

# LVEM Introduction

LOW VOLTAGE ELECTRON MICROSCOPES FOR  
EVERY LAB

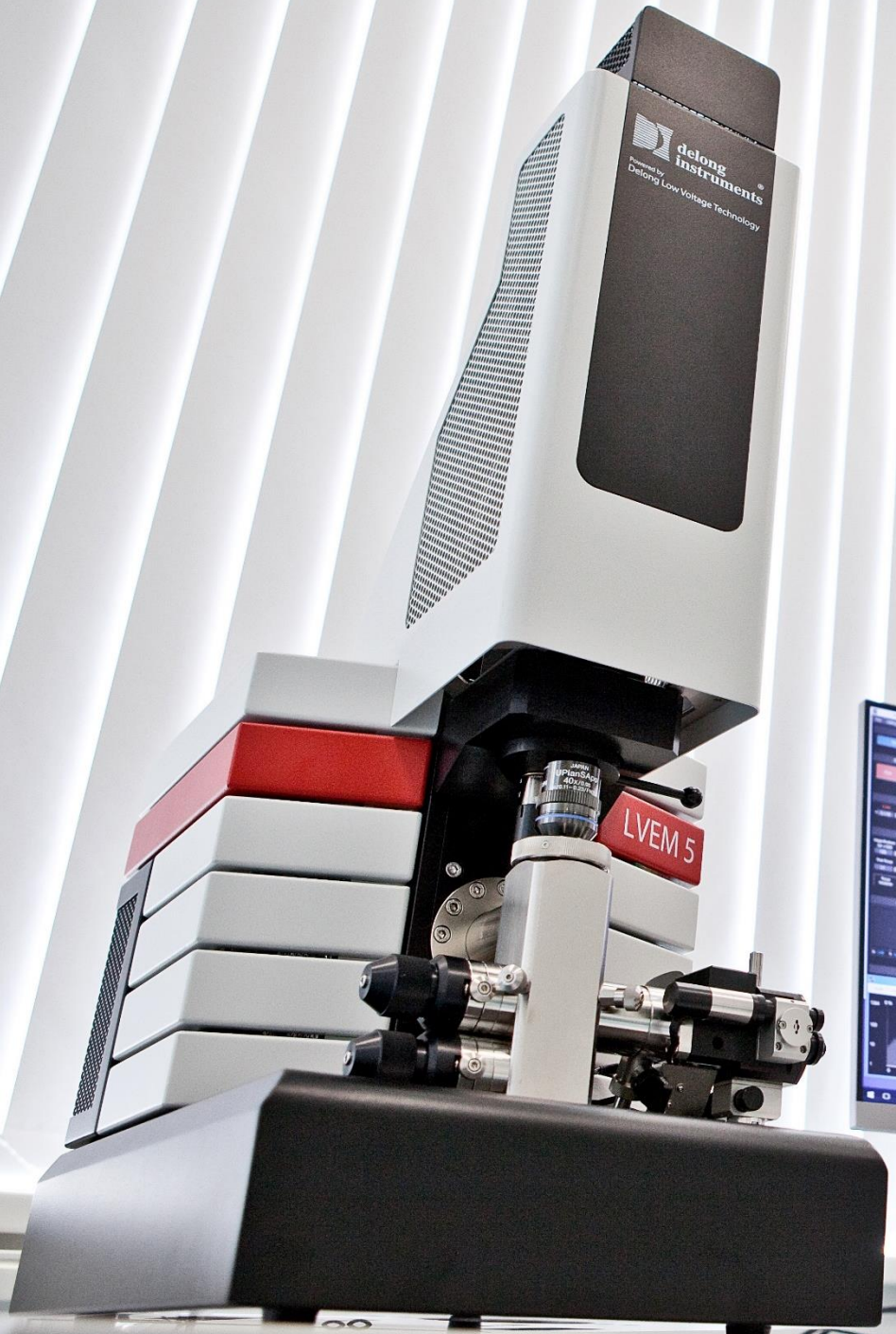


„Every scientist should have the opportunity to regularly use a transmission electron microscope for his or her research.“

Prof. Armin Delong

founder of electron microscopy in  
Czechoslovakia

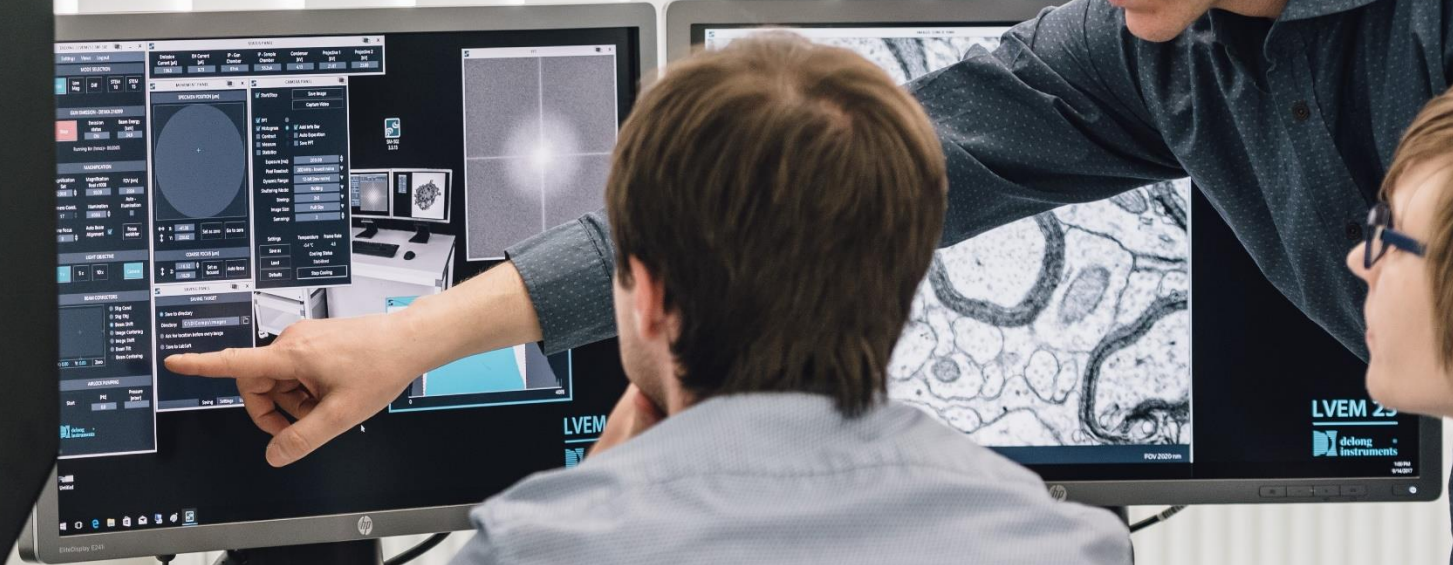






**delong instruments**  
Powered by  
Delong Low Voltage Technology

**LVEM 25**



# LOW VOLTAGE TEM?



1.008 1 H Vodik -I, I																	4.003 2 He Helium						
6.94 3 Li Lithium I	9.01 4 Be Beryllium II																	10.81 5 B Bor III	12.01 6 C Uhlík -IV, II, IV	14.00 7 N Dusík -III, I, II, III, IV, V	15.99 8 O Kyslík -II, -I	18.99 9 F Fluor -I	20.18 10 Ne Neon
22.99 11 Na Sodík I	24.30 12 Mg Hořčík II																	26.98 13 Al Hliník III	28.09 14 Si Křemík -IV, IV	30.97 15 P Fosfor -III, I, III, V	32.07 16 S Síra -II, II, IV, VI	35.45 17 Cl Chlor -I, I, III, V, VII	39.95 18 Ar Argon
39.10 19 K Draslík I	40.08 20 Ca Vápník II	44.96 21 Sc Skandium III	47.87 22 Ti Titan II, IV	50.94 23 V Vanad II, III, IV, V	52.00 24 Cr Chrom II, III, VI	54.94 25 Mn Mangan II, III, IV, VI, VII	55.85 26 Fe Železo II, III, VI	58.93 27 Co Kobalt II, III	58.70 28 Ni Nikl II, III	63.55 29 Cu Měď I, II	65.40 30 Zn Zinek II	69.72 31 Ga Gallium III	72.64 32 Ge Germanium II, IV	74.92 33 As Arsen -III, III, V	78.96 34 Se Selen -II, IV, VI	79.90 35 Br Brom -I, I, III, V, VII	83.80 36 Kr Krypton II						
85.47 37 Rb Rubidium I	87.62 38 Sr Stroncium II	88.91 39 Y Yttrium III	91.20 40 Zr Zirkonium IV	92.90 41 Nb Niob III, V	96.00 42 Mo Molybden II, III, IV, V, VI	96.90 43 Tc Technecium VII	101.10 44 Ru Ruthenium II, III, IV, V, VIII	102.90 45 Rh Rhodium I, II, III, IV, V	106.40 46 Pd Palladium II, IV	107.90 47 Ag Stříbro I, II	112.40 48 Cd Kadmium II	114.80 49 In Indium III	118.70 50 Sn Cin II, IV	121.80 51 Sb Antimon -III, III, V	127.60 52 Te Tellur -II, IV, VI	126.90 53 I Jod -I, I, V, VII	131.30 54 Xe Xenon II, IV, VI						
132.90 55 Cs Cesium I	137.30 56 Ba Baryum II	138.90 57 La Lanthan III	178.50 72 Hf Hafnium IV	180.95 73 Ta Tantal V	183.80 74 W Wolfram II, III, IV, V, VI	186.20 75 Re Rhenium II, IV, V, VI, VII	190.20 76 Os Osmium II, III, IV, V, VIII	192.20 77 Ir Iridium I, II, III, IV, IV	195.10 78 Pt Platina II, IV	197.00 79 Au Zlato I, III	200.60 80 Hg Rtuť I, II	204.40 81 Tl Thallium I, III	207.20 82 Pb Olovo II, IV	209.00 83 Bi Bismut III, V	209.00 84 Po Polonium II, IV, VI	210.00 85 At Astat -I, I, III, V, VII	222.02 86 Rn Radon II						
223.00 87 Fr Francium I	226.00 88 Ra Radium II	227.00 89 Ac Aktinium III	267.10 104 Rf Rutherfordium	268.10 105 Db Dubnium	271.10 106 Sg Seaborgium	272.14 107 Bh Bohrium	277.20 108 Hs Hassium	276.20 109 Mt Meitnerium	281.20 110 Ds Darmstadtium	280.20 111 Rg Roentgenium	285.80 112 Cn Kopernicium	284.20 113 Uut Ununtrium	289.20 114 Fl Flerovium	288.20 115 Uup Ununpentium	292.00 116 Lv Livermorium	292.00 117 Uus Ununseptium	293.00 118 Uuo Ununoctium						
140.10 58 Ce Cer II, IV	140.90 59 Pr Praseodym III, IV	144.20 60 Nd Neodym III	144.90 61 Pm Promethium III	150.40 62 Sm Samarium II, III	152.00 63 Eu Europium II, III	157.30 64 Gd Gadolinium III	158.90 65 Tb Terbium III, IV	162.50 66 Dy Dysprosium III	164.90 67 Ho Holmium III	167.30 68 Er Erbium III	168.90 69 Tm Thulium II, III	173.10 70 Yb Ytterbium II, III	175.00 71 Lu Lutecium III										
232.00 90 Th Thorium IV	231.00 91 Pa Protaktinium IV, V	238.00 92 U Uran III, IV, V, VI	237.00 93 Np Neptunium III, IV, V, VI	244.10 94 Pu Plutonium III, IV, V, VI	243.10 95 Am Americium III, IV, V, VI	247.10 96 Cm Curium II, IV	247.10 97 Bk Berkelium III, IV	251.10 98 Cf Kalifornium III, IV	252.10 99 Es Einsteinium III	257.10 100 Fm Fermium III	258.10 101 Md Mendelevium III	259.10 102 No Nobelium II, III	262.10 103 Lr Lawrencium III										

# LVEM Advantages



## High contrast with biologic and light material samples

- Lower necessity of staining
- Excellent for organic samples and nanomaterials

## Suitability of permanent magnet lenses

- No water cooling
- Allowing miniaturisation



# LVEM 5: Nanoscale from Your Benchtop



- Unique benchtop design
- Easy installation
- Simplified workflow
- Quick sample exchange
- Fast results
- Standard TEM grids
- Schottky FEG

# LVEM 5: The World's Smallest TEM



## Universal

- TEM
- SEM
- STEM
- ED

## High resolution

- 1.2 nm TEM Boost
- 4 nm SEM
- 2.5 nm STEM





# LVEM 25: Uncomplicated & Quick Results



- Compact design
- Easy installation
- Simplified software and intuitive controls
- High contrast
- Fast sample exchange
- Standard TEM grids
- Schottky FEG

# LVEM 25: Fast • Compact • Powerful

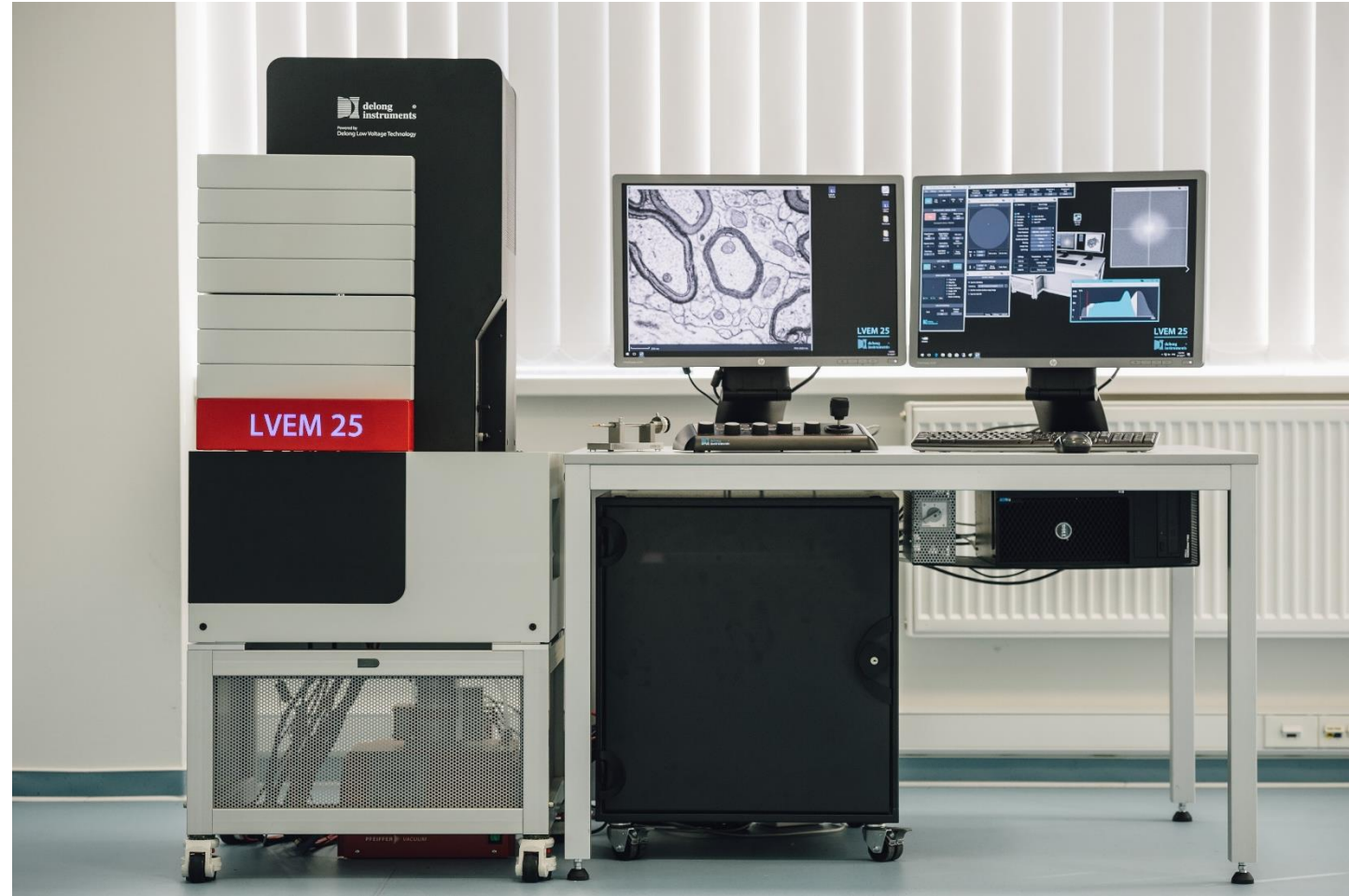


## Compact

- TEM (25 kV)
- STEM (10 a 15 kV)
- ED

## High resolution

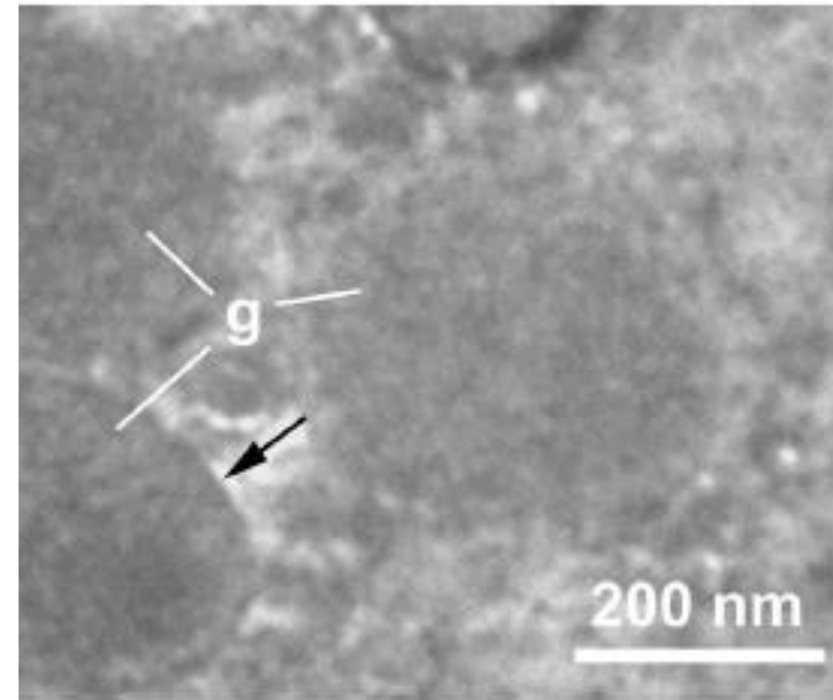
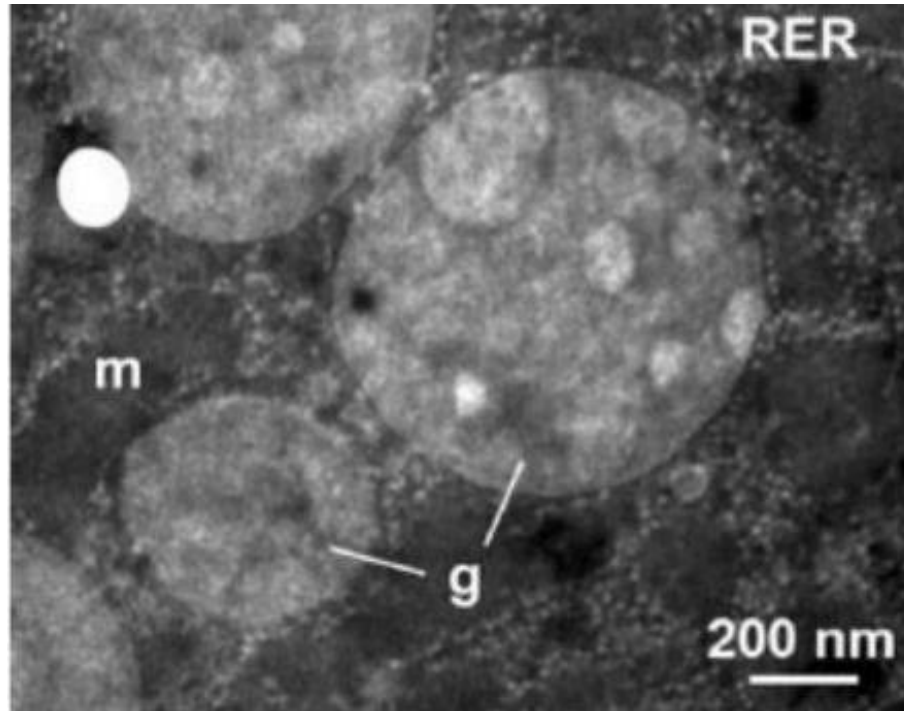
- 1.0 nm TEM
- 1.0 nm STEM 10 kV
- 1.3 nm STEM 15 kV



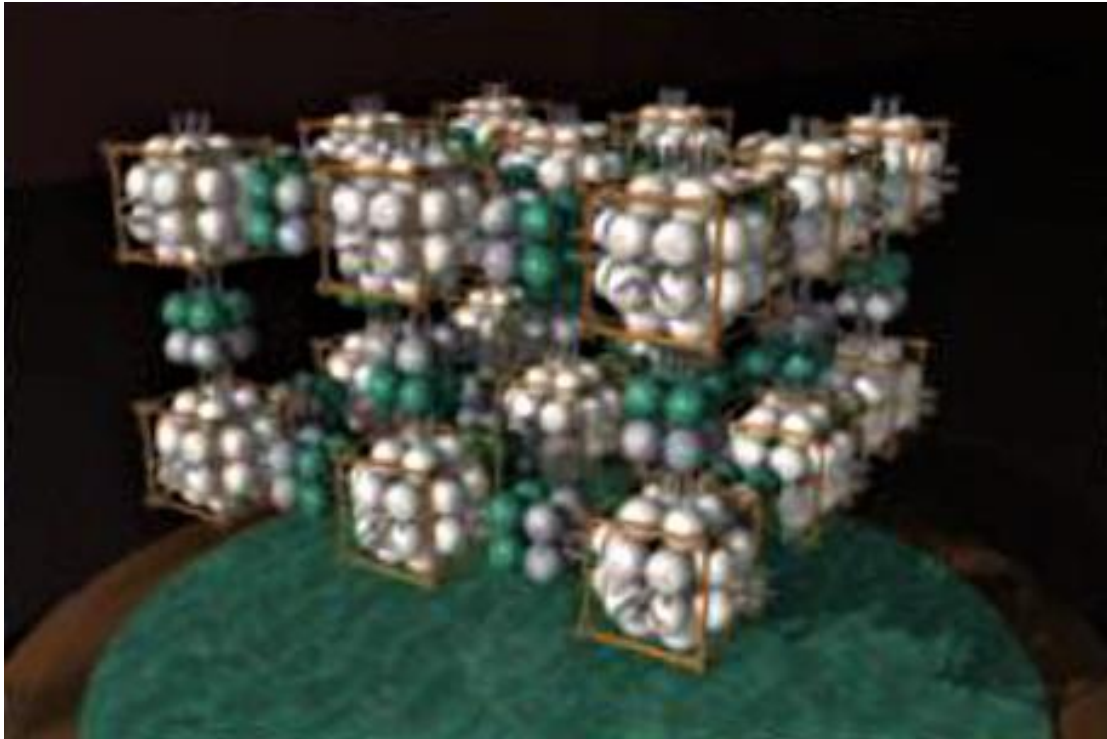


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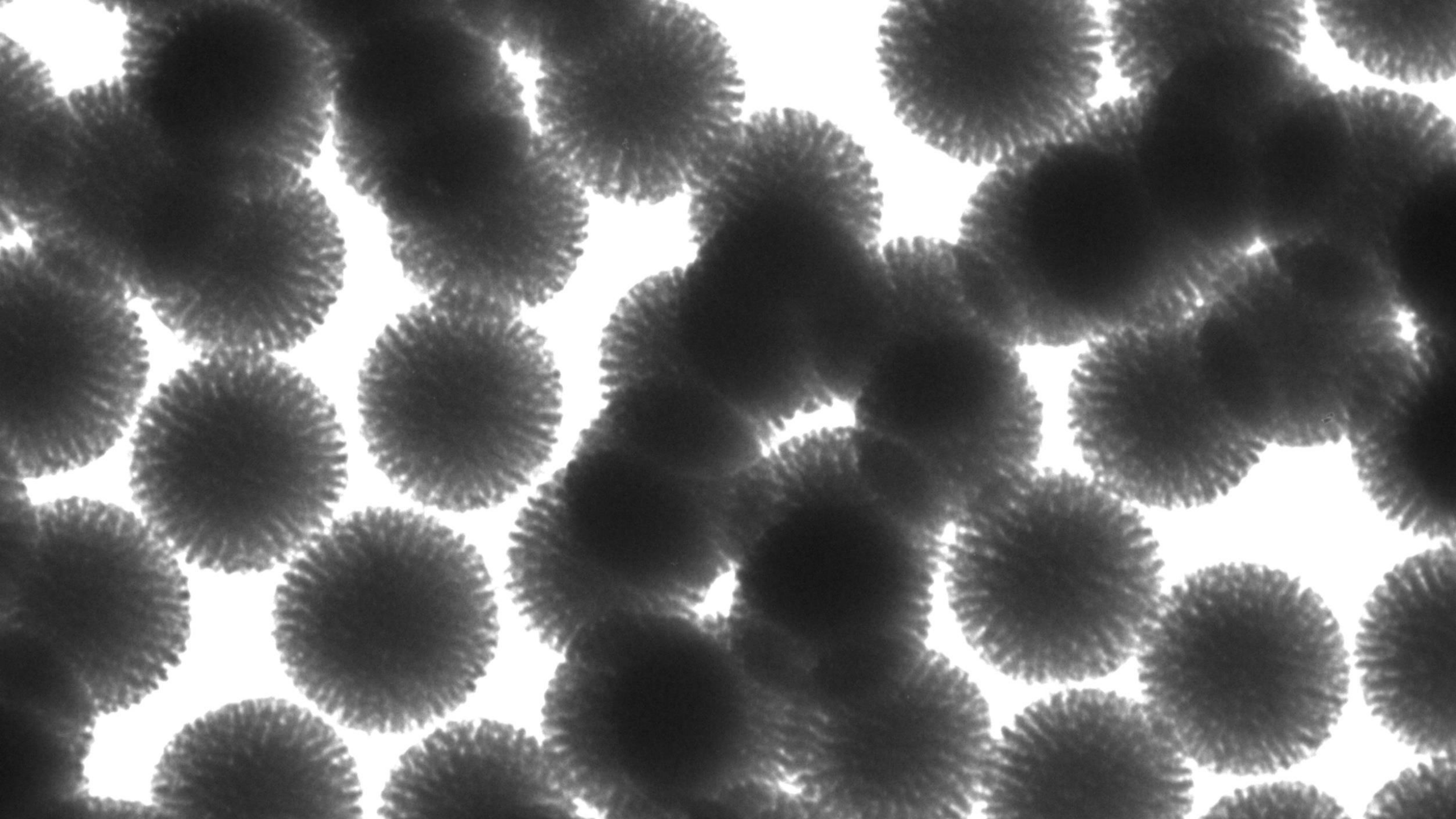
# Where LVEMs Help

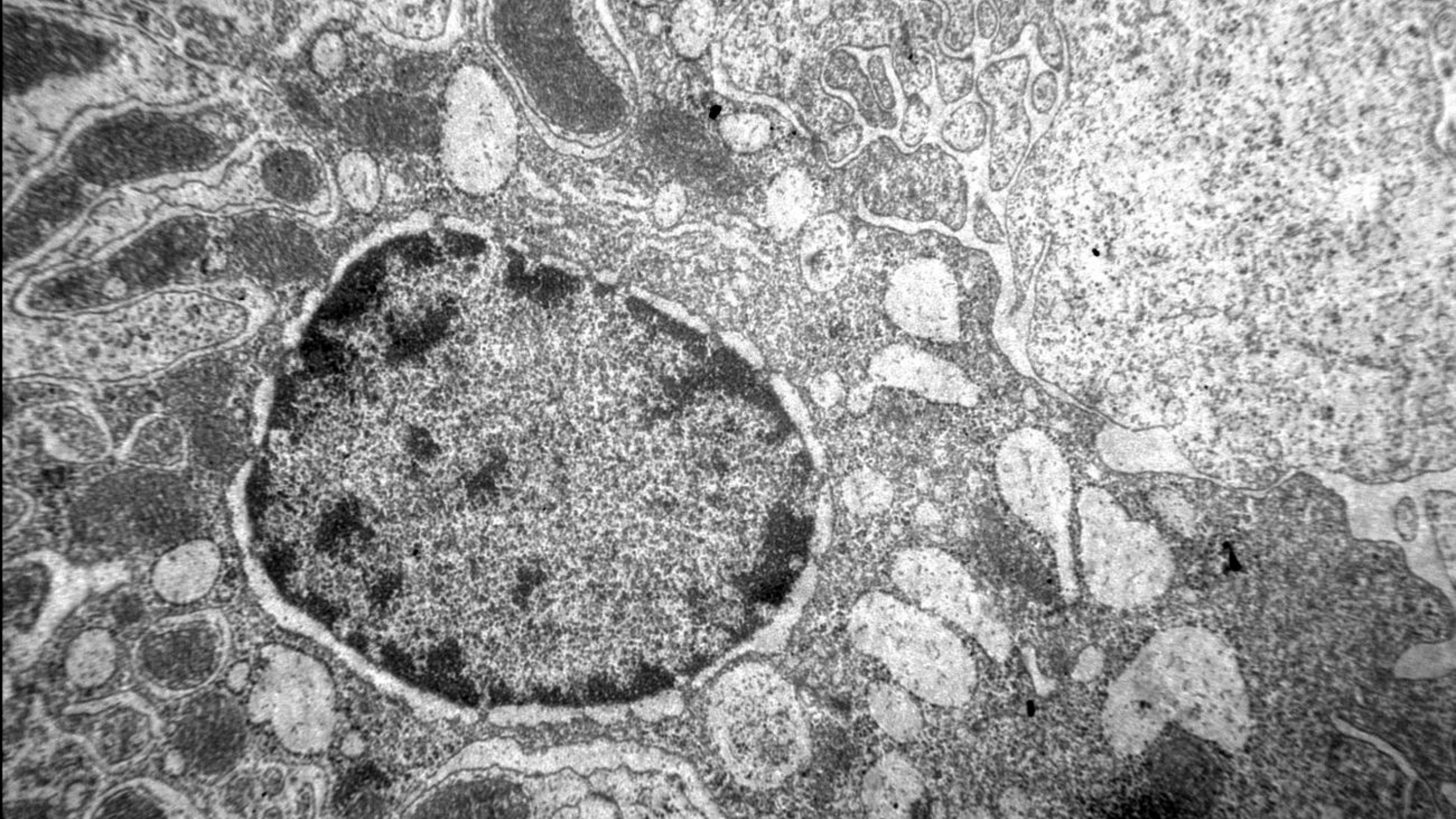


- Examination of ultrathin (30nm) sections of non-osmicated, stain-free pancreatic tissue sections by low-voltage electron microscopy revealed the existence of granules with non-homogeneous matrix and sub-compartments having circular or oval profiles of different electron densities and sizes.

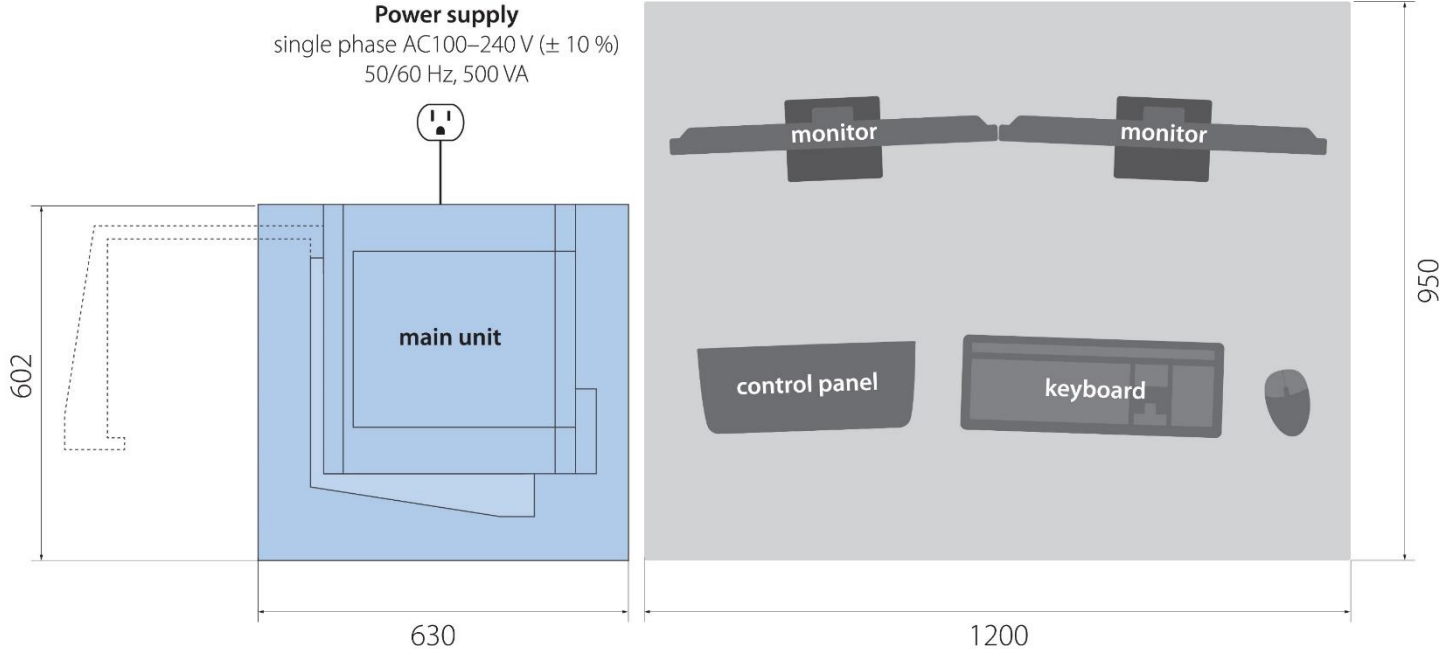
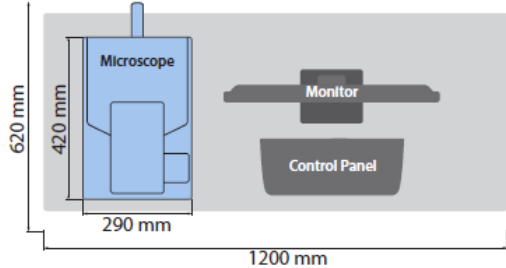
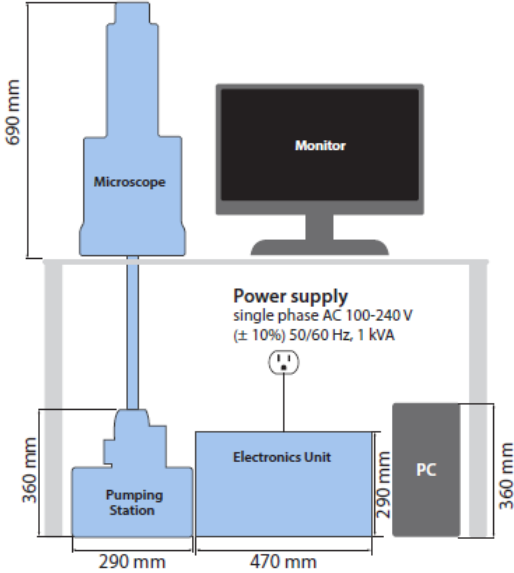


- Crystals - a new class of protein-based materials
- Staining the proteins interferes with lattice self-assembly



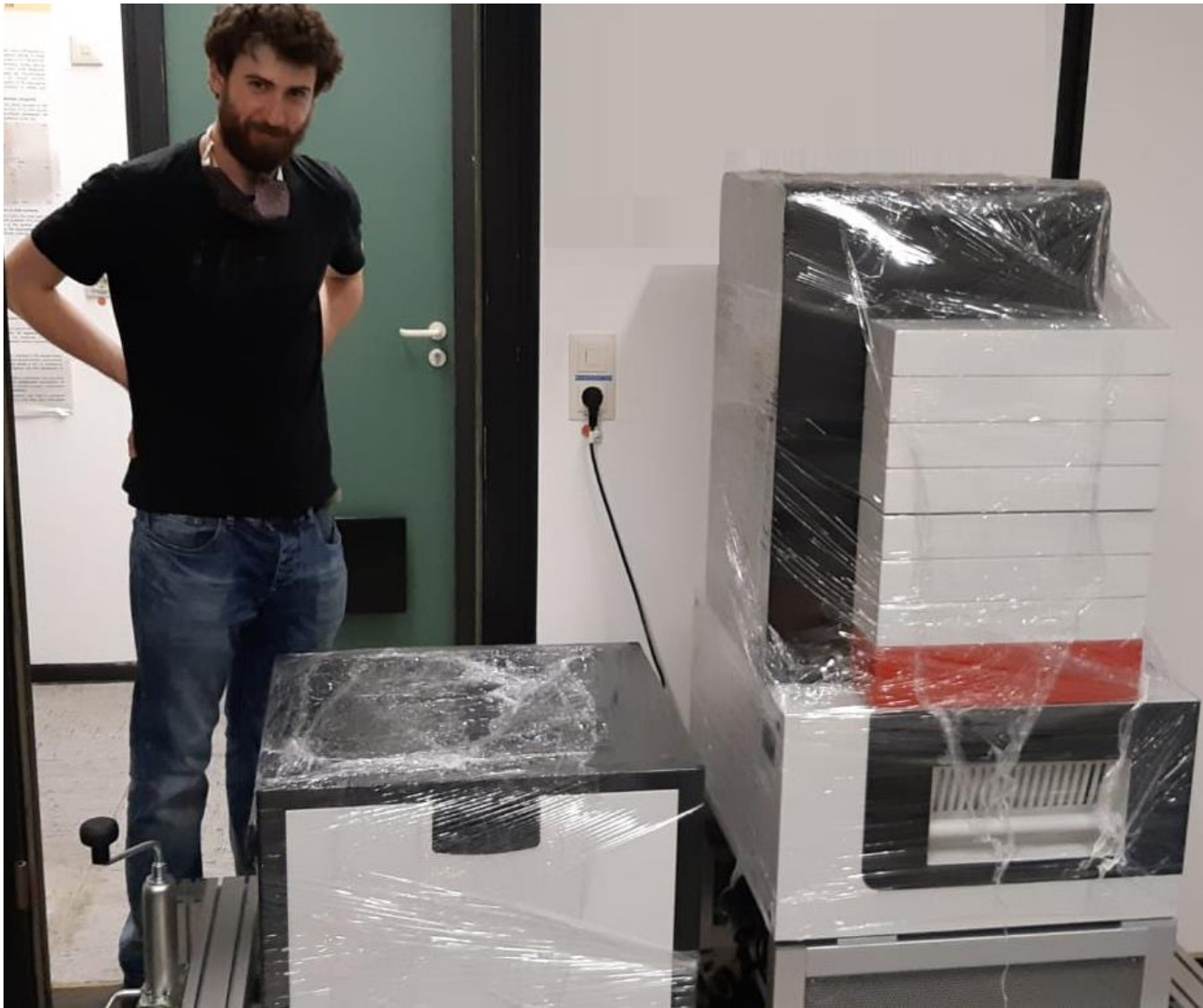
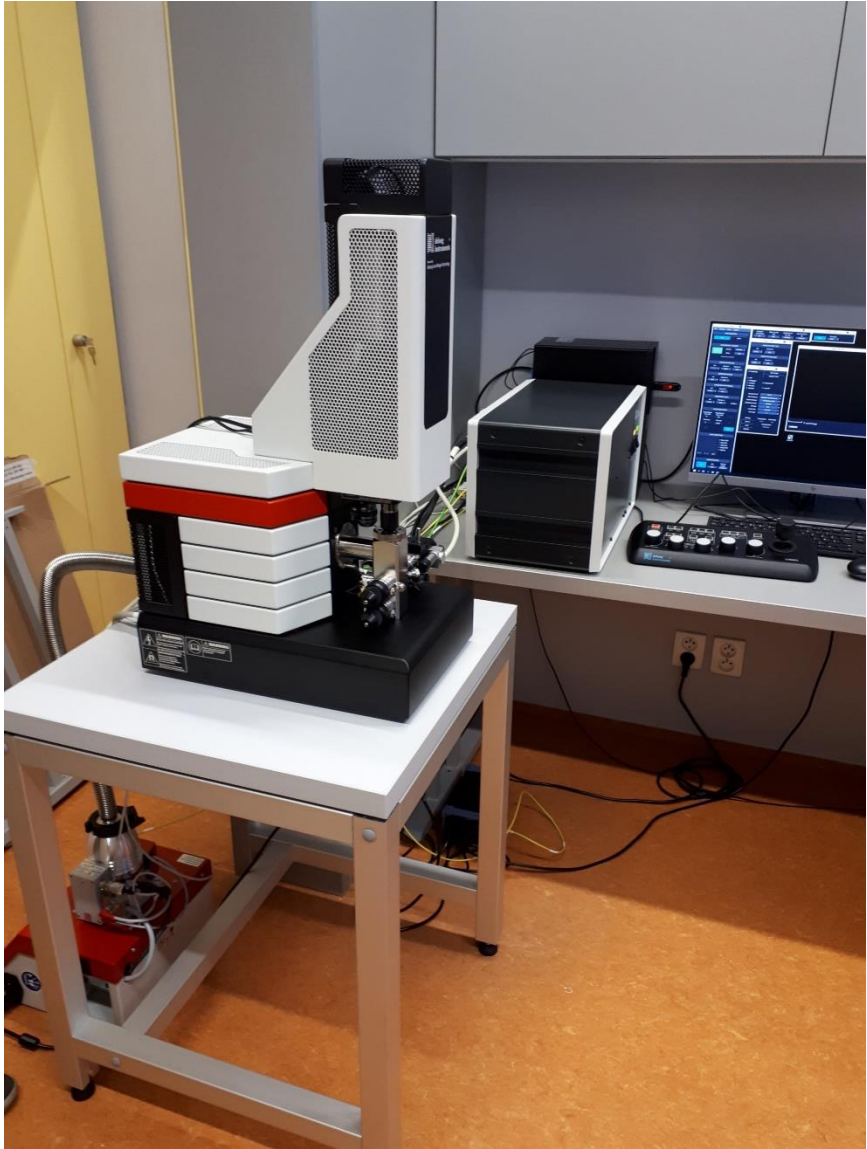


# Where LVEMs Help





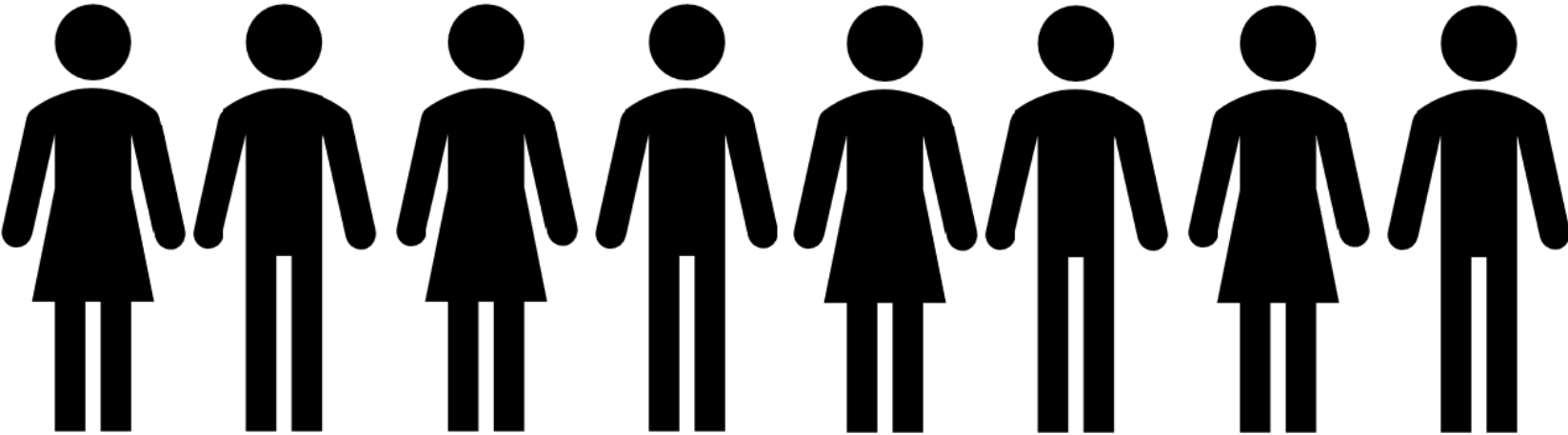
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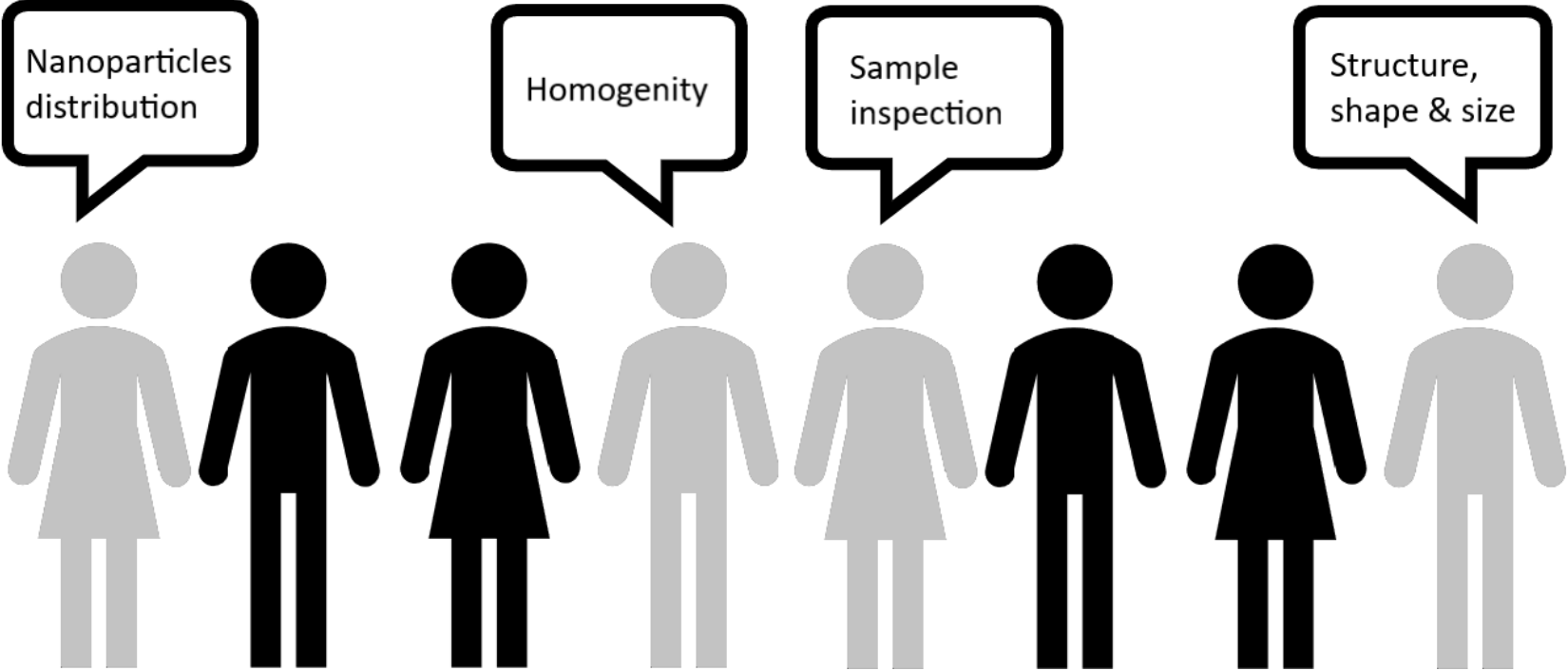
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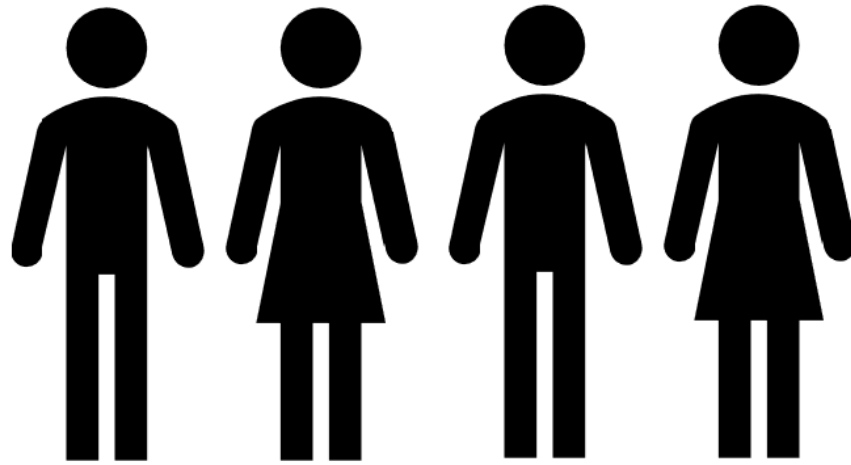
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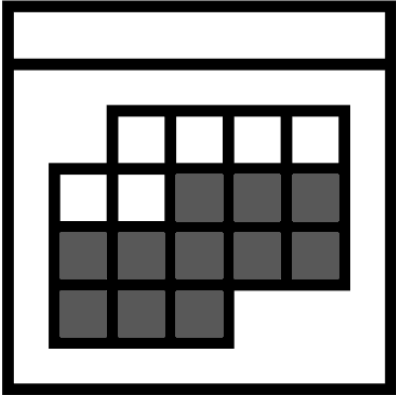
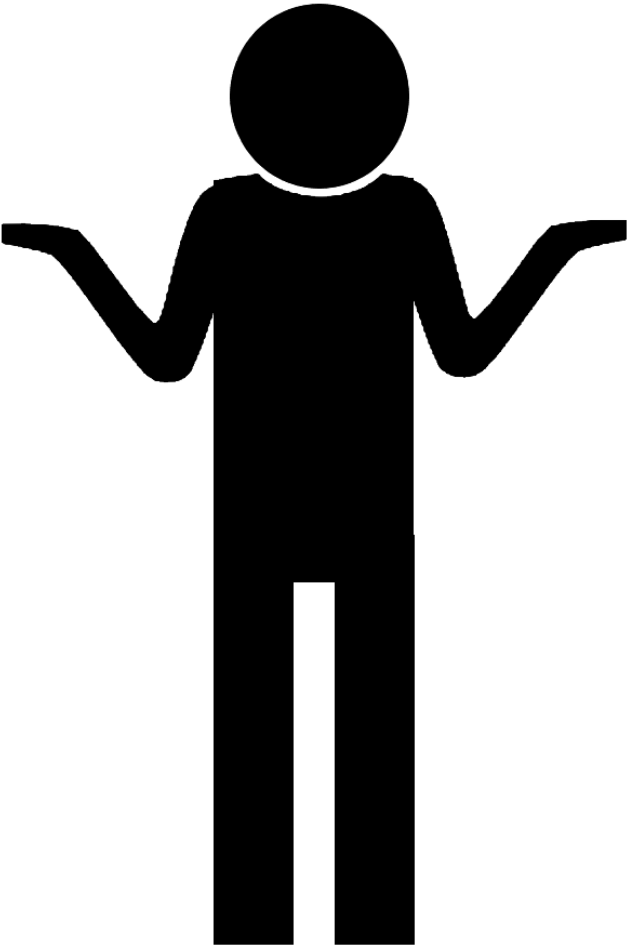
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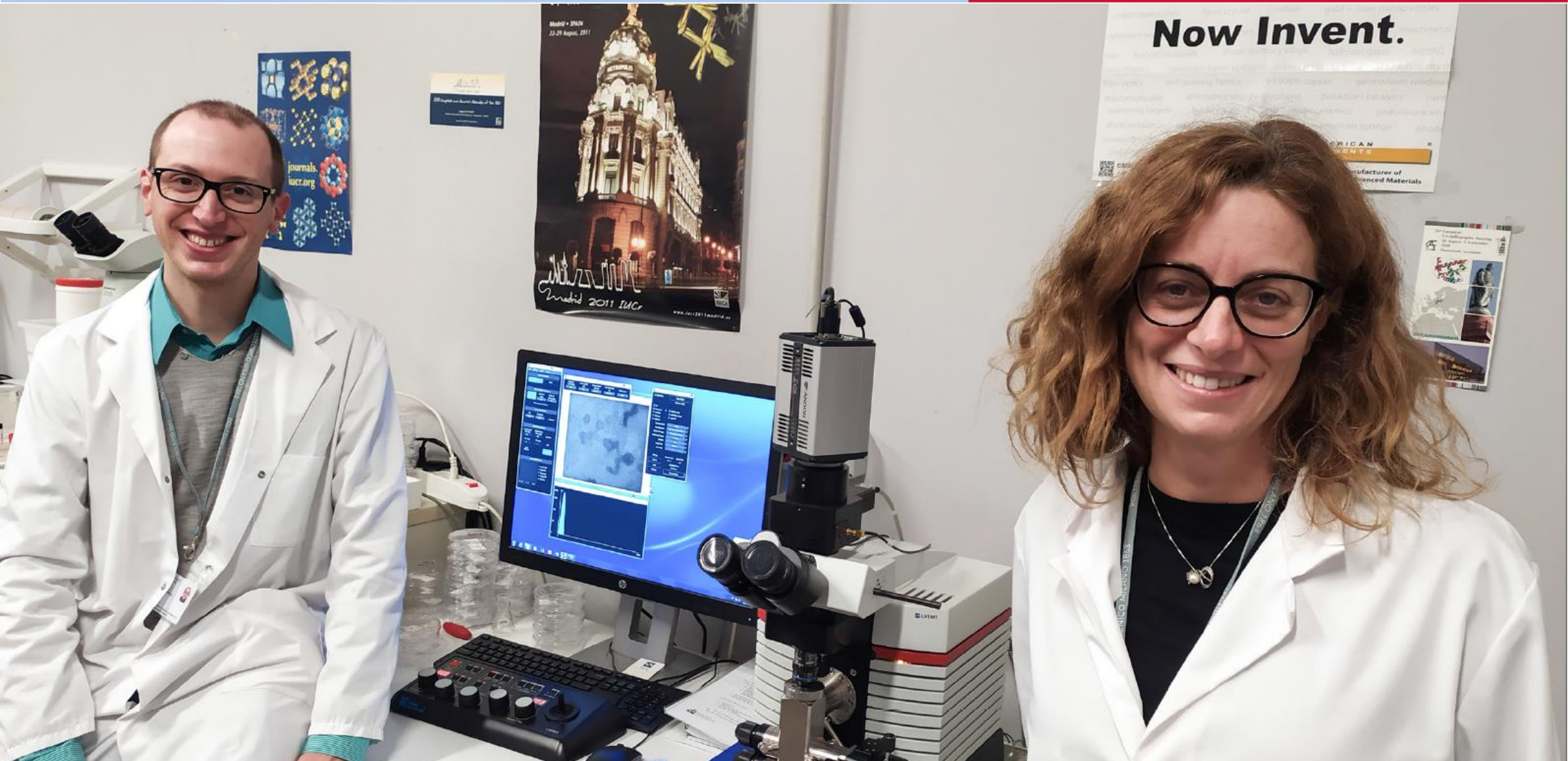
# Where LVEMs Help



# Where LVEMs Help



# Where LVEMs Help



# Where LVEMs Help



- When you need naturally high contrast, even without staining
- If you need a TEM and have so little space
- In case you need a robust instrument for students
- When you need to redirect the routine tasks from an overloaded big TEM
- If you need a TEM at hand for your research





# Let's talk about LVEM



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