for the Russian-German Laboratory

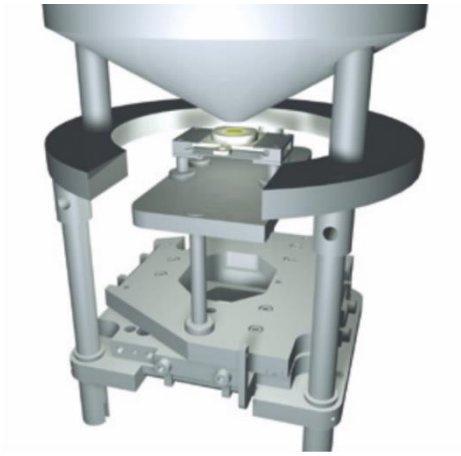


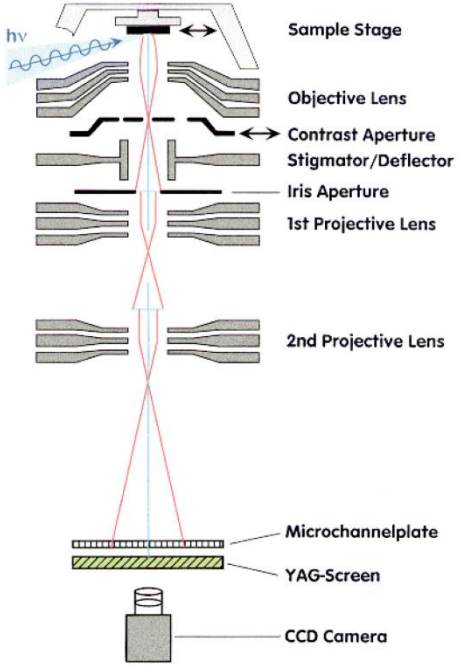
FOCUS PEEM Photo Emission Electron Microscope

Omicron/FOCUS IS-PEEM

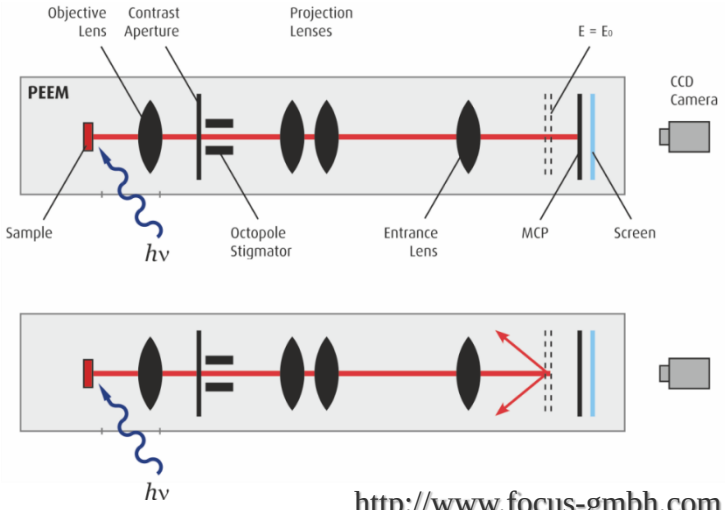


Integrated sample stage





Retarding imaging energy filter



http://www.focus-gmbh.com

G. Schönhense, J. Phys.: Condens. Matter 11, 9517 (1999)

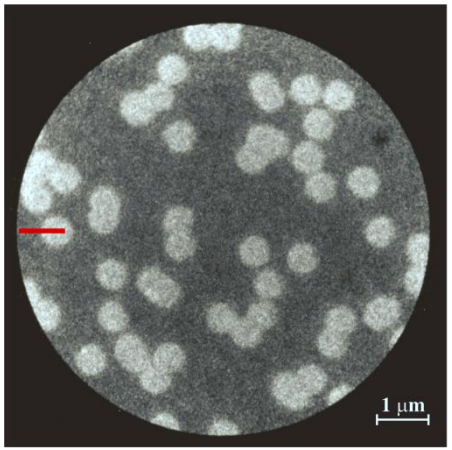
FOCUS PEEM Photo Emission Electron Microscope

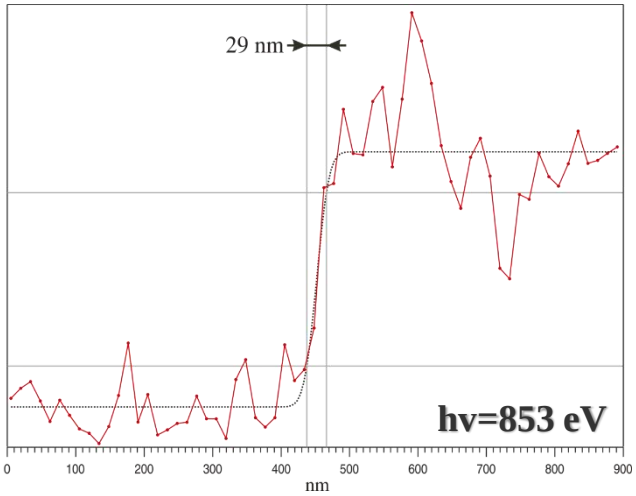
Omicron An Oxford Instruments Company

FOCUS GmbH

Various contrast mechanisms:

- **work function**
- **topographic**
- **chemical**
- **magnetic**

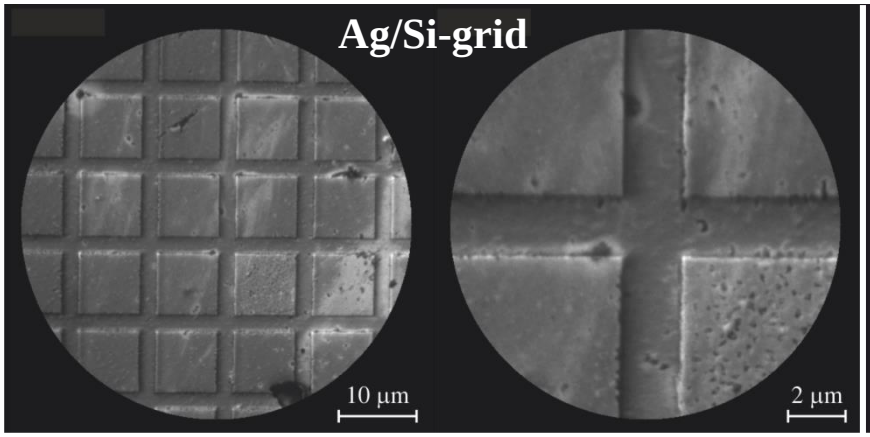


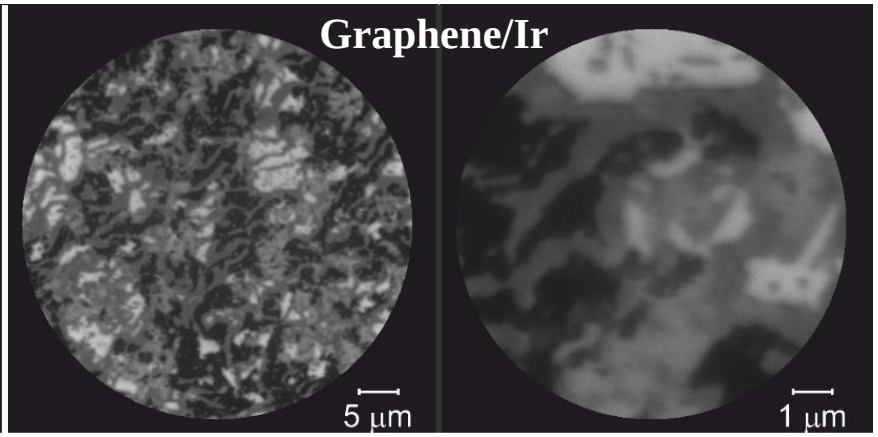


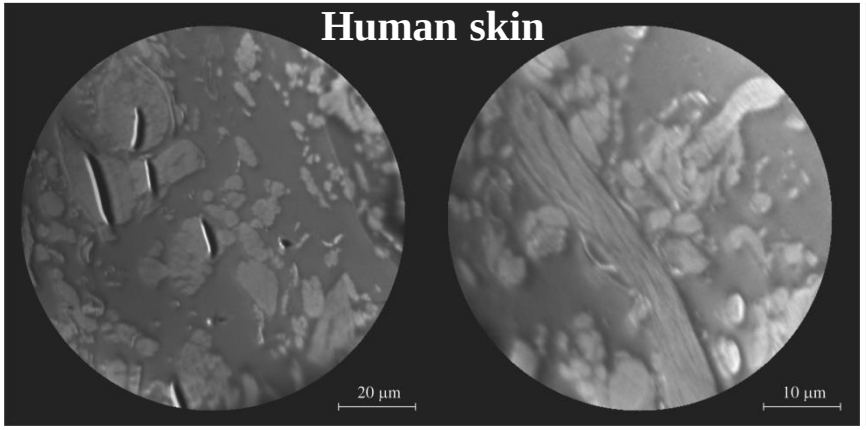
30 nm lateral resolution

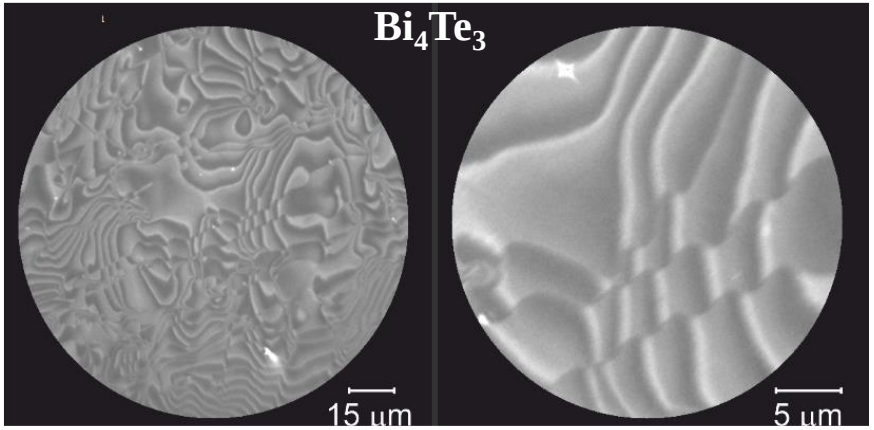
Microscopy | **Spectromicroscopy** | **Microspectroscopy** | **k-space imaging**

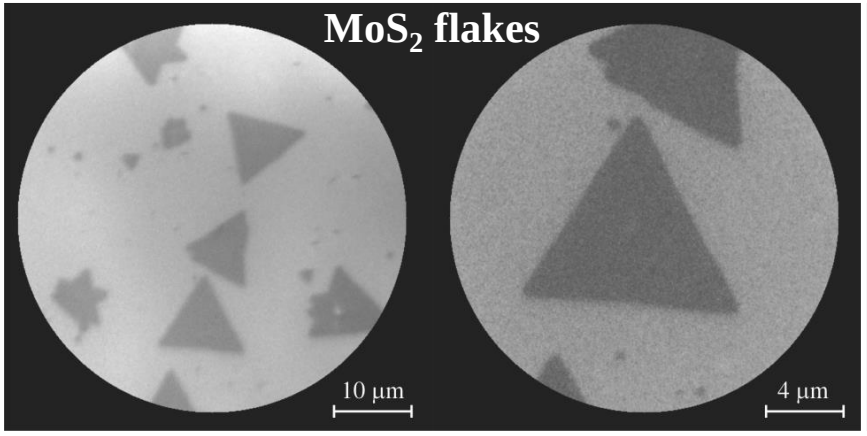
Microscopy

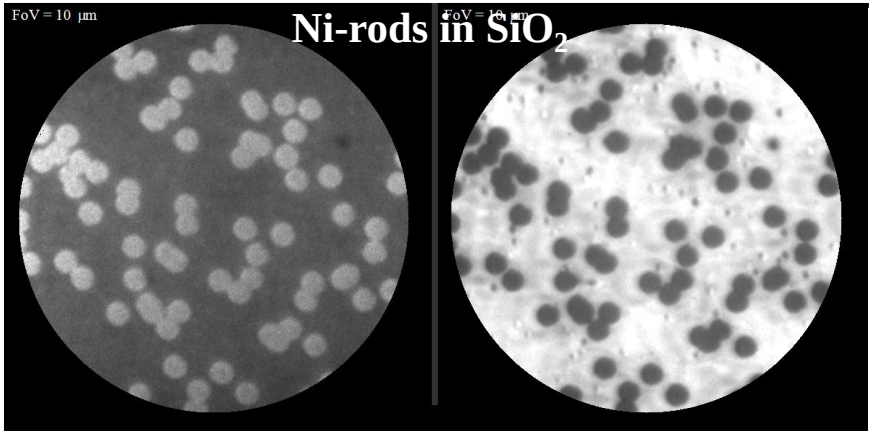

Ag/Si-grid
10 µm
2 µm


Graphene/Ir
5 µm
1 µm


Human skin
20 µm
10 µm

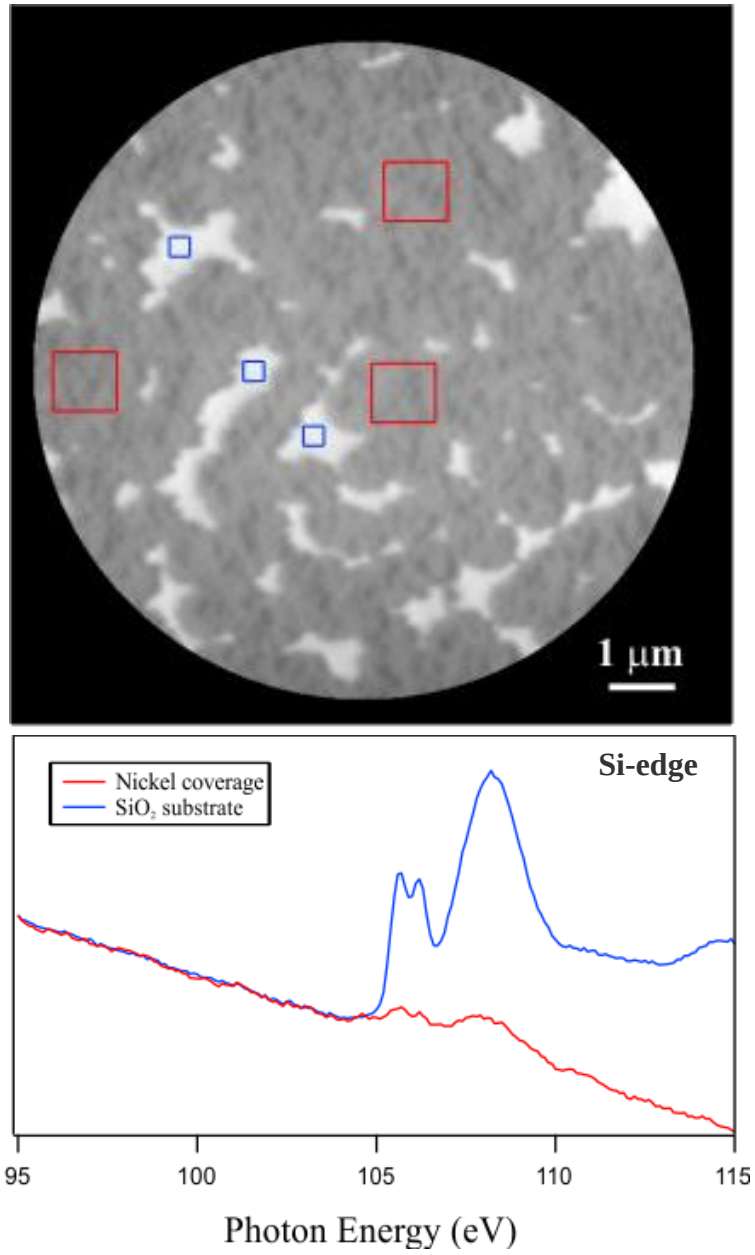

Bi_4Te_3
15 µm
5 µm


MoS_2 flakes
10 µm
4 µm


FoV = 10 µm
Ni-rods in SiO_2

Microspectroscopy

XAS with lateral resolution



Spectromicroscopy

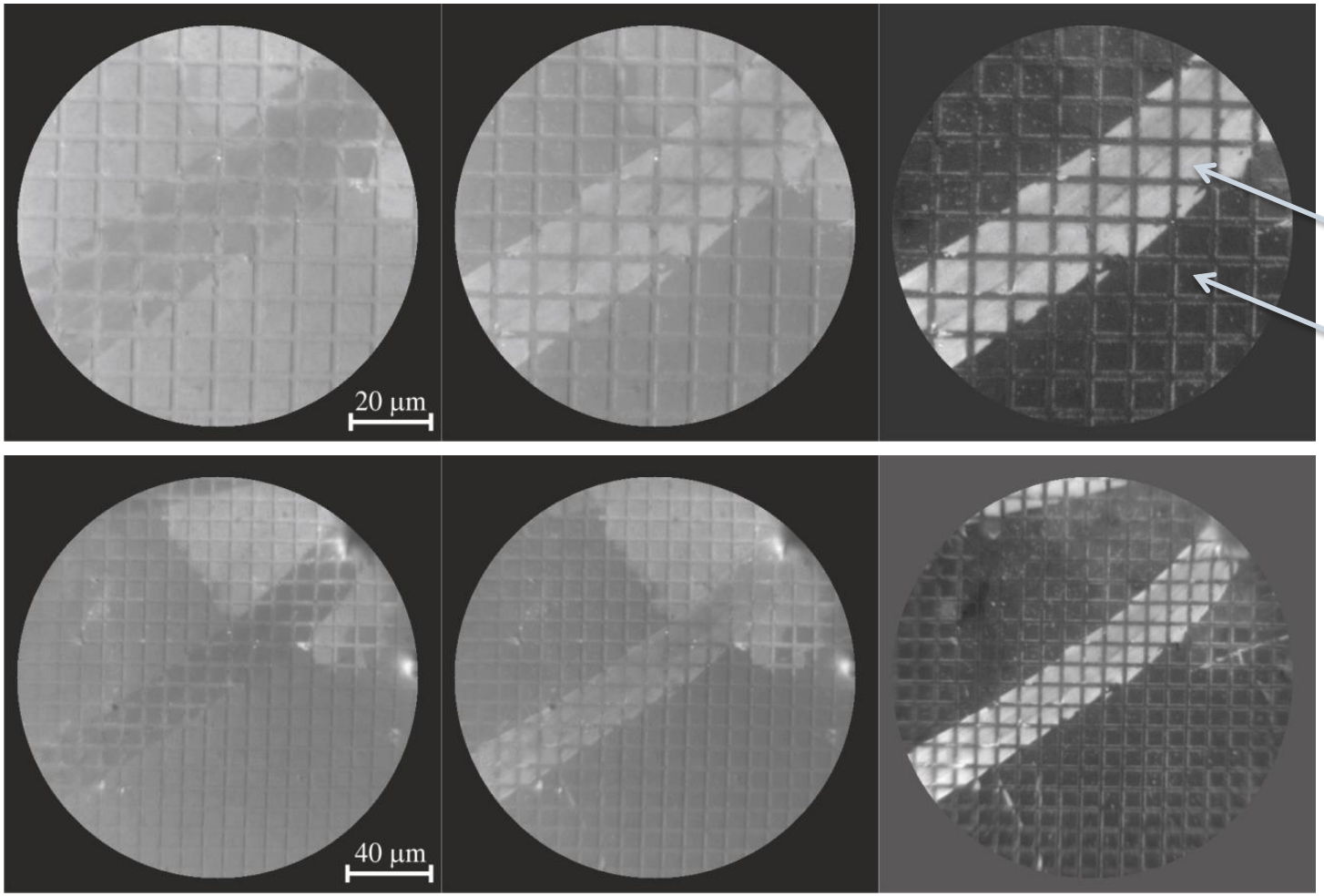
Ag-covered/Si-grid

Chemical contrast

Before the Si edge (hv = 103 eV)

Maximum of SiO_2 absorption (hv = 108.2 eV)

Contrast by SiO_2 absorption

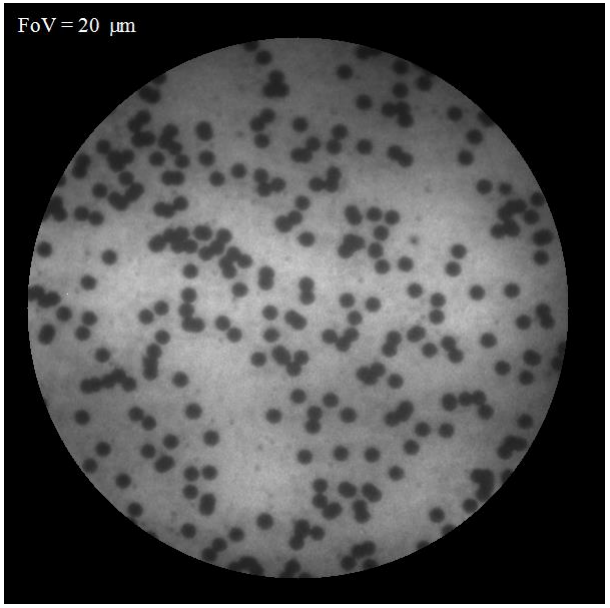


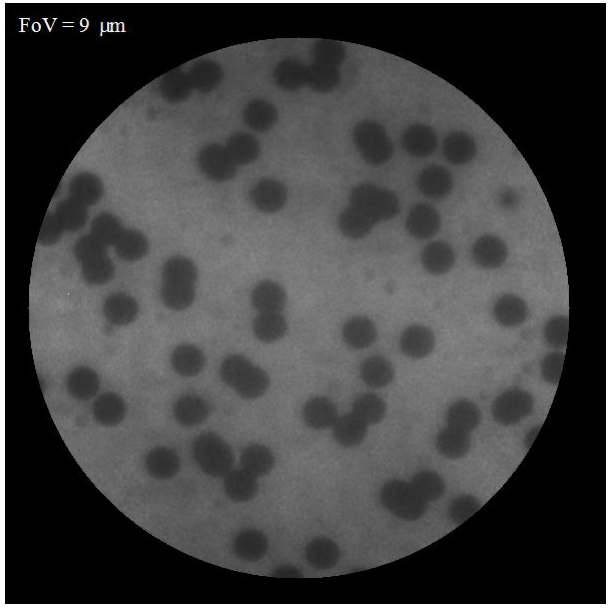
Spectromicroscopy

Ni-rods in SiO_2

Chemical contrast by Oxygen

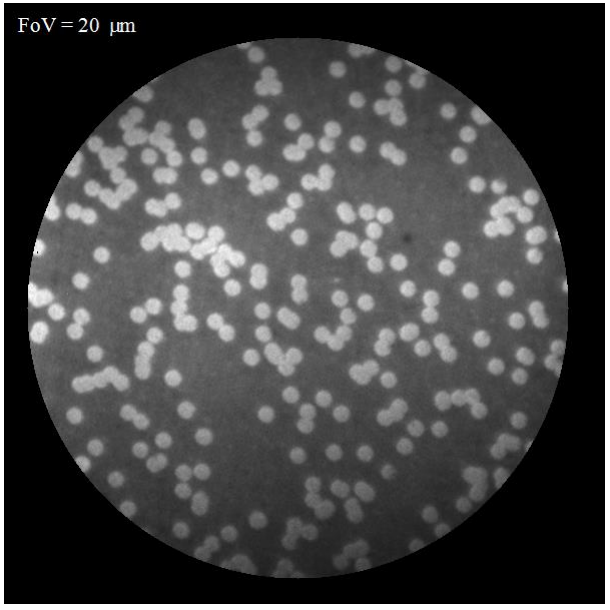
hv=537.6 eV
(Max Oxygen absorption)

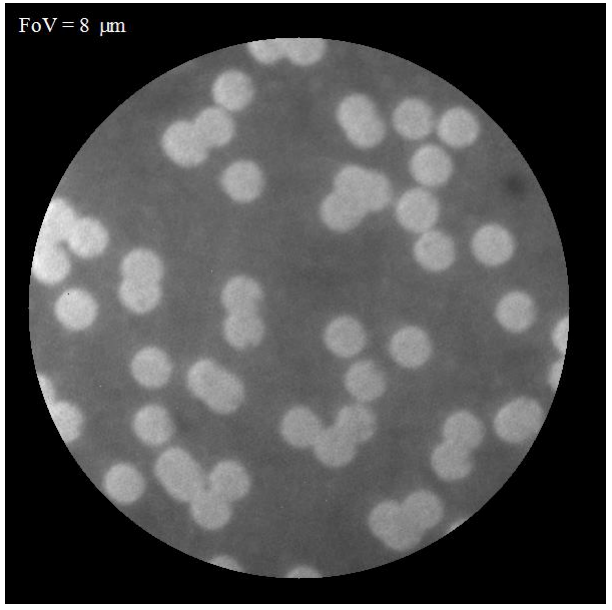




Chemical contrast by Nickel

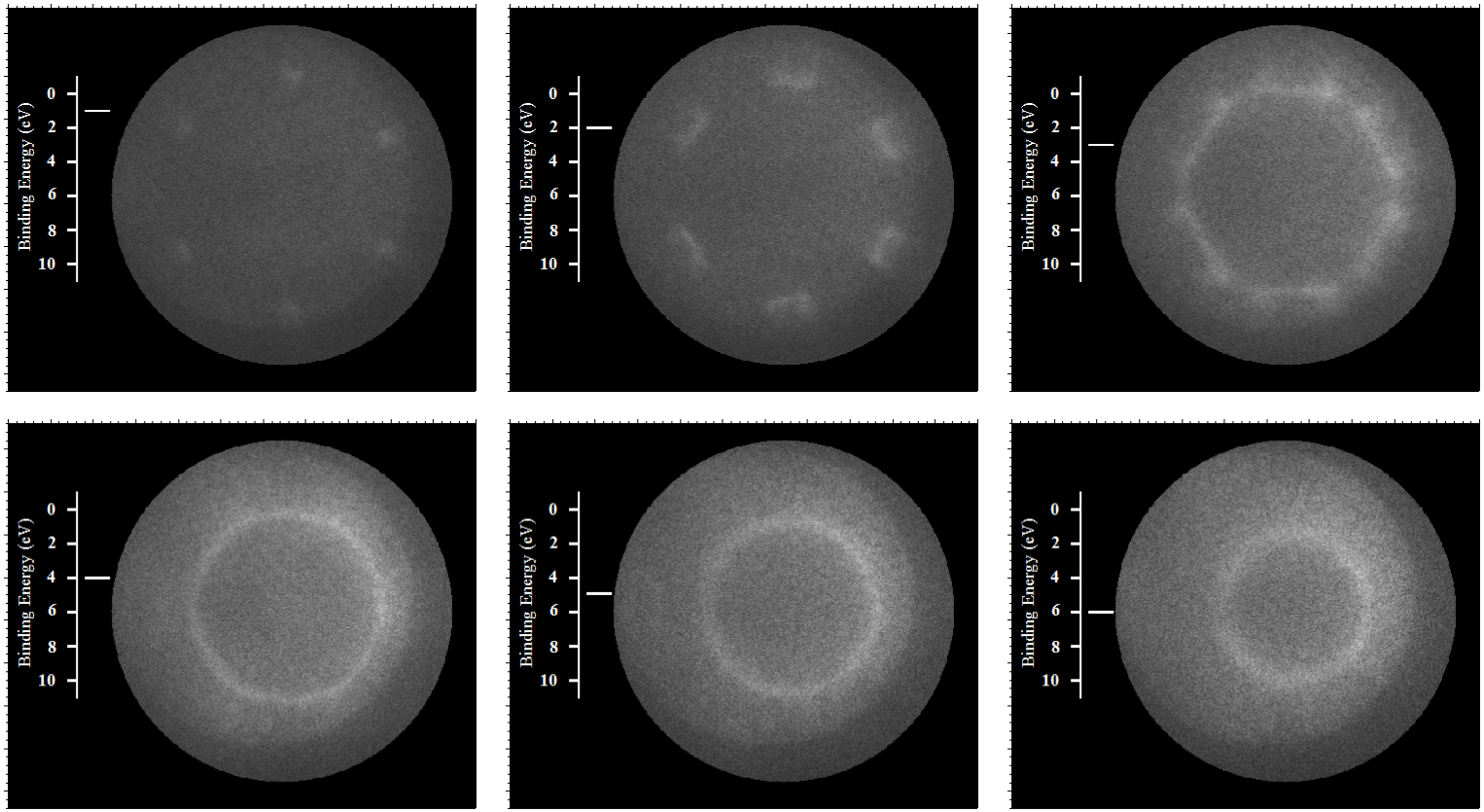
hv=853 eV
(Max Ni absorption)

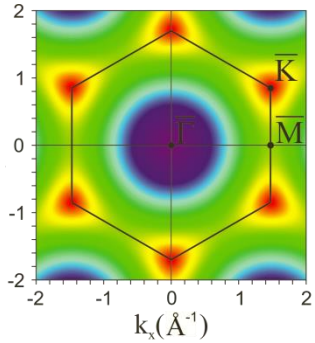


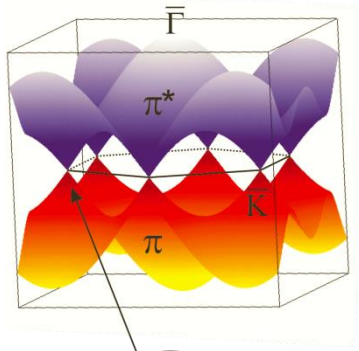


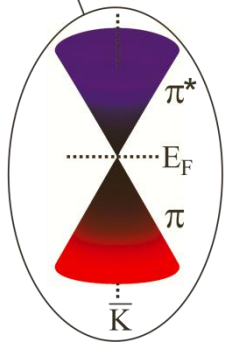
k-space imaging

Angle-resolved photoemission from Graphene: scanning the entire Brillouin zone



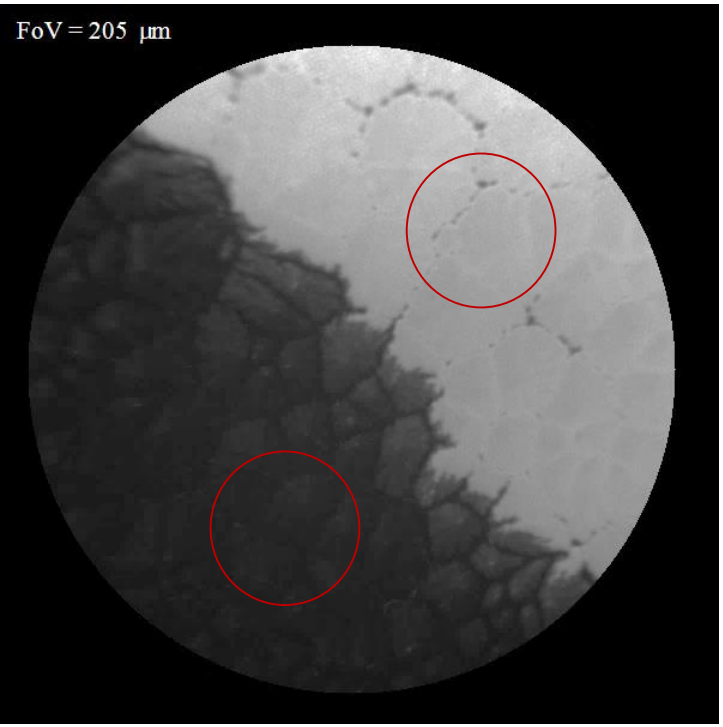






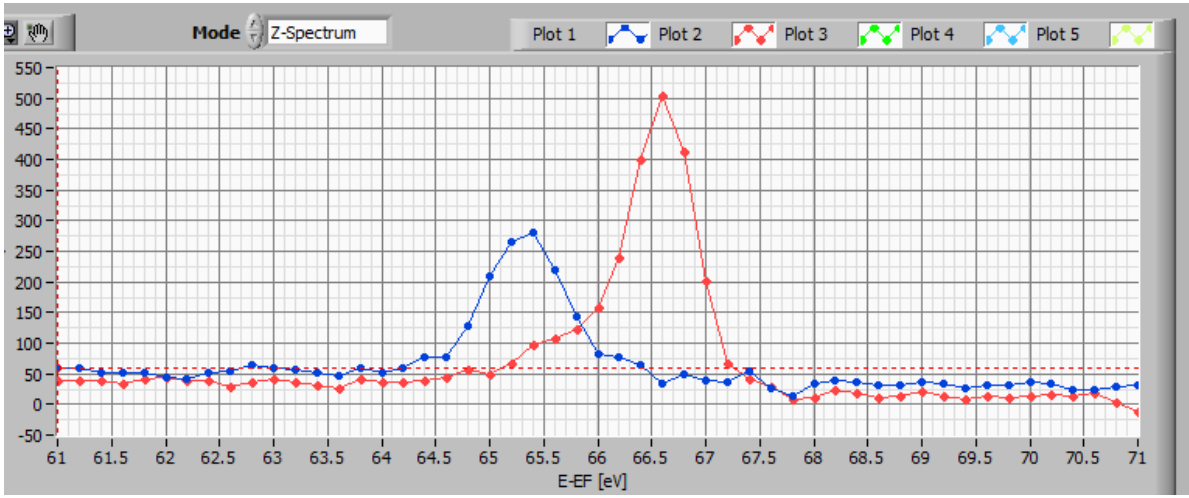
Partially oxygen-intercalated Graphene/Co

Micro-XPS



hv = 350 eV

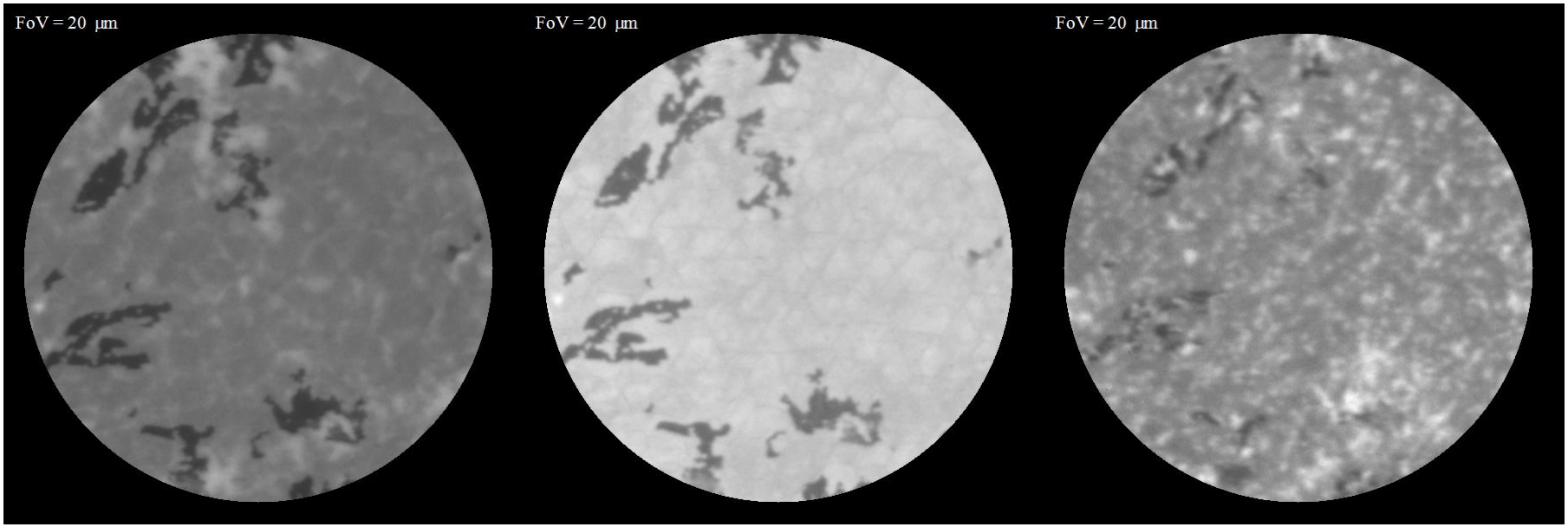
C 1s corel-level shift



Graphene Bi-intercalation

Monitoring of surface processes during deposition/intercalation/oxidation etc.

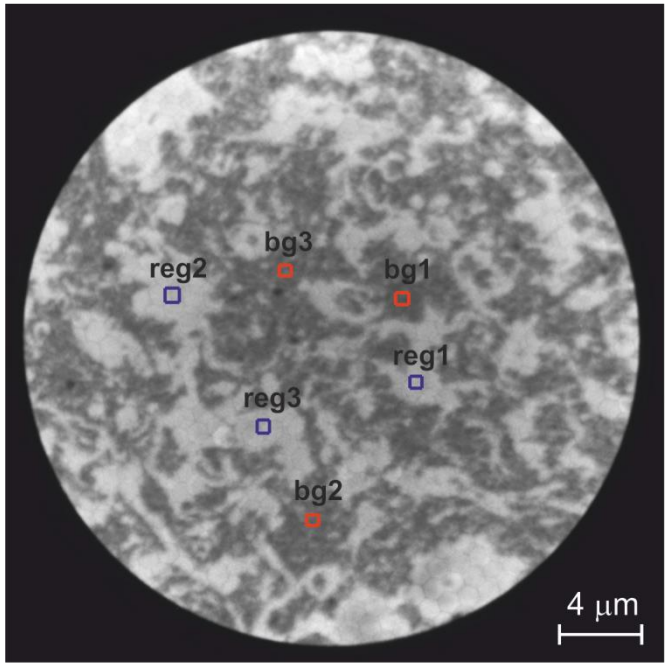
Graphene/Ir(111) **Gr/Bi/Ir(111)** **Bi/Gr/Bi/Ir(111)**

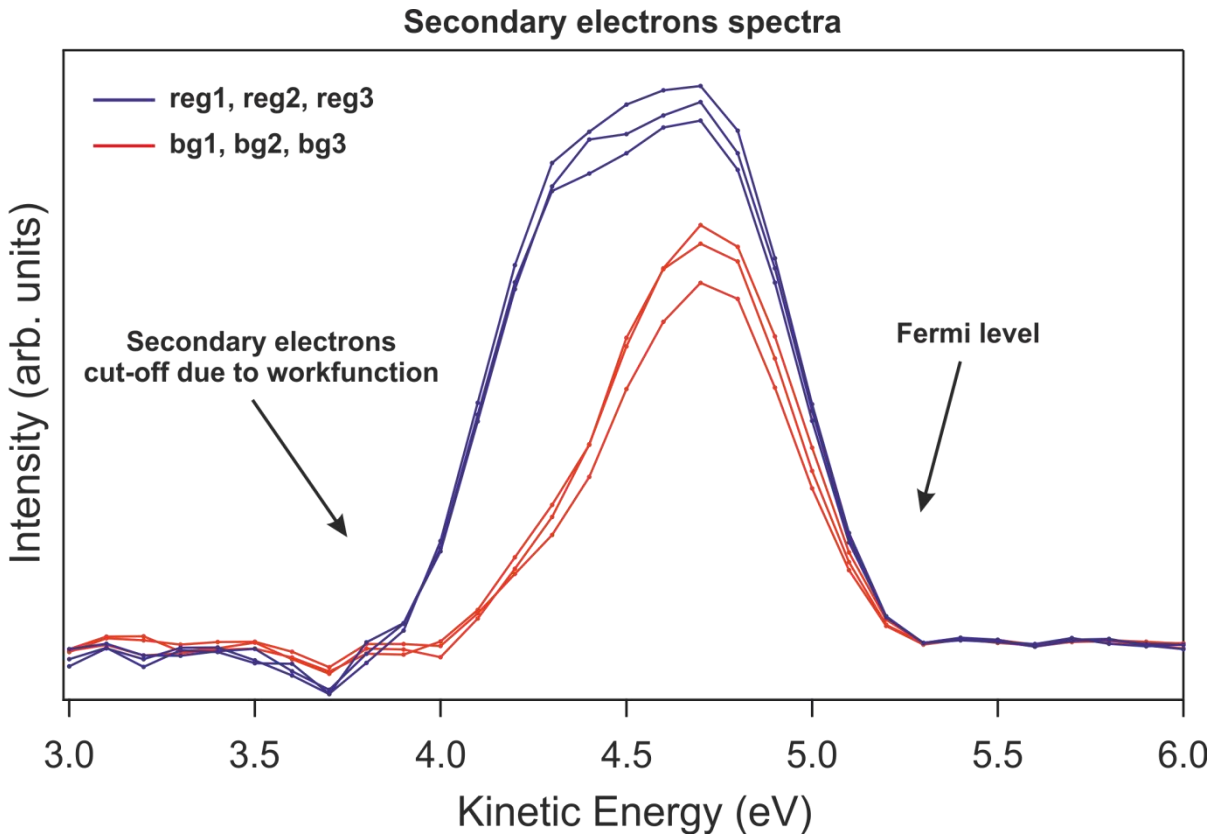


(measured offline using Hg-lamp)

Graphene/Bi/Ir(111)

Workfunction cut-off spectra





(measured offline using Hg-lamp)

- **Microscopy and Micro-XPS/XAS/Workfunction analysis.**
- **Possibility of in-vacuum sample transfer to/from RGBL-1.**
- **Hg-lamp (offline) and synchrotron beam.**

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