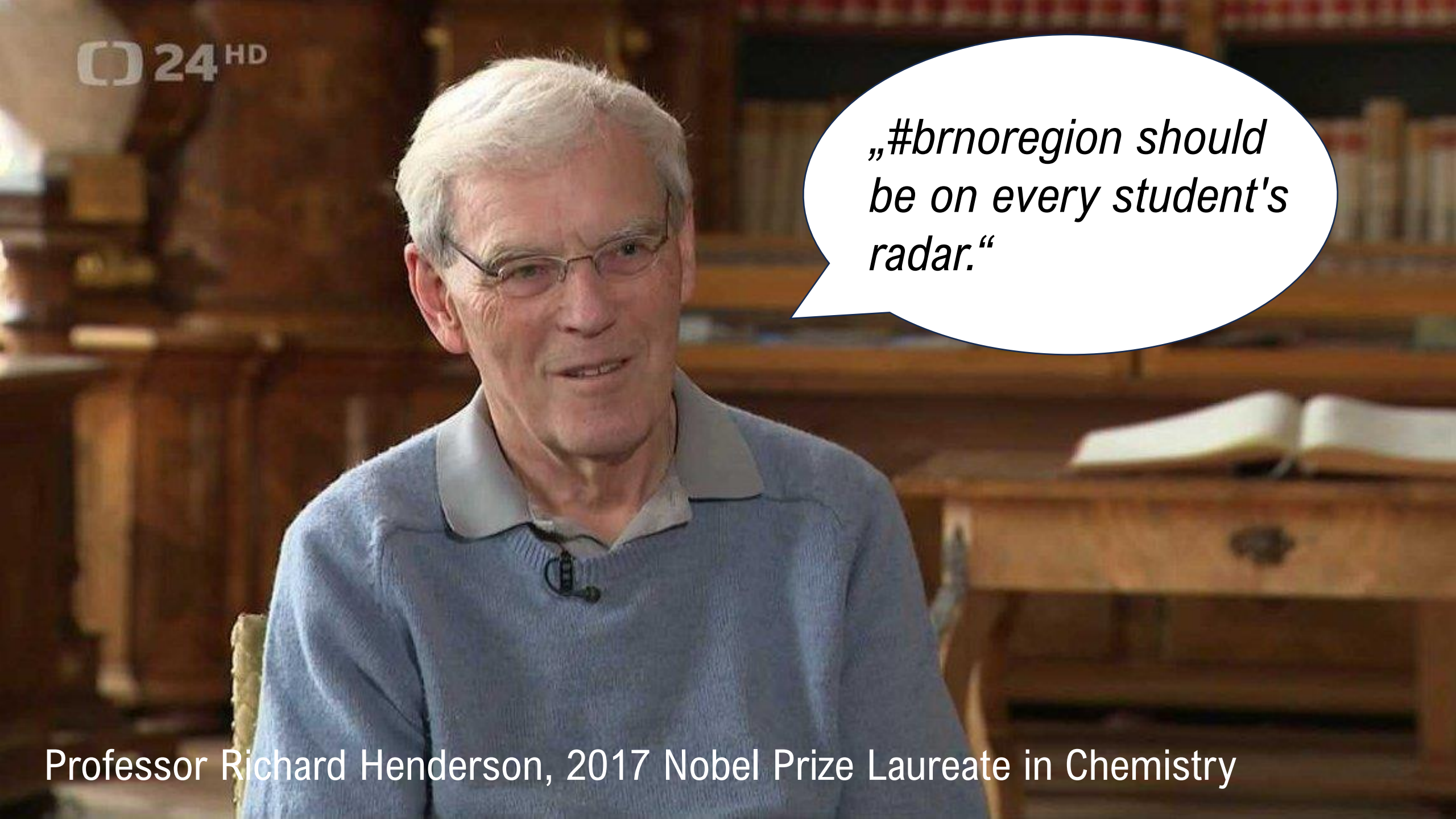
BRNOREGION
MICROSCOPY

# Let‘s cooperate!

empowered

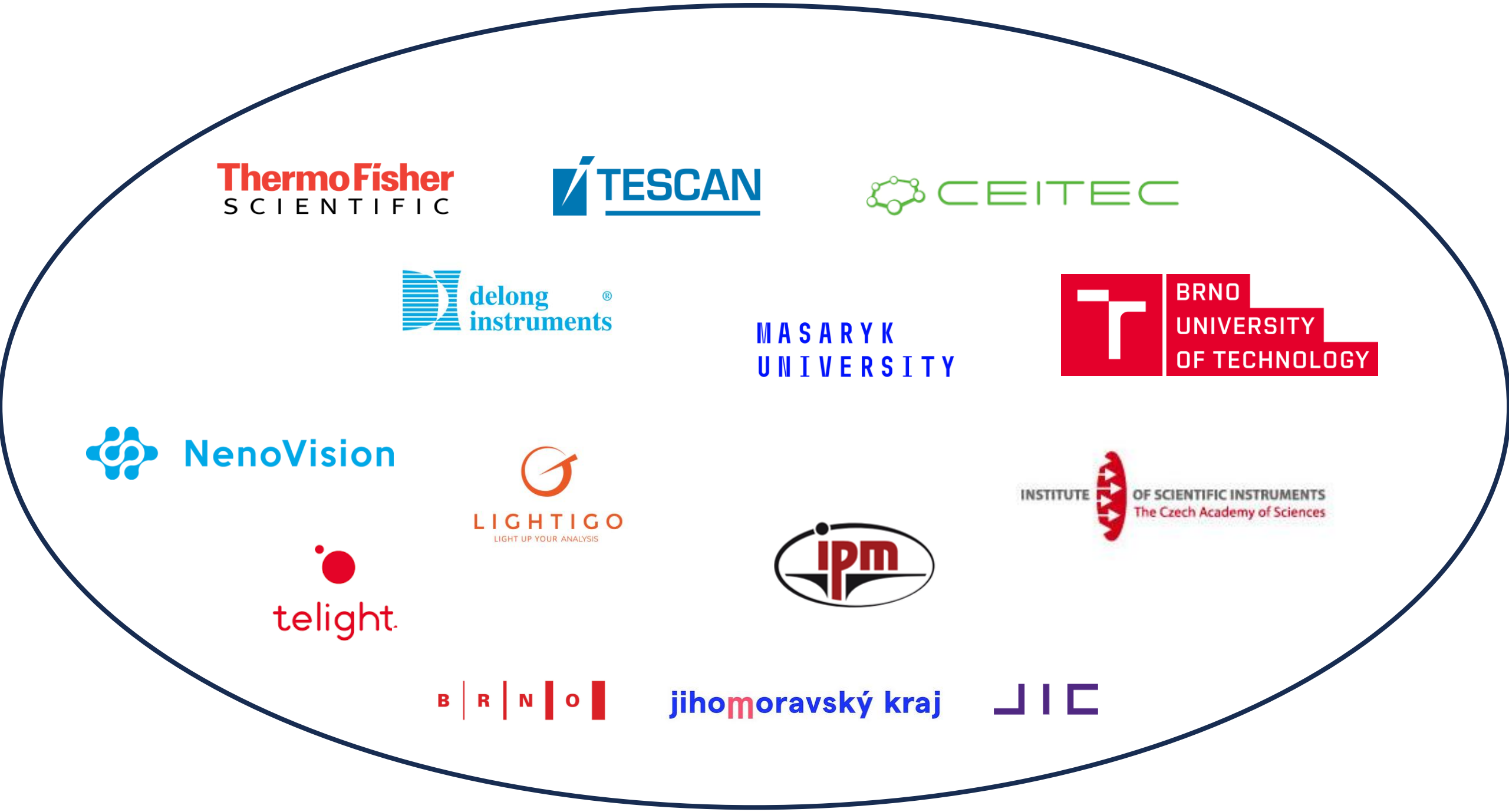



Professor Richard Henderson, 2017 Nobel Prize Laureate in Chemistry

5 000 jobs

33 % of world production

1 billion EUR annual turnover


ThermoFisher
SCIENTIFIC
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UNIVERSITY
BRNO
UNIVERSITY
OF TECHNOLOGY
NenoVision
LIGHTIGO
LIGHT UP YOUR ANALYSIS
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OF SCIENTIFIC INSTRUMENTS
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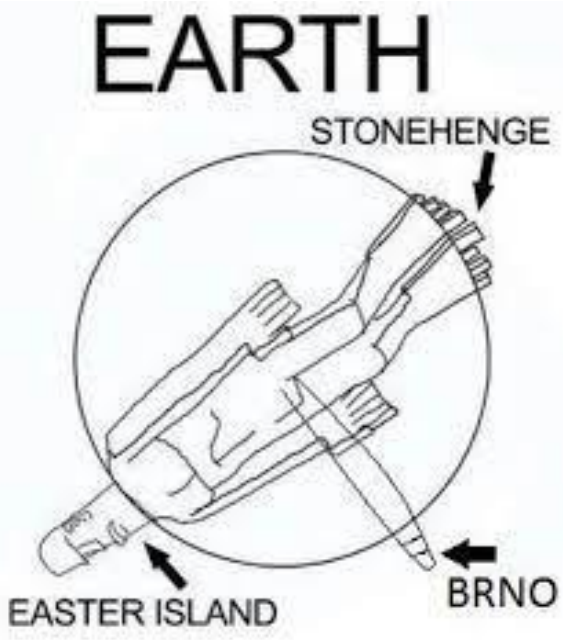
B R N O
jihomoravský kraj
JIC

BRNOREGION MICROSCOPY COMMUNITY

#~B·R·N·O·R·E·S·I·O·N



WE ARE UNIQUE

AND WE WANT TO BE MORE

# BRNOREGION MICROSCOPY PLATFORM


community
suppliers development
commercialisation support
marketing & PR

# Community

- 120 seconds
- Small Companies
- Application Mafia
- Talents attraction

# Supply chain development

- How to become an electron microscopy supplier
- Increasing efficiency, quality and competitiveness of suppliers
- Suppliers community development

# Commercialisation support

- JIC Ph.D. Academy
- CEITEC Innovation Accelerator

# Marketing and PR

- Days of Electron Microscopy
- EMC 2024

(electron) microscopy = #brnoregion

Pushing the boundaries of microscopy

Delivering the world's best devices

Educate and support talent

# STAY IN TOUCH WITH BRNOREGION MICROSCOPY!

## Get the latest updates

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## Join the official platform

brnoregion.com/en/brnoregion-microscopy

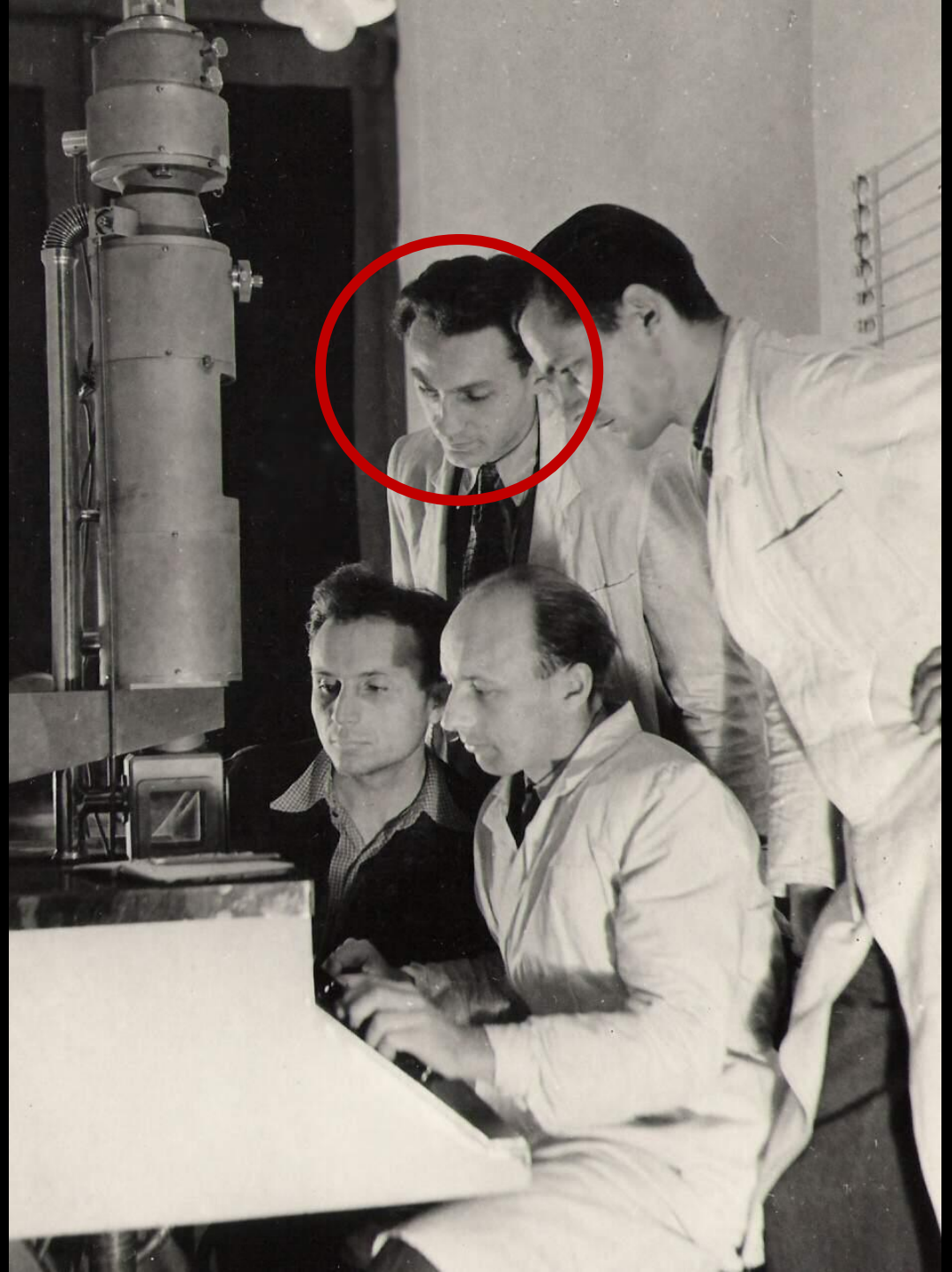
delong instruments®

. . . your way to electron microscopy



# LVEM

## Your way to multimodal electron microscopy

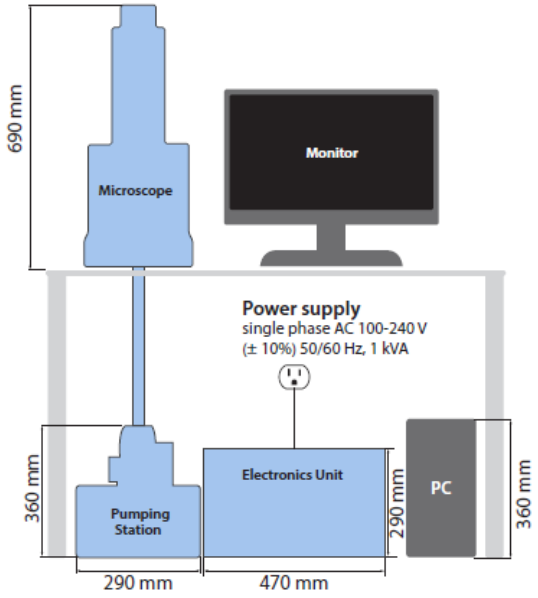


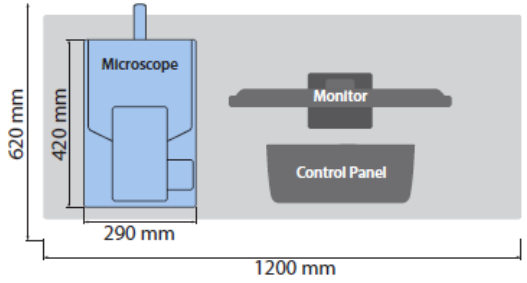
„Every scientist should have the opportunity to regularly use a transmission electron microscope for his or her research.“

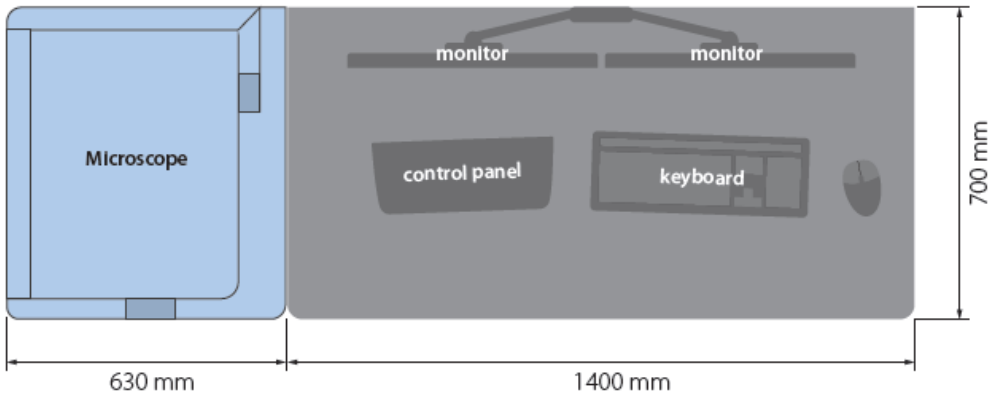
Prof. Armin Delong

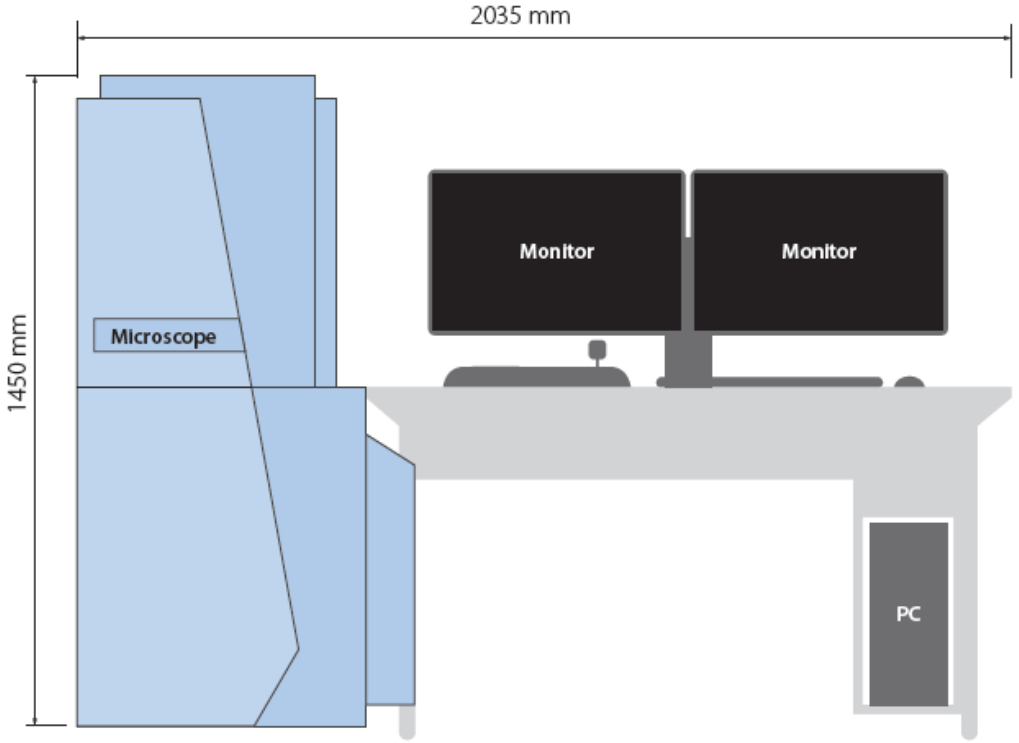
founder of electron microscopy in Czechoslovakia

# Small and affordable



# LVEM for every lab

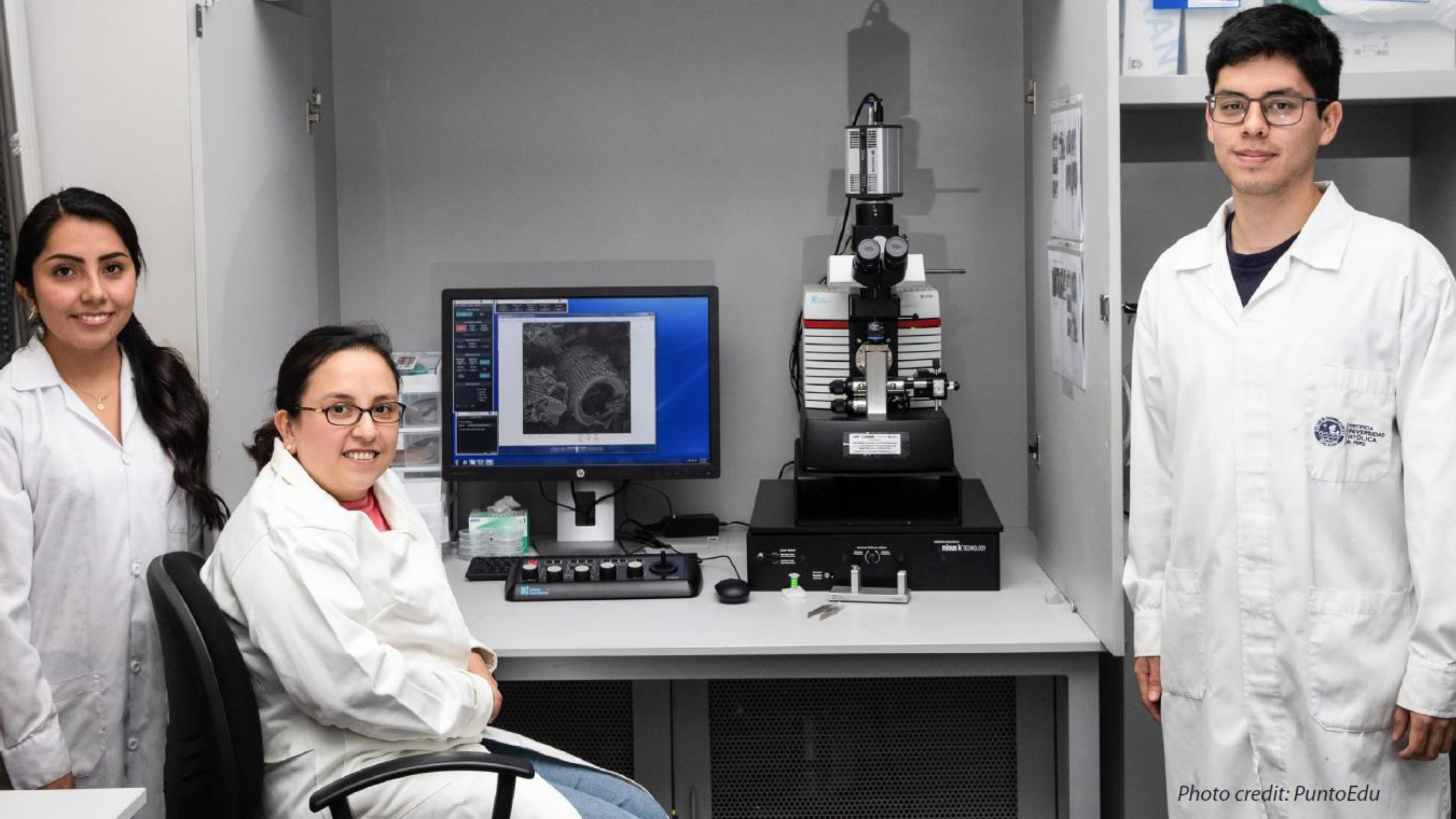
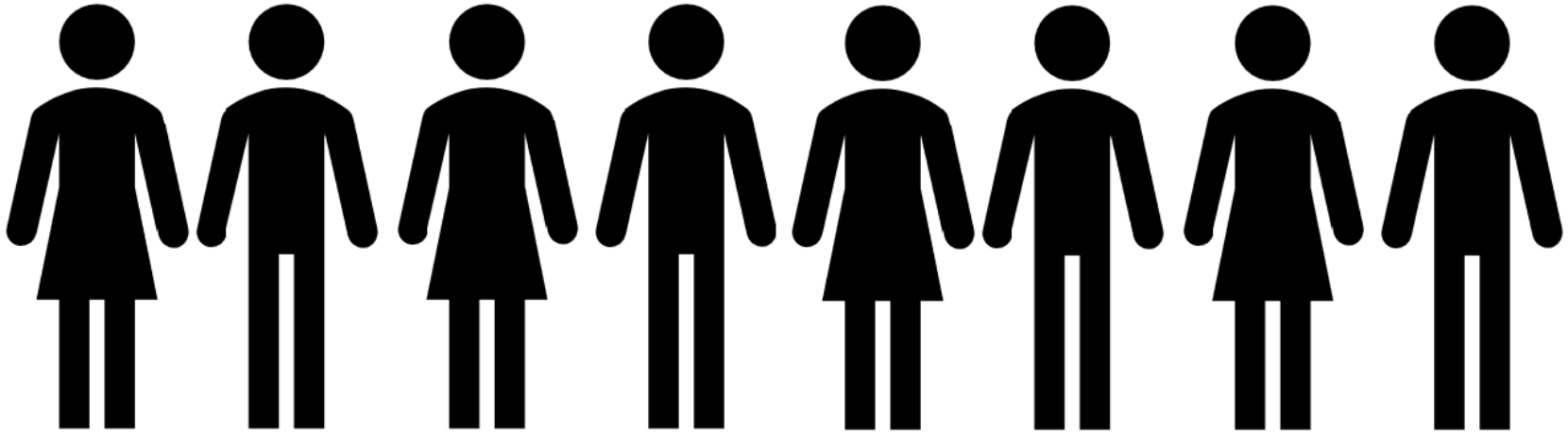


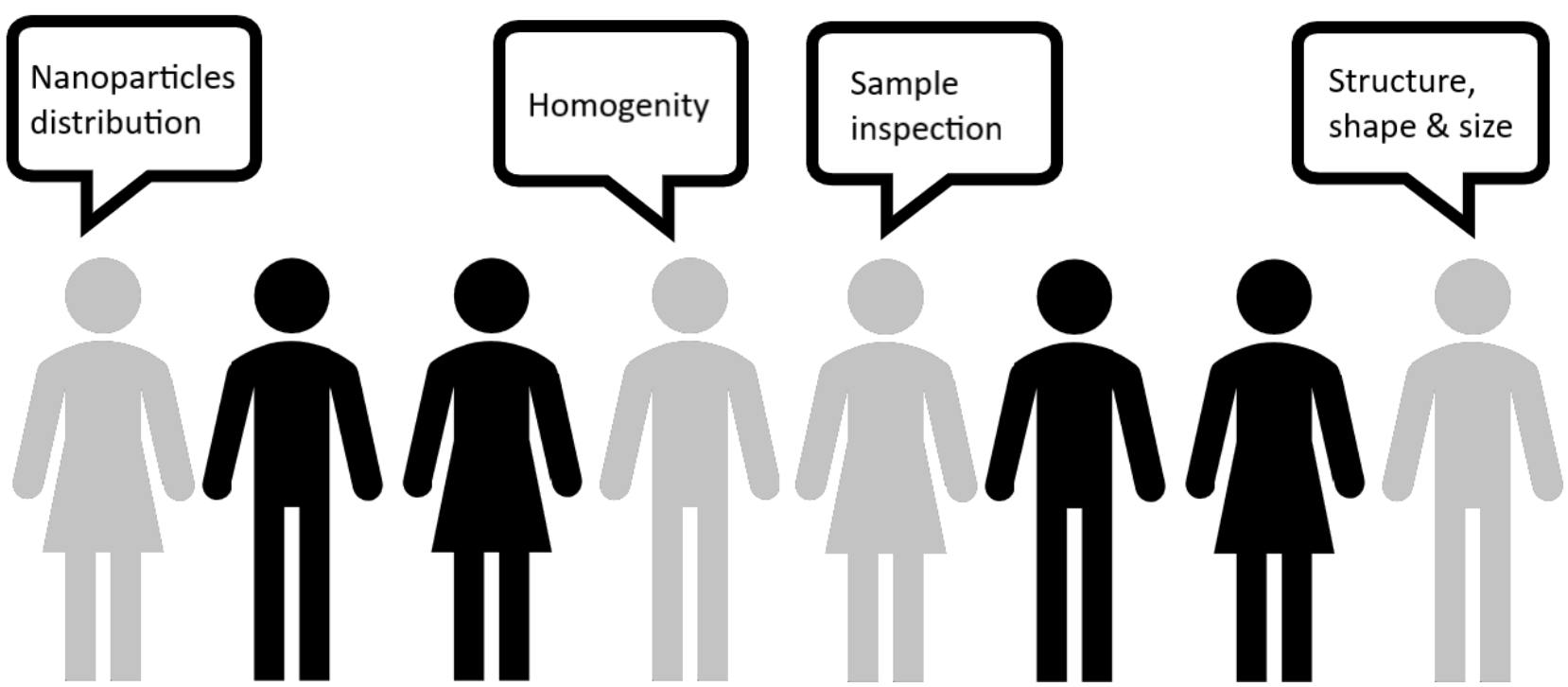
*Photo credit: PuntoEdu*

# Robust and user-friendly

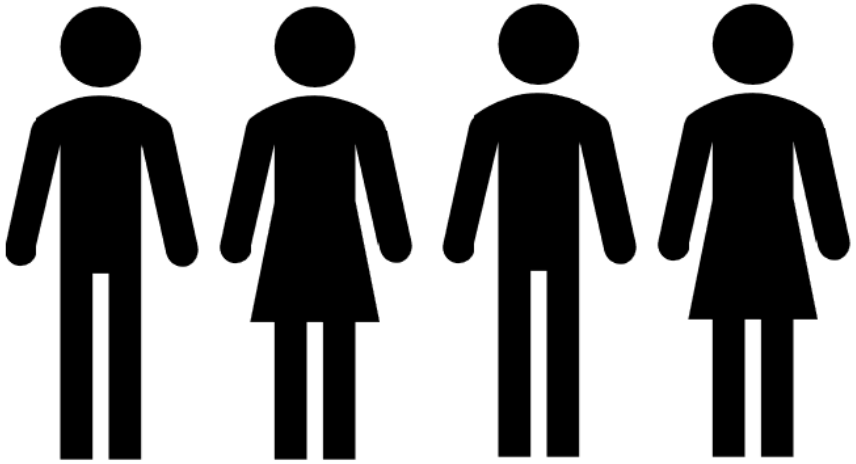
# … and for higher efficiency of shared labs



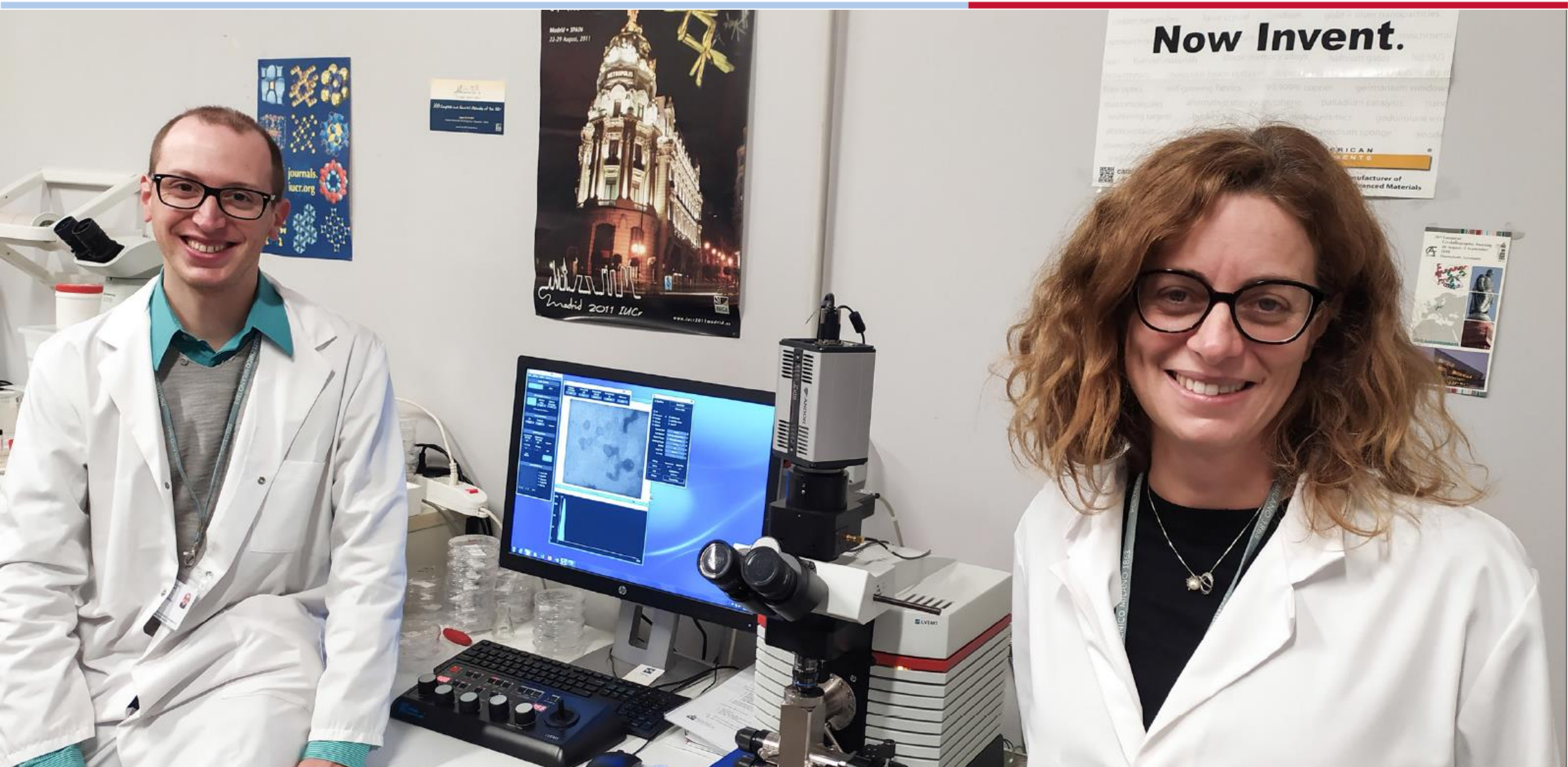
# … and for higher efficiency of shared labs




# … and for higher efficiency of shared labs

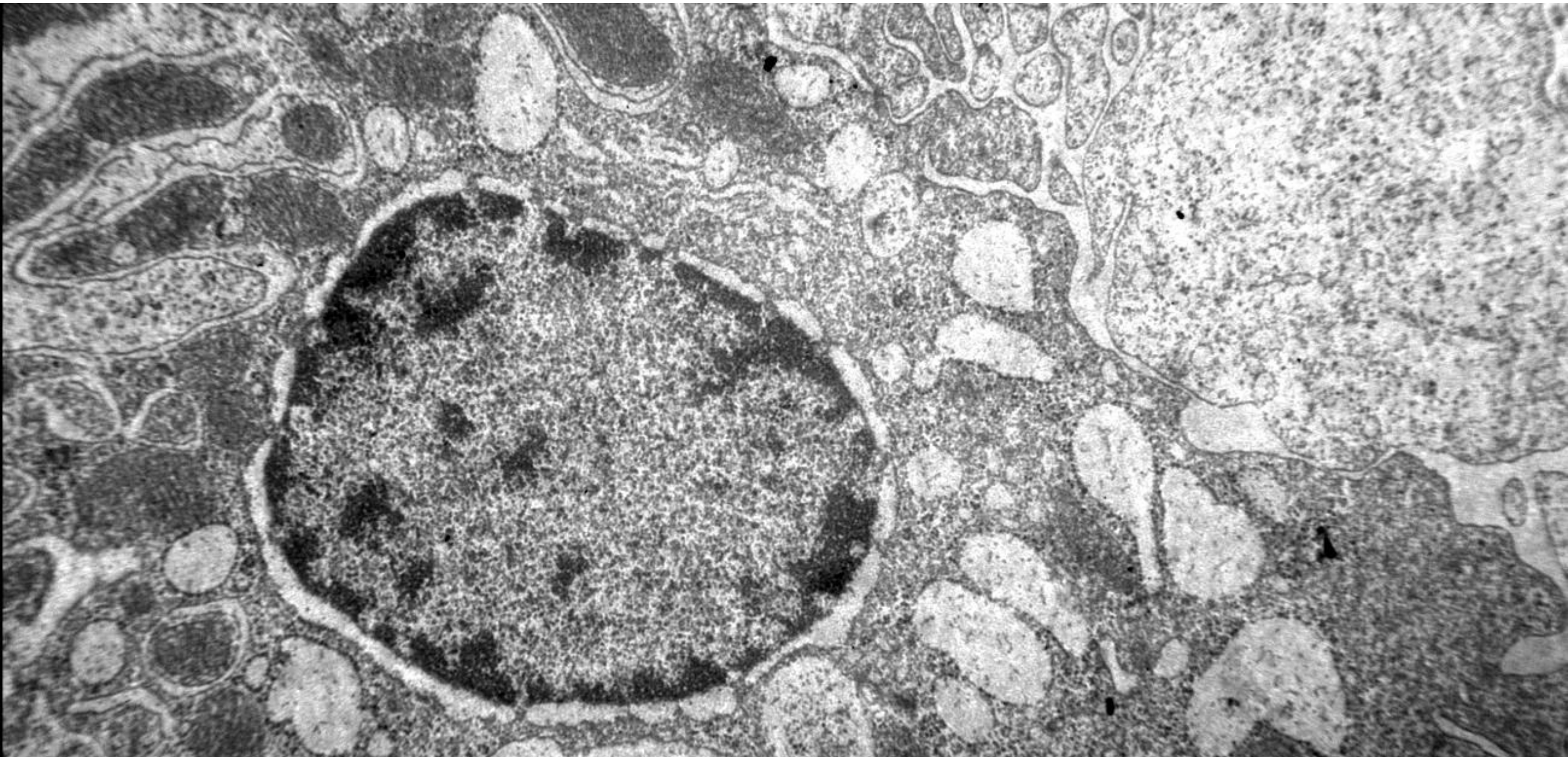


# … or particular research teams

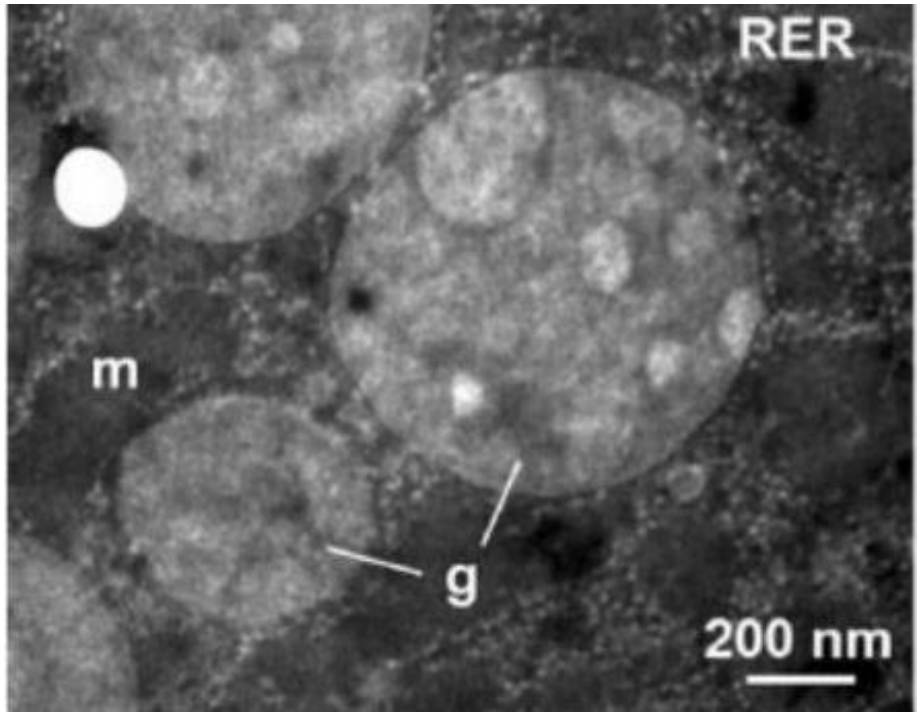


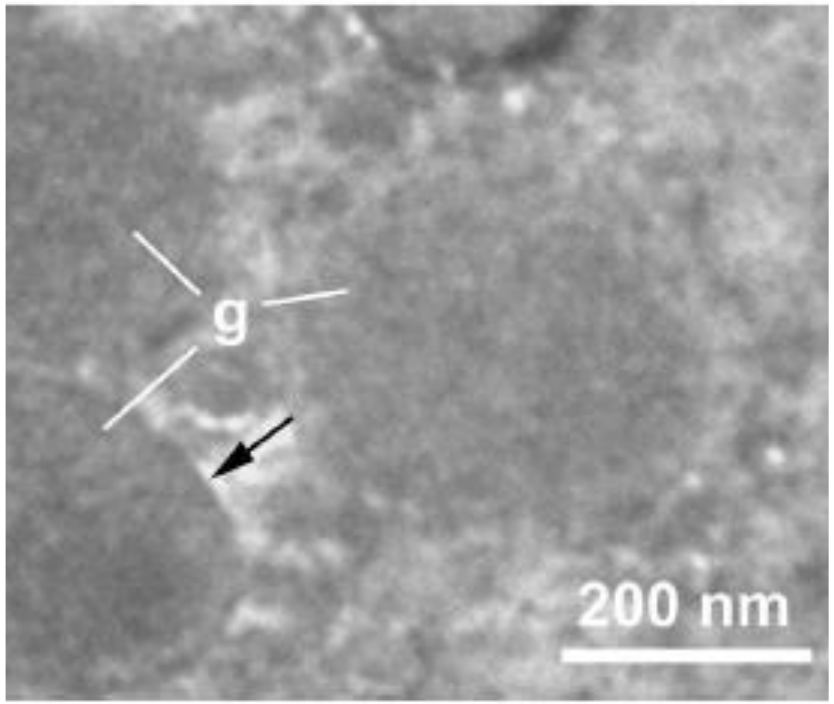
# Low Voltage Electron Microscopes


# Naturally high contrast



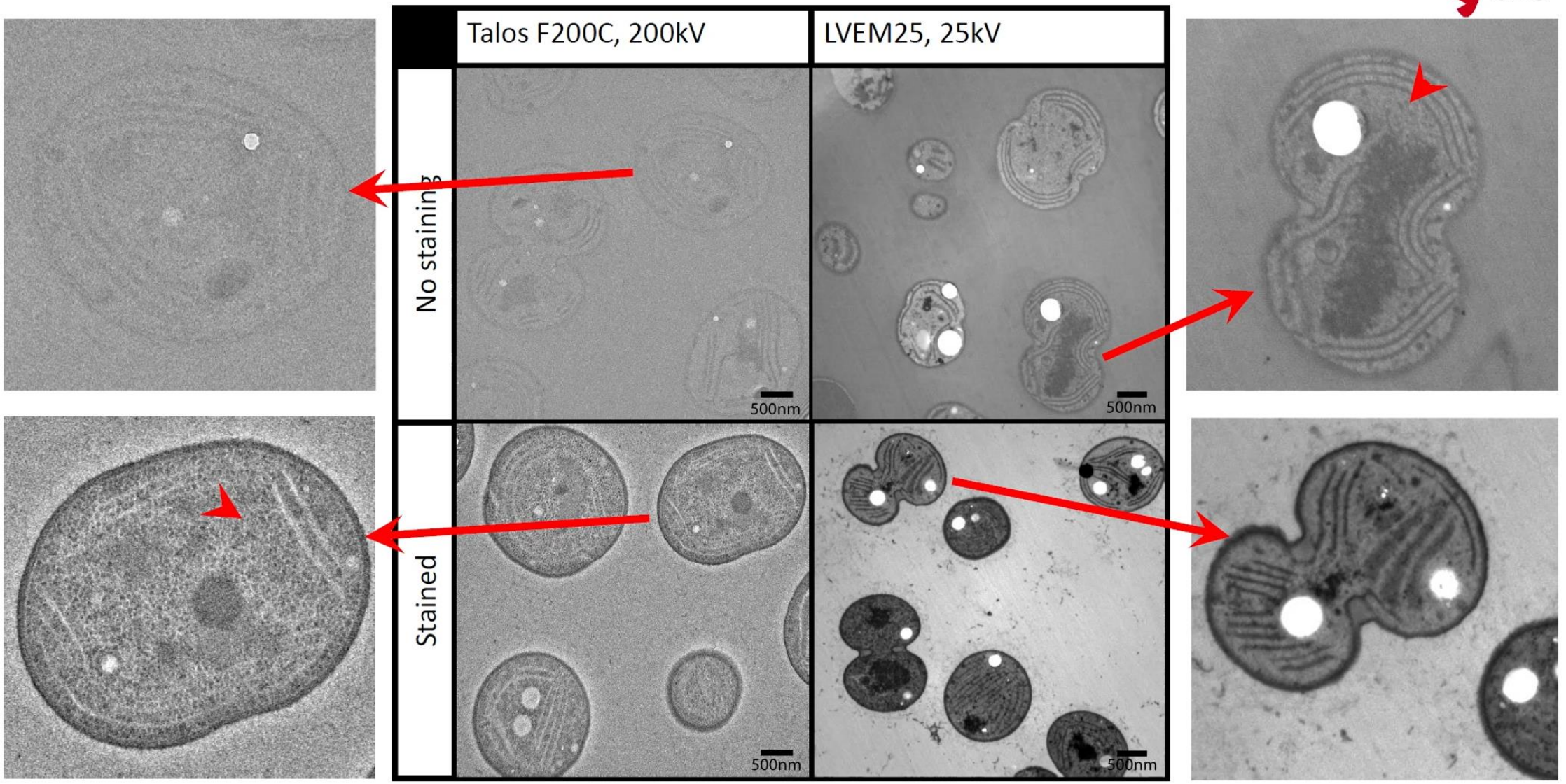
# LVEM for reduced staining




LVEM 5: Ultrathin (30nm) sections of non-osmicated, stain-free pancreatic tissue sections revealed the existence of granules with non-homogeneous matrix and sub-compartments having circular or oval profiles of different electron densities and sizes.

# Results → High voltage TEM x Low voltage TEM

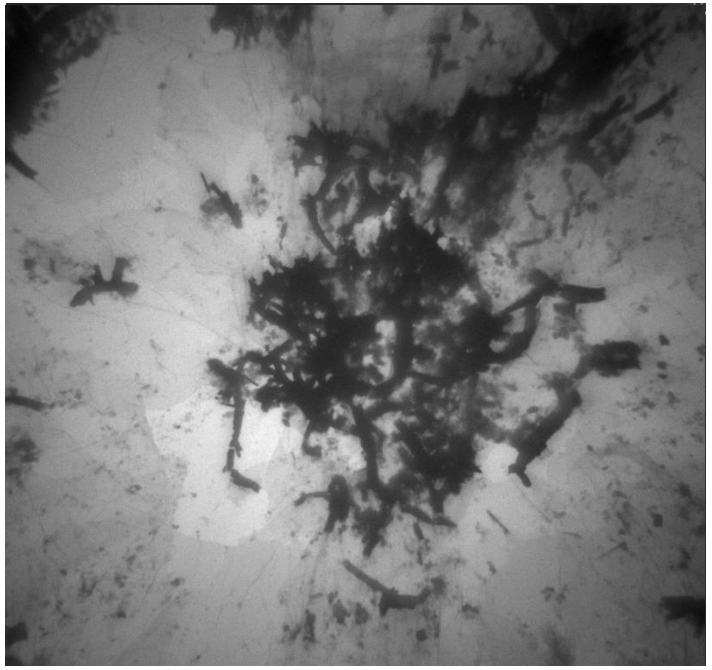



*Mrazova K.: UranyLess Low Voltage Transmission Electron Microscopy: A Powerful Tool for Ultrastructural Studying of Cyanobacterial Cells, 2023*

# LVEM 5: Nanoscale from Your Benchtop

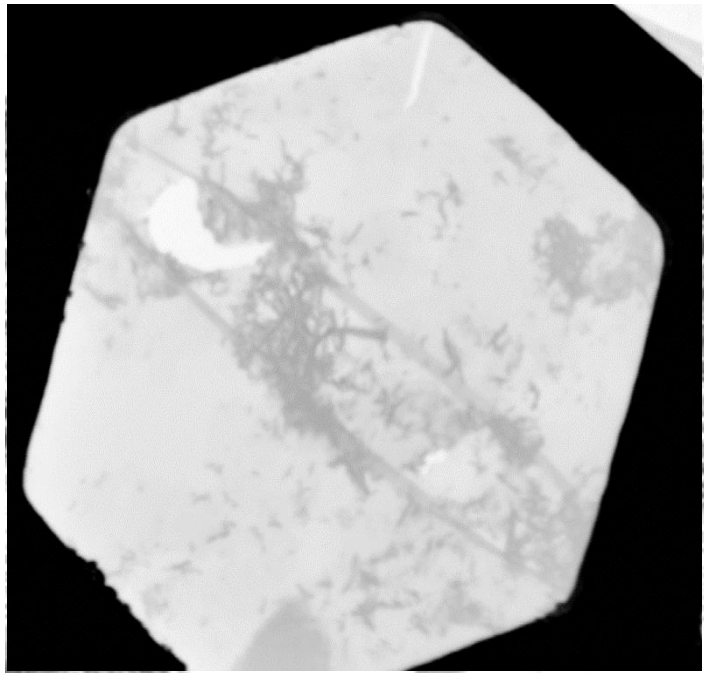

- TEM 1.2 nm
- STEM 2.5 nm
- SEM 4 nm
- ED
- Standard TEM grids
- Schottky FEG
- Easy installation

# LVEM 5 Multimodal imaging



## TEM: Graphene

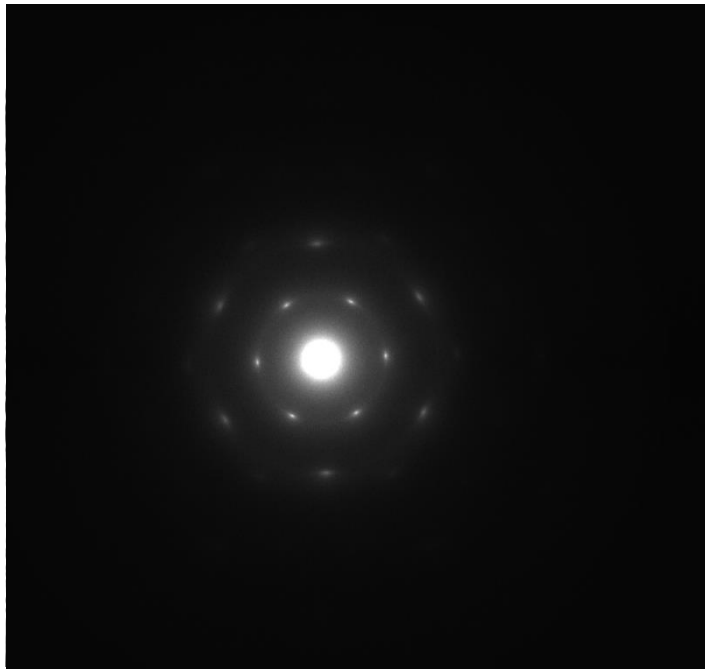
*Particles on carbon film*



## SEM: Graphene

*Particles on carbon film*

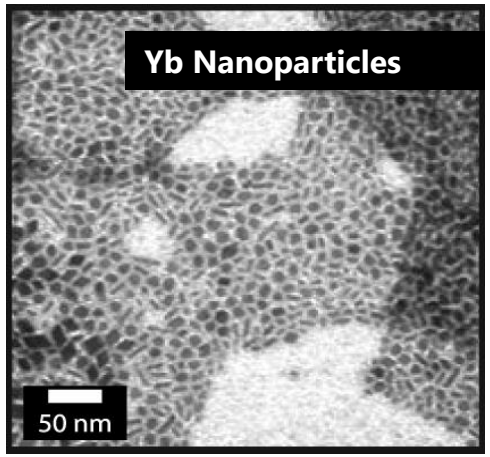
Low magnification



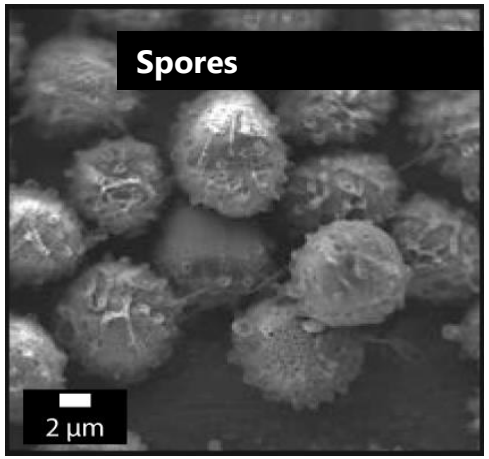
## ED: Graphene

*Particles on carbon film*

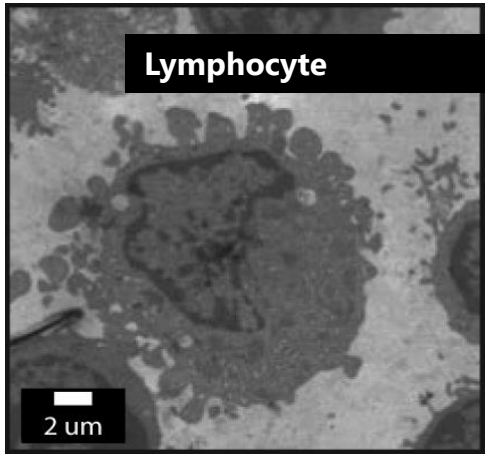
# LVEM 5 Multimodal imaging



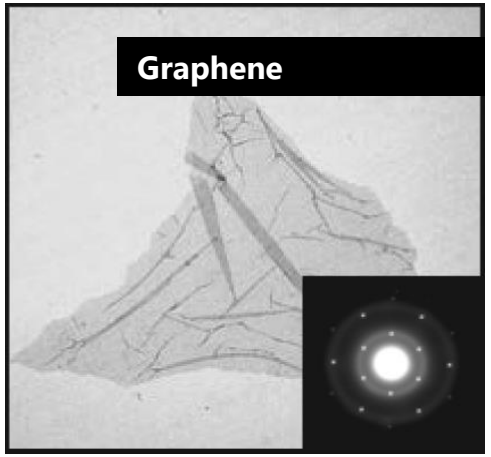

TEM Mode




SEM Mode




STEM Mode




ED Mode

delong instruments®

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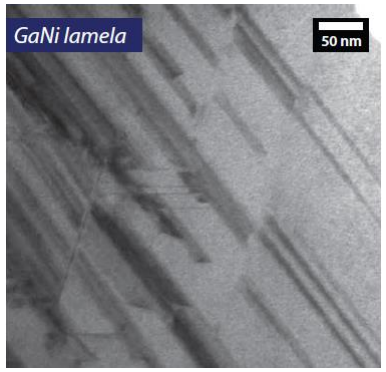
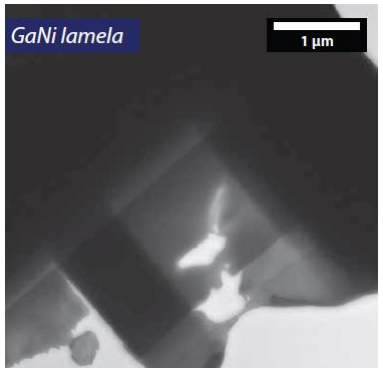
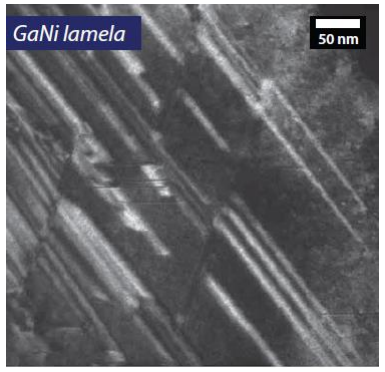
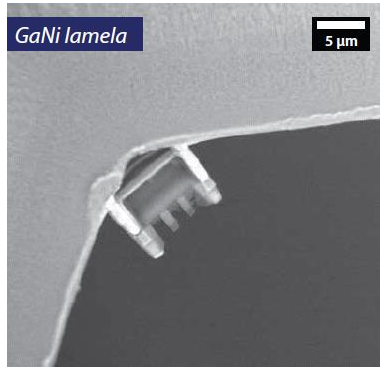
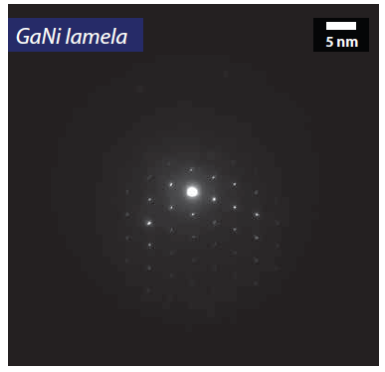
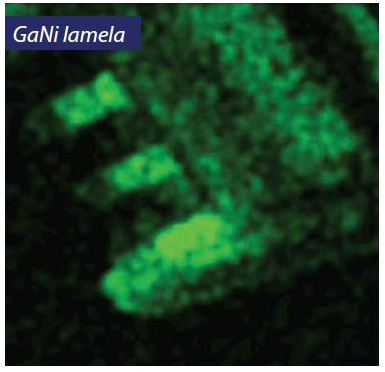



# LVEM 25E

## All-in-One Electron Microscope

# All-in-One Electron Microscope

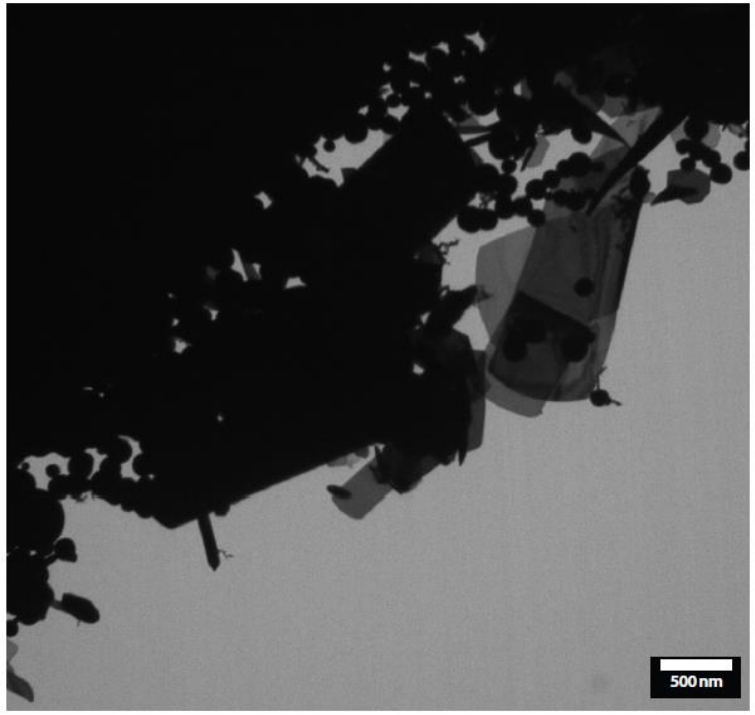
## Universal

- TEM (25 kV)
- STEM (10 a 15 kV)
- ED
- SEM (15 kV)
- EDS (10, 15 and 25 kV)

## High resolution

- 1.0 nm TEM
- 1.0 nm STEM 10 kV
- 1.3 nm STEM 15 kV
- 4 nm SEM
- ≤ 129 eV FWHM at MnKα

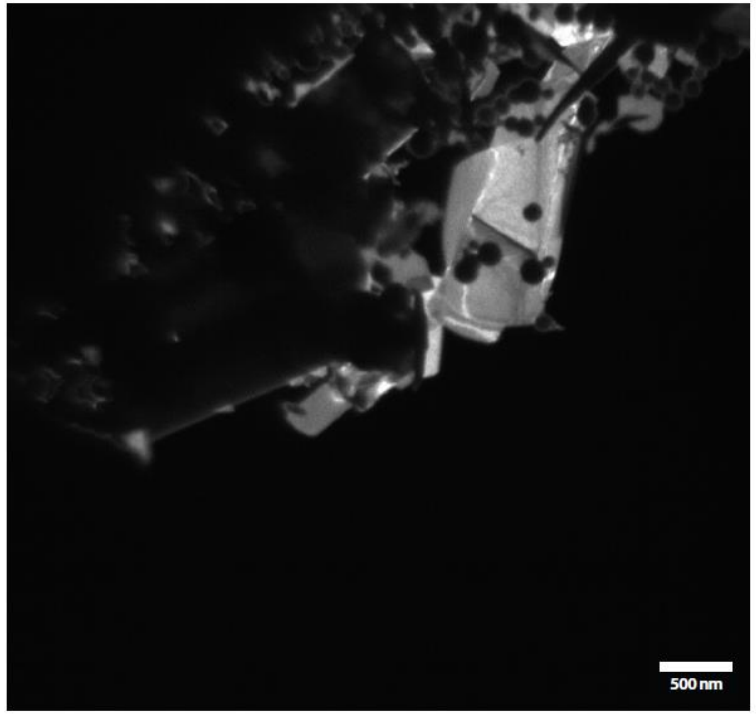
# YOUR WAY TO ELECTRON MICROSCOPY




## TEM: Molybden Crystal

*Evaporated film*

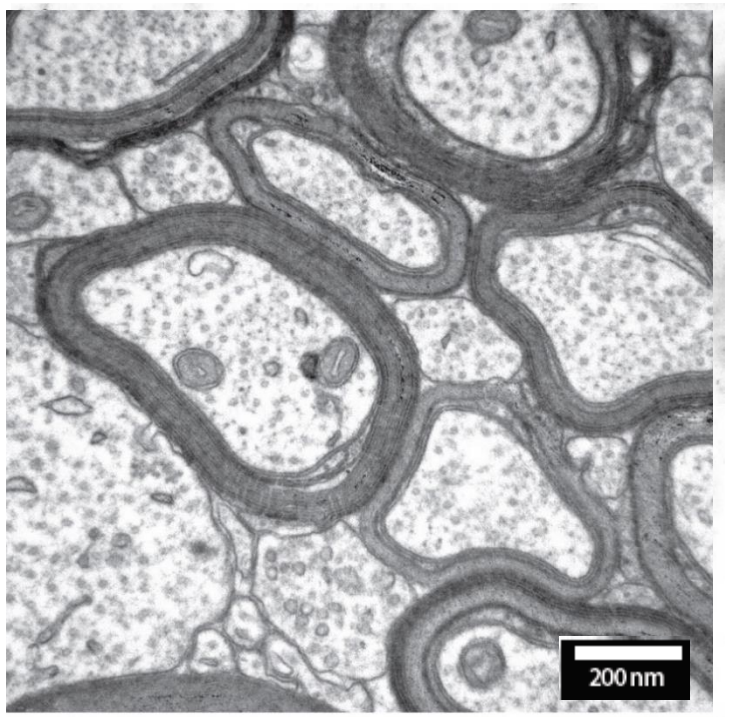
Bright field




## TEM: Molybden Crystal

*Evaporated film*

Dark field

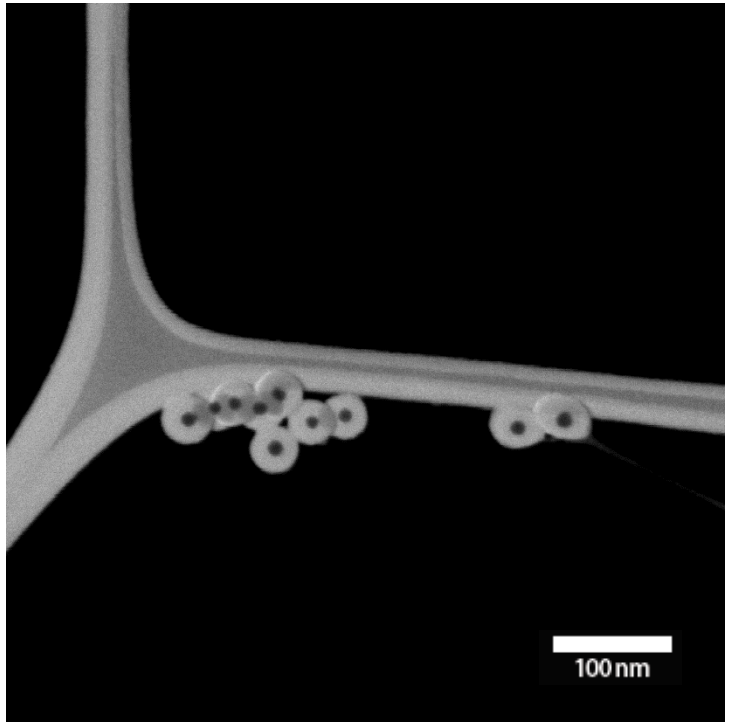



## TEM: Mouse brain

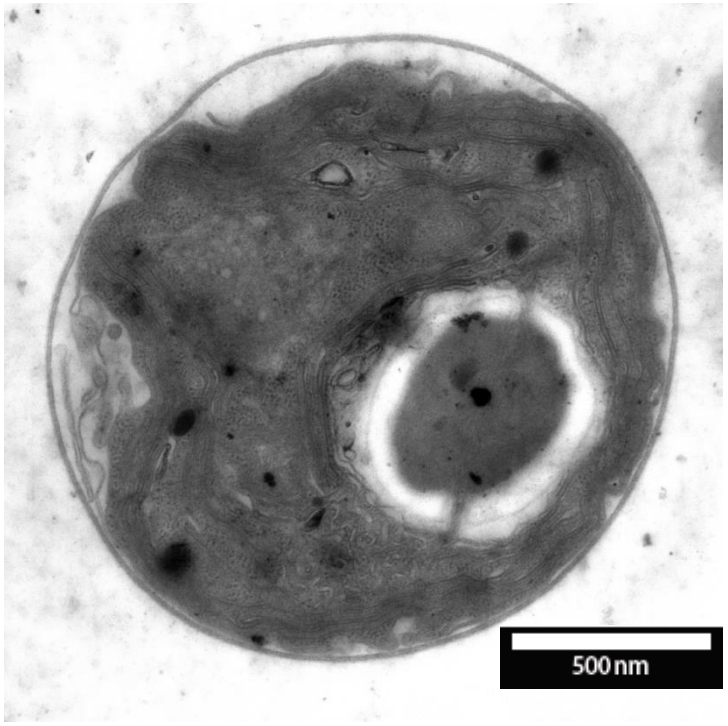
*Stained section*

Neural tissue, including axons with and without myelin sheath

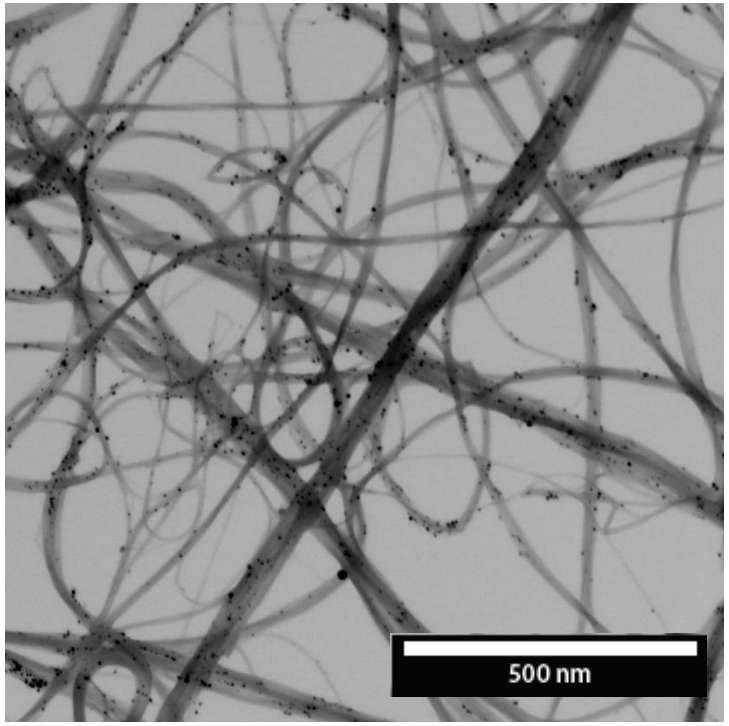
# YOUR WAY TO ELECTRON MICROSCOPY




**STEM 15 kV: Silica-Coated Gold**
*Dark field*
Gold colloids with 20 nm silica shell

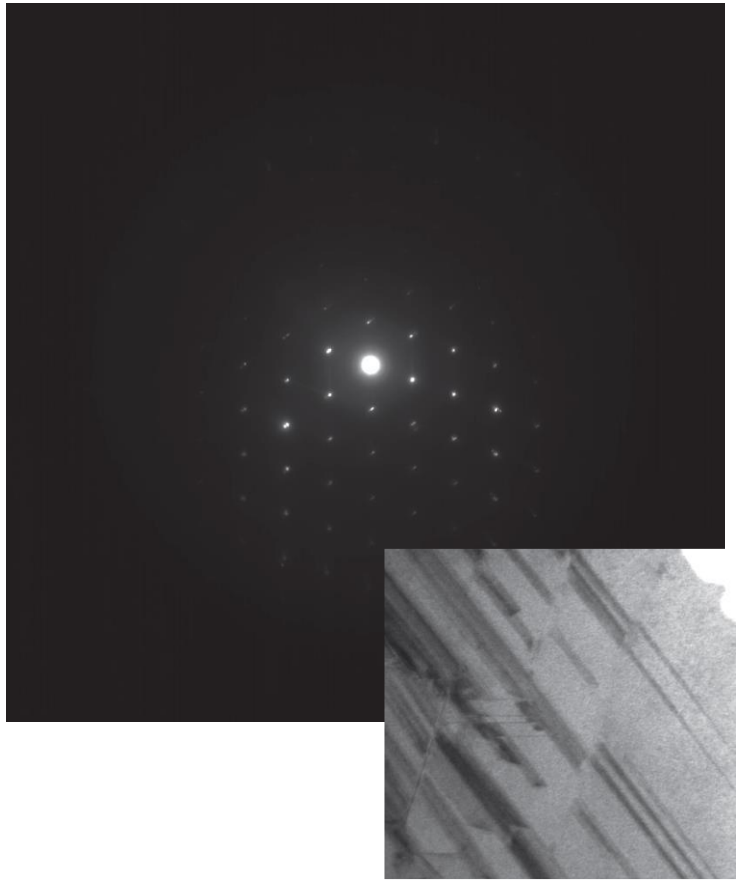



**STEM 15 kV: Chlorella Vulgaris**
*Bright field*
Stained section

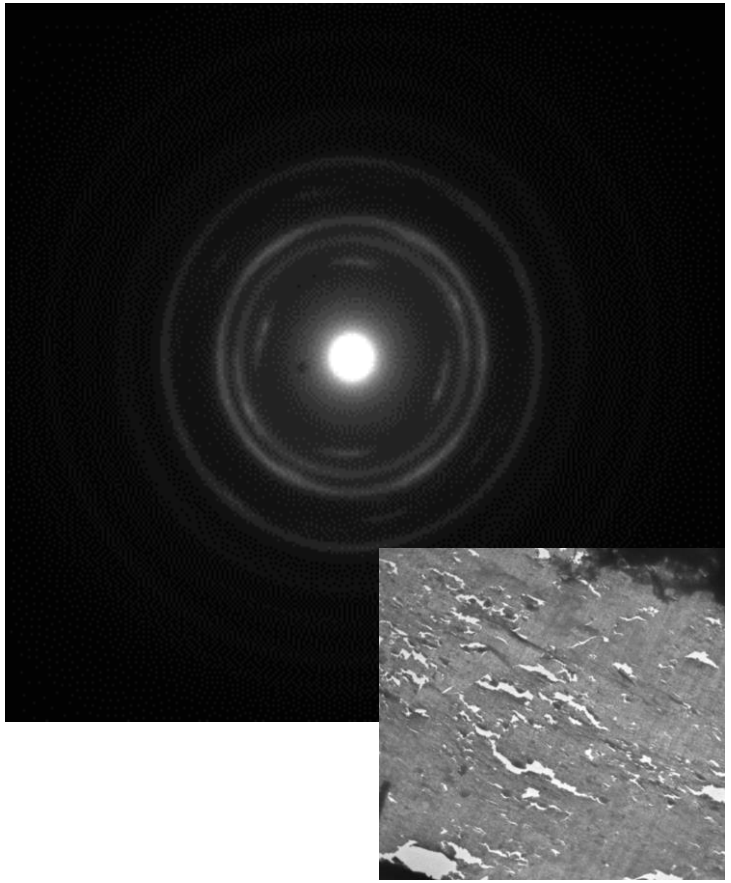



**STEM: Pt Nanoparticles with CNT**
*Bright field*
Particles on carbon film

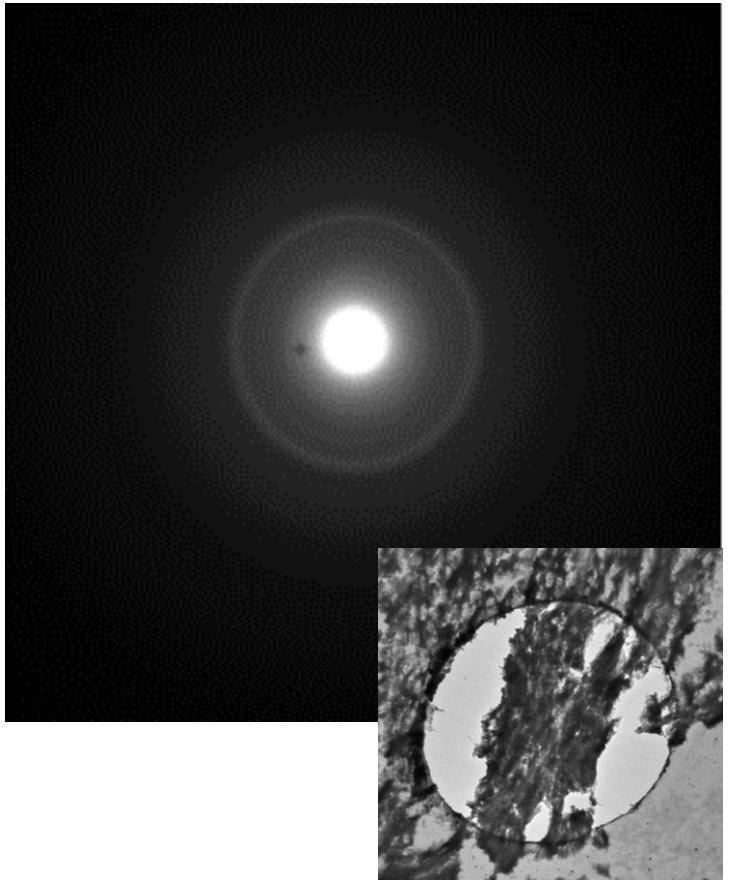
# YOUR WAY TO ELECTRON MICROSCOPY



ED: GaN on SiC

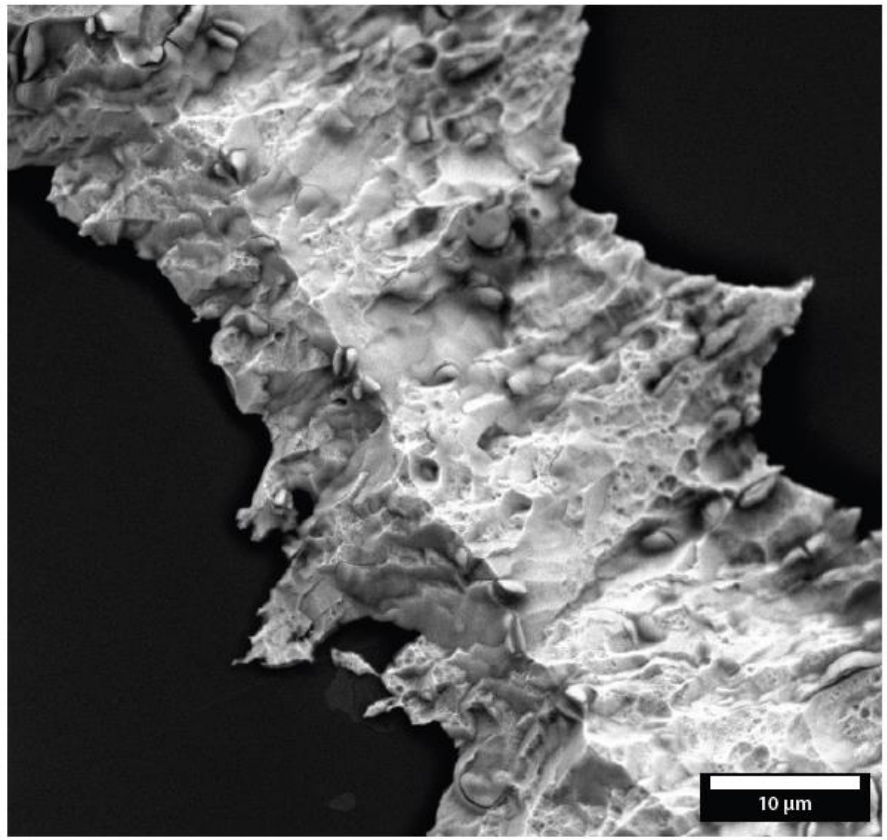


ED: Clam shell



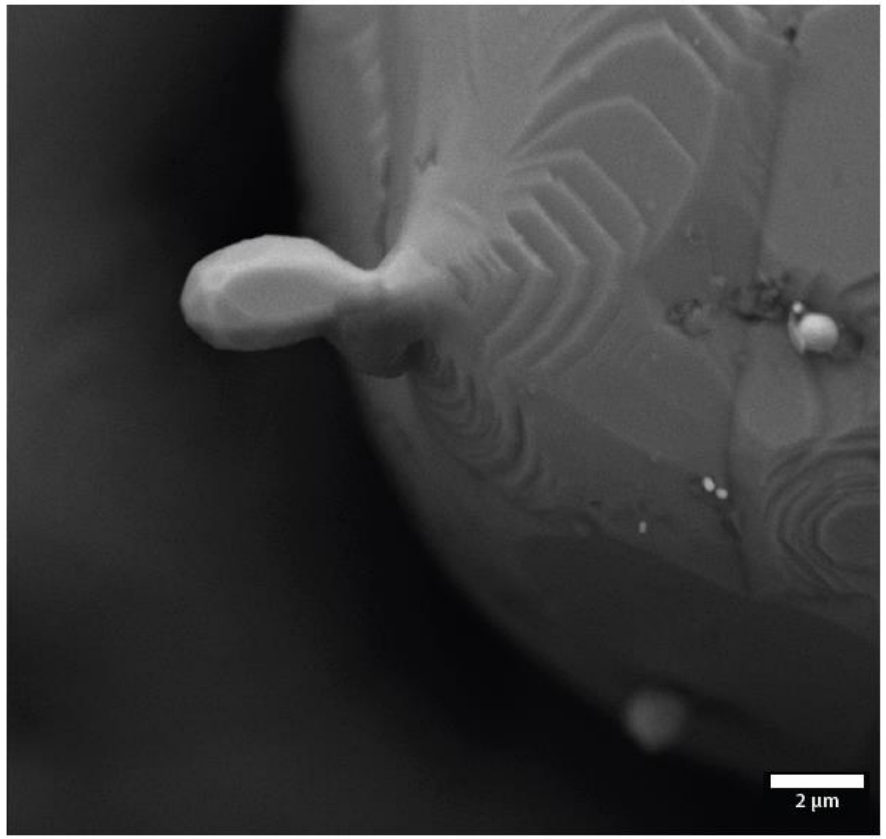
ED: Bone calcification

# YOUR WAY TO ELECTRON MICROSCOPY




## SEM: NIOx

*Sample on grid*

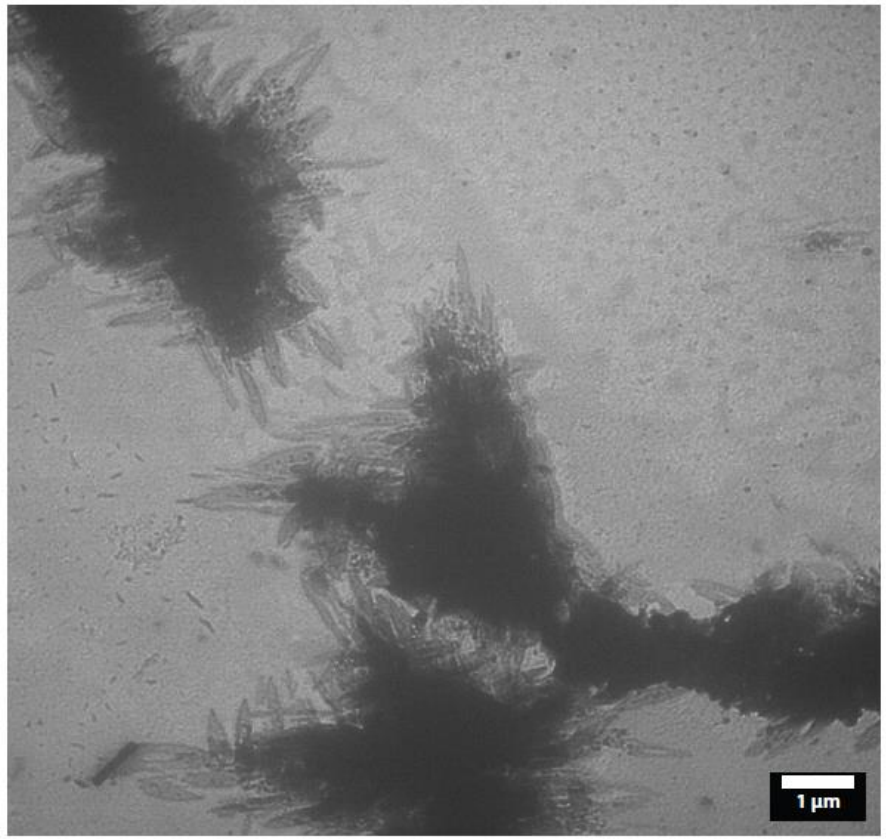



## SEM: Cu Annealed

*Sample on grid*

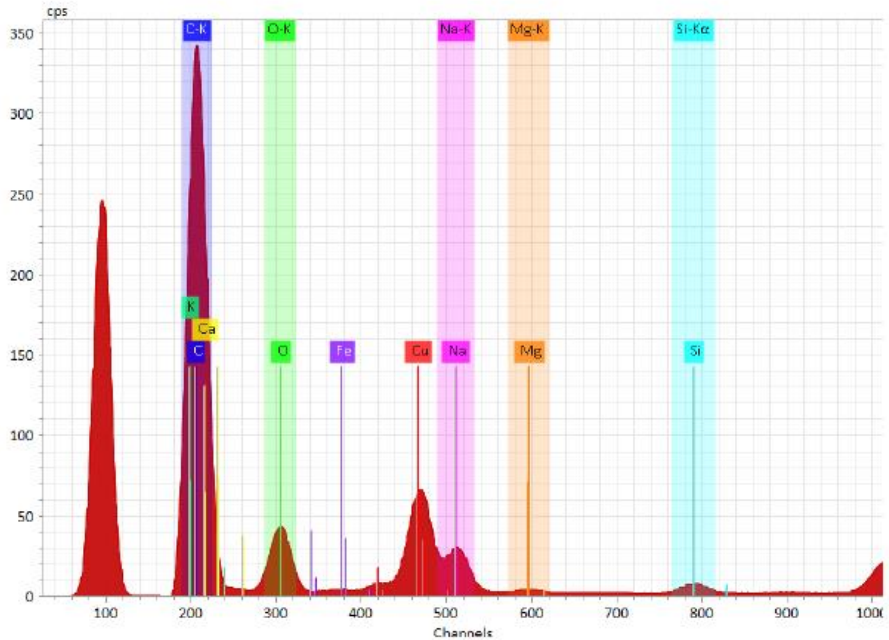
Bulk material

# YOUR WAY TO ELECTRON MICROSCOPY




## TEM: Asbestos

*Particles on carbon*

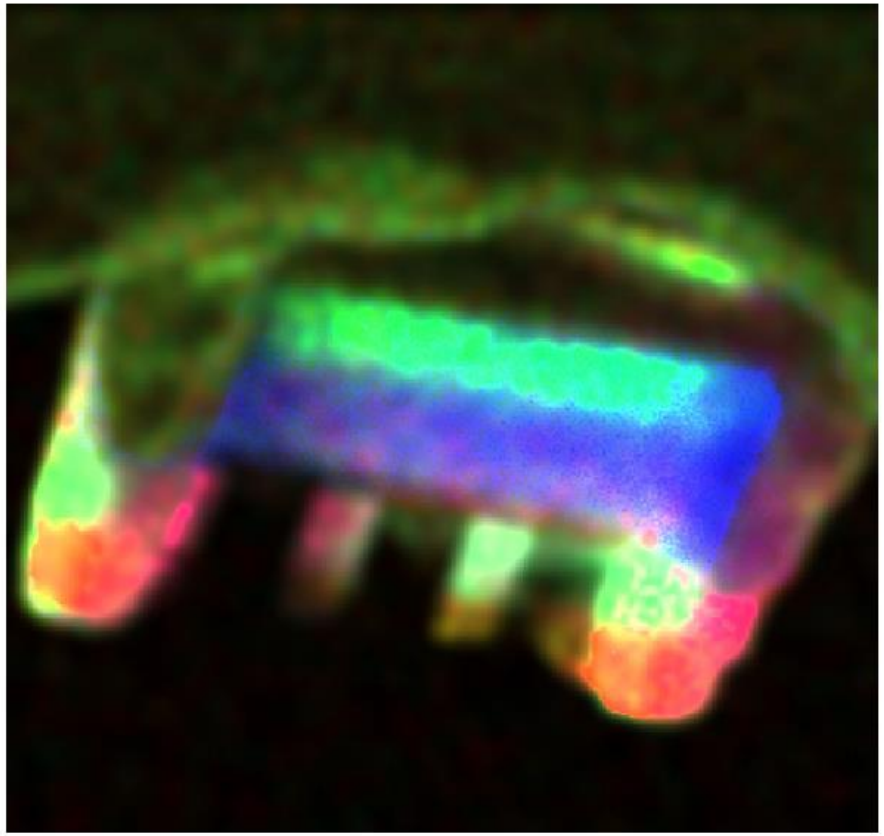



## EDS: Asbestos

*Particles on carbon*

EDS spectrum

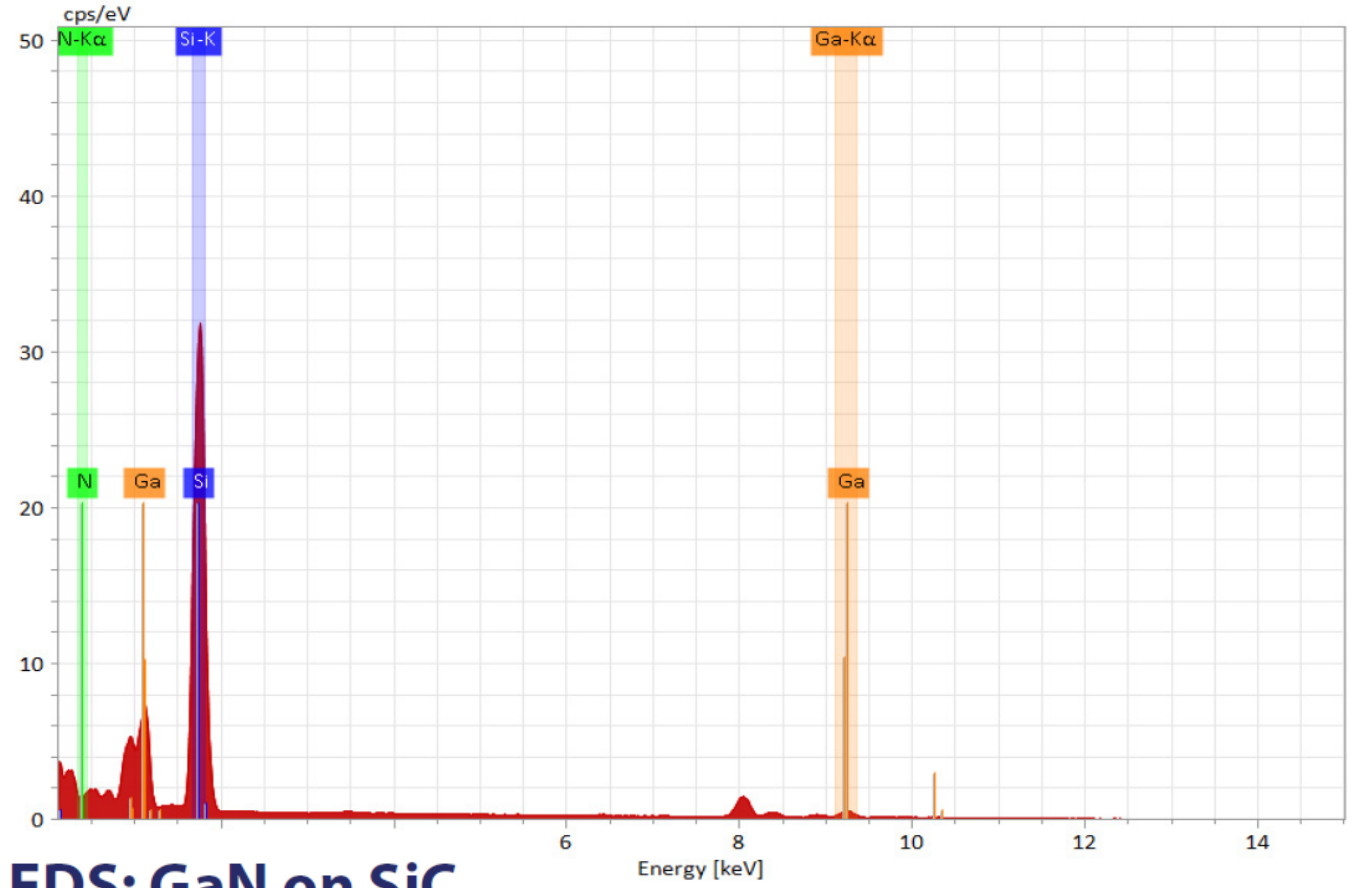
# YOUR WAY TO ELECTRON MICROSCOPY



**EDS: GaN on SiC**

*FIB lamela*

Sample mapping

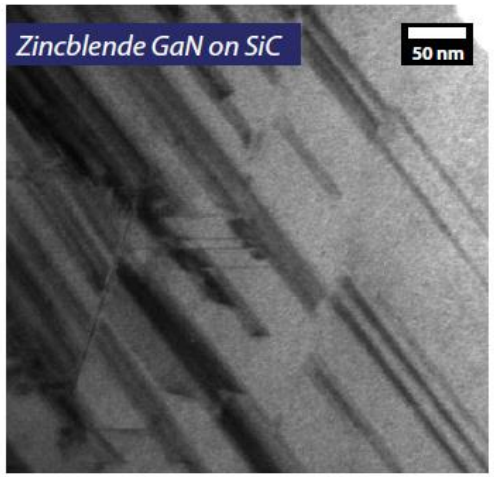



**EDS: GaN on SiC**

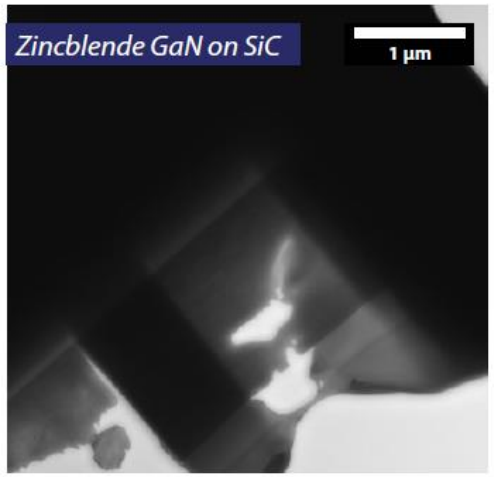
*FIB lamela*

EDS spectrum

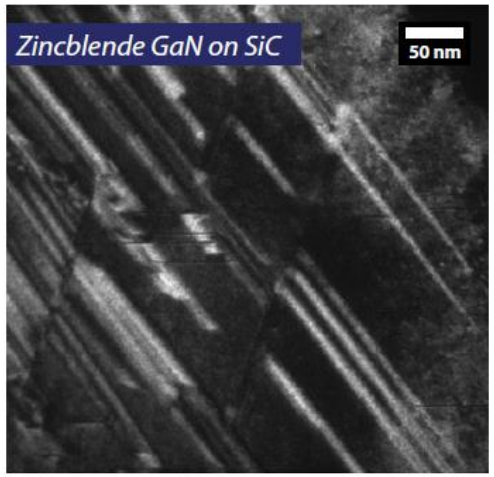
# LVEM 25 E for correlative microscopy



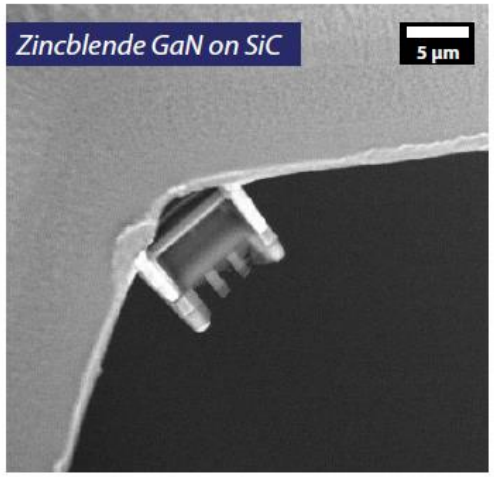

TEM




STEM

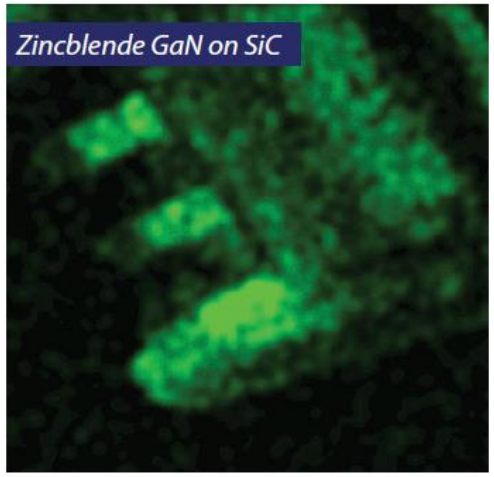



Dark Field




SEM

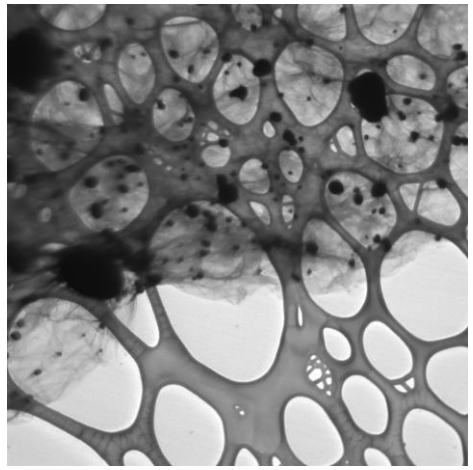

ED



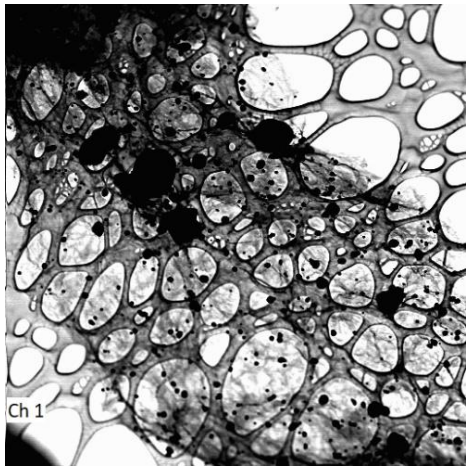

EDS

*Zincblende GaN on SiC.*
*Sample courtesy of ipm.cz*

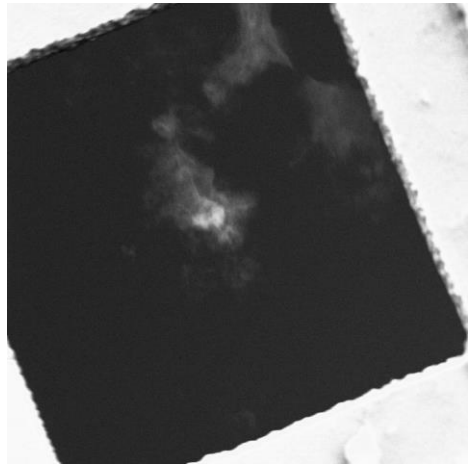
# LVEM 25 E for correlative microscopy



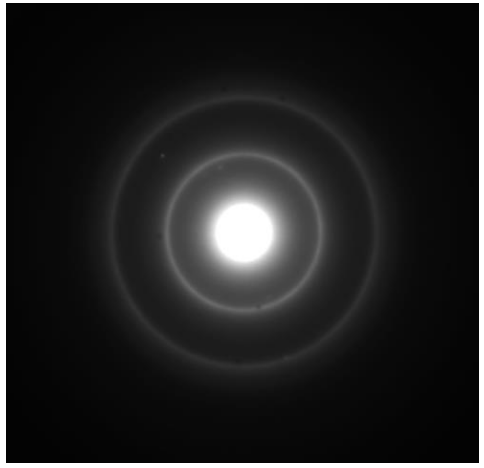
TEM



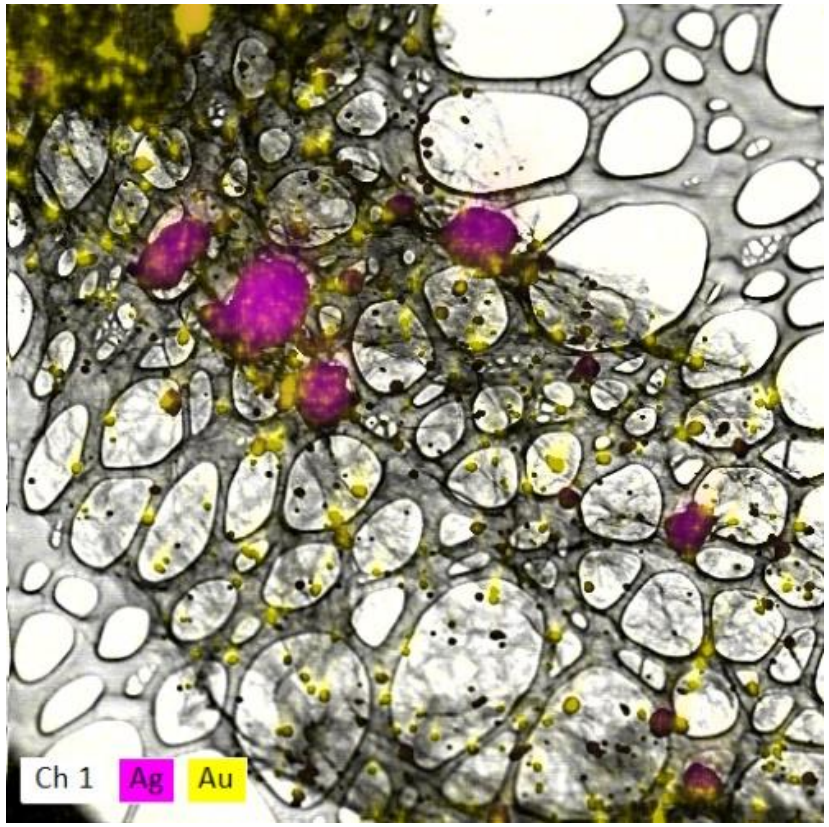

STEM



SEM (BSE)



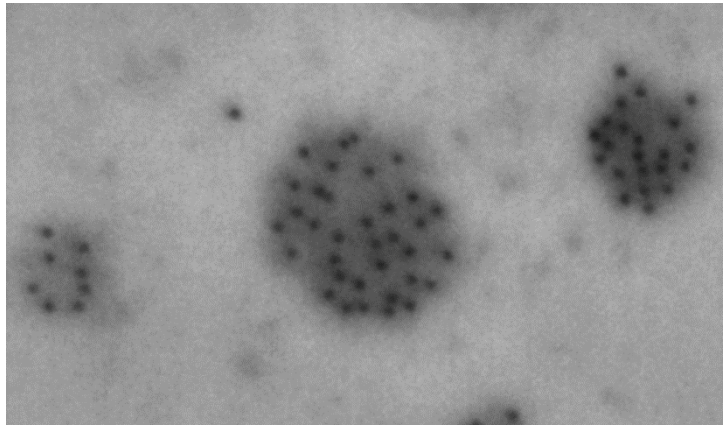
ED



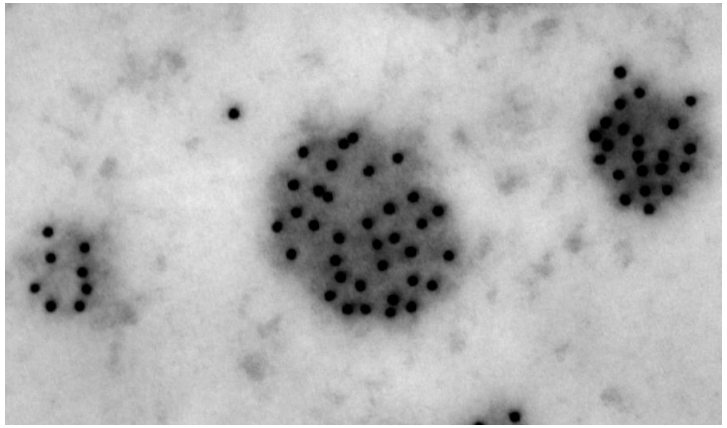

EDS mapping

*Reduced graphene oxide decorated with gold and silver nanoparticles, Z. Bytešníková, Mendel University Brno*

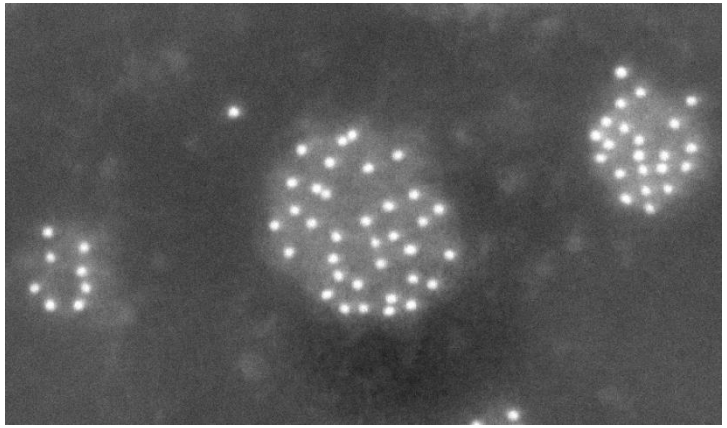
# LVEM 25 E for correlative microscopy



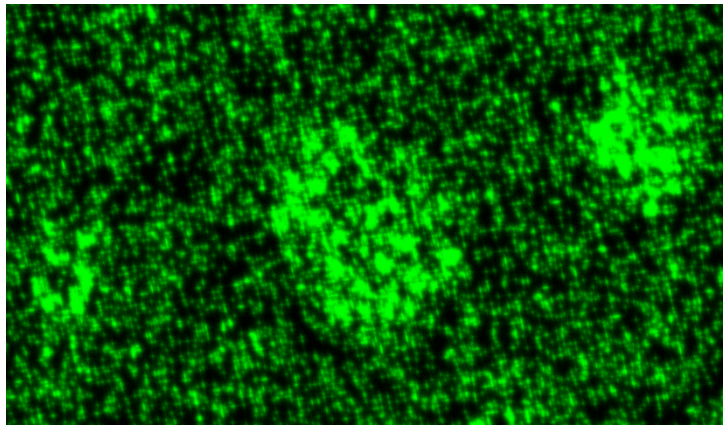
TEM



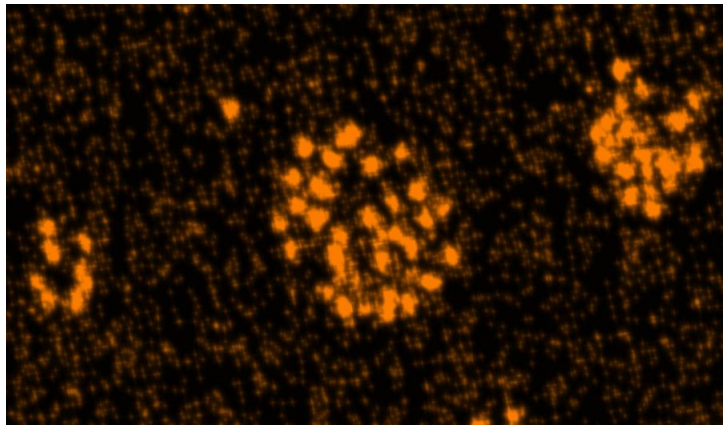
STEM



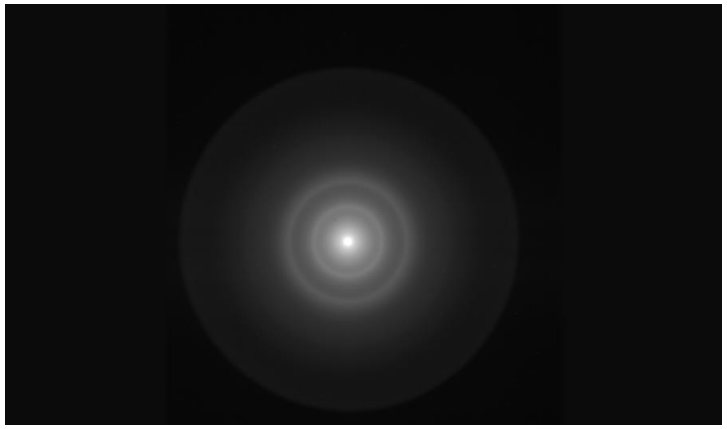
SEM (BSE)



EDS mapping (S)



EDS mapping (Au)



ED

*Zebrafish pancreatic cells with golden immunolabeling concentrated in insulin, T. Kurth, TU Dresden*

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