



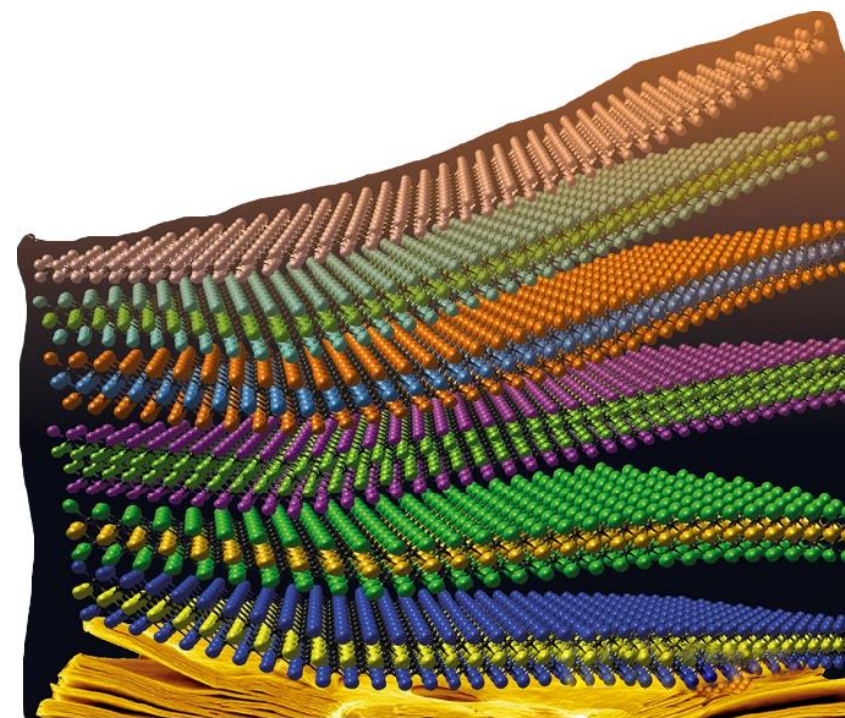
Visualisation of $\text{Ti}_3\text{C}_2\text{T}_x$ MXenes in eukaryotic cells by Transmission Electron Microscopy



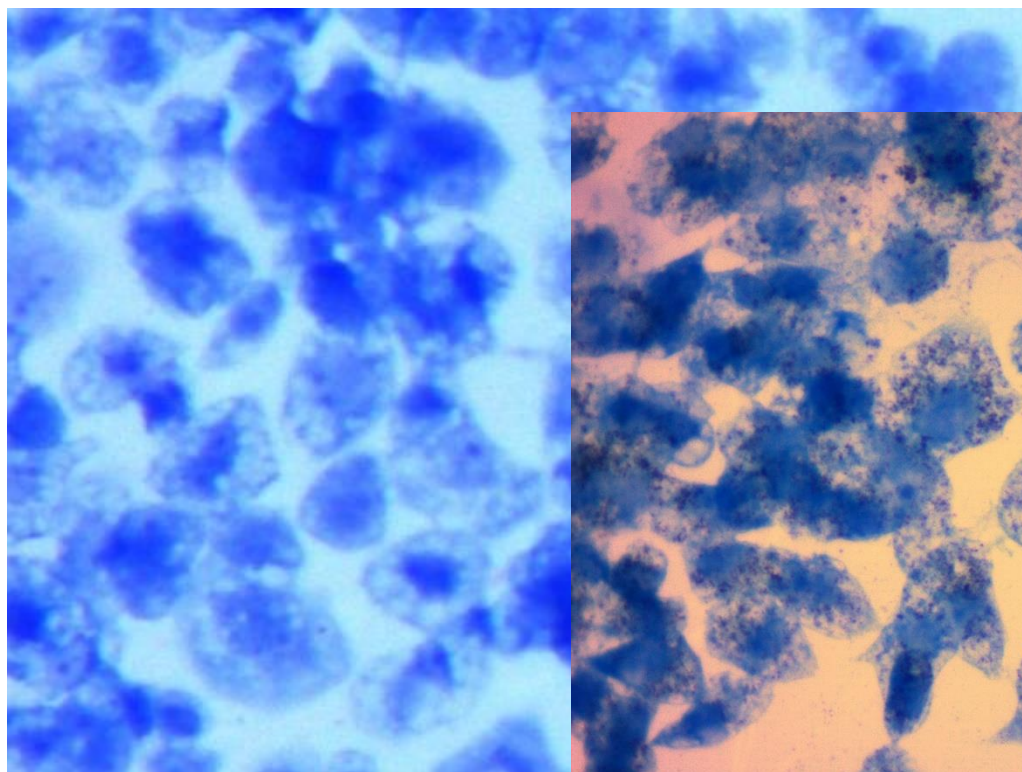
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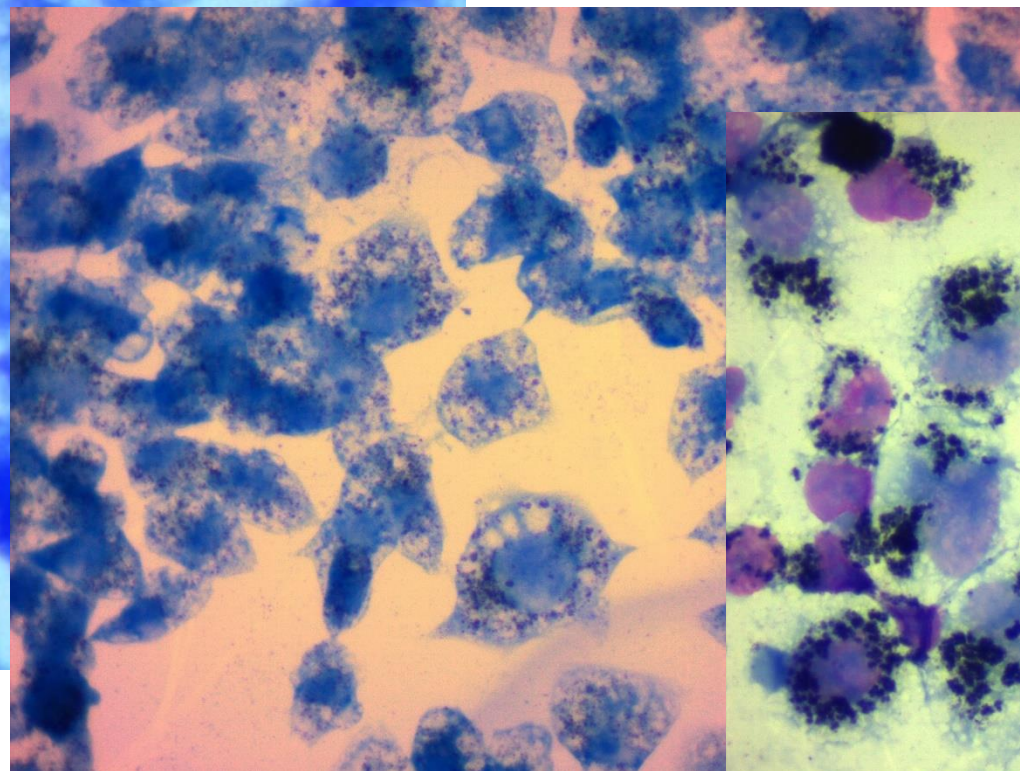
VERBA
& HEALTH



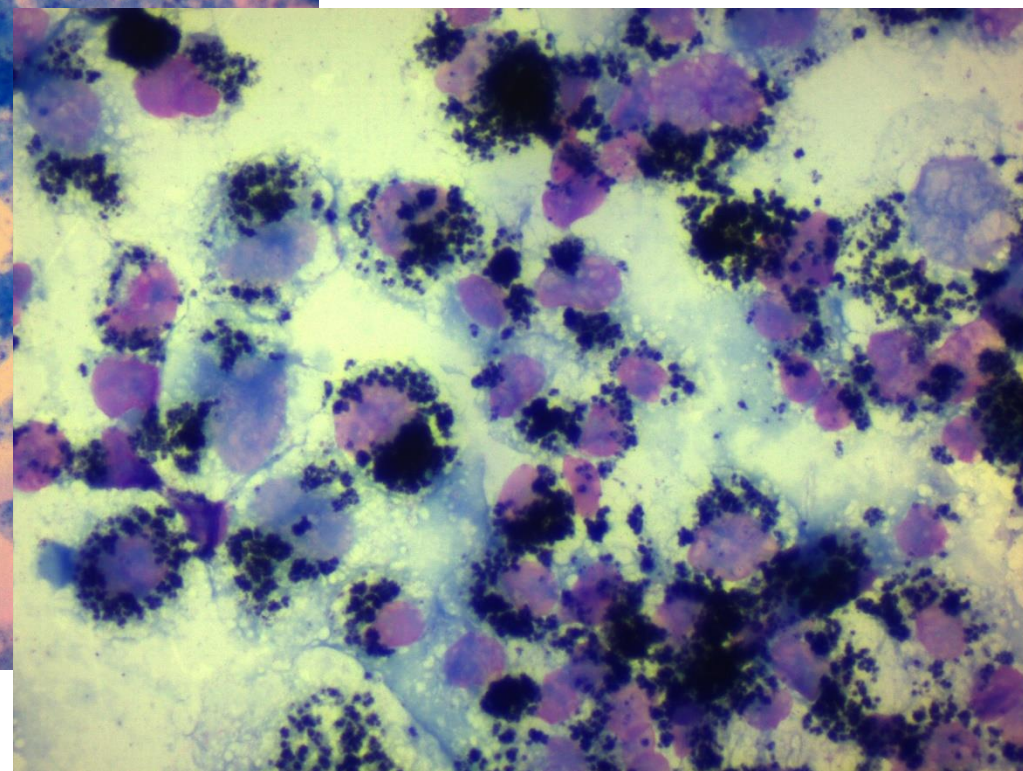
Ti₃C₂T_x MXenes in human mesenchymal stem cells



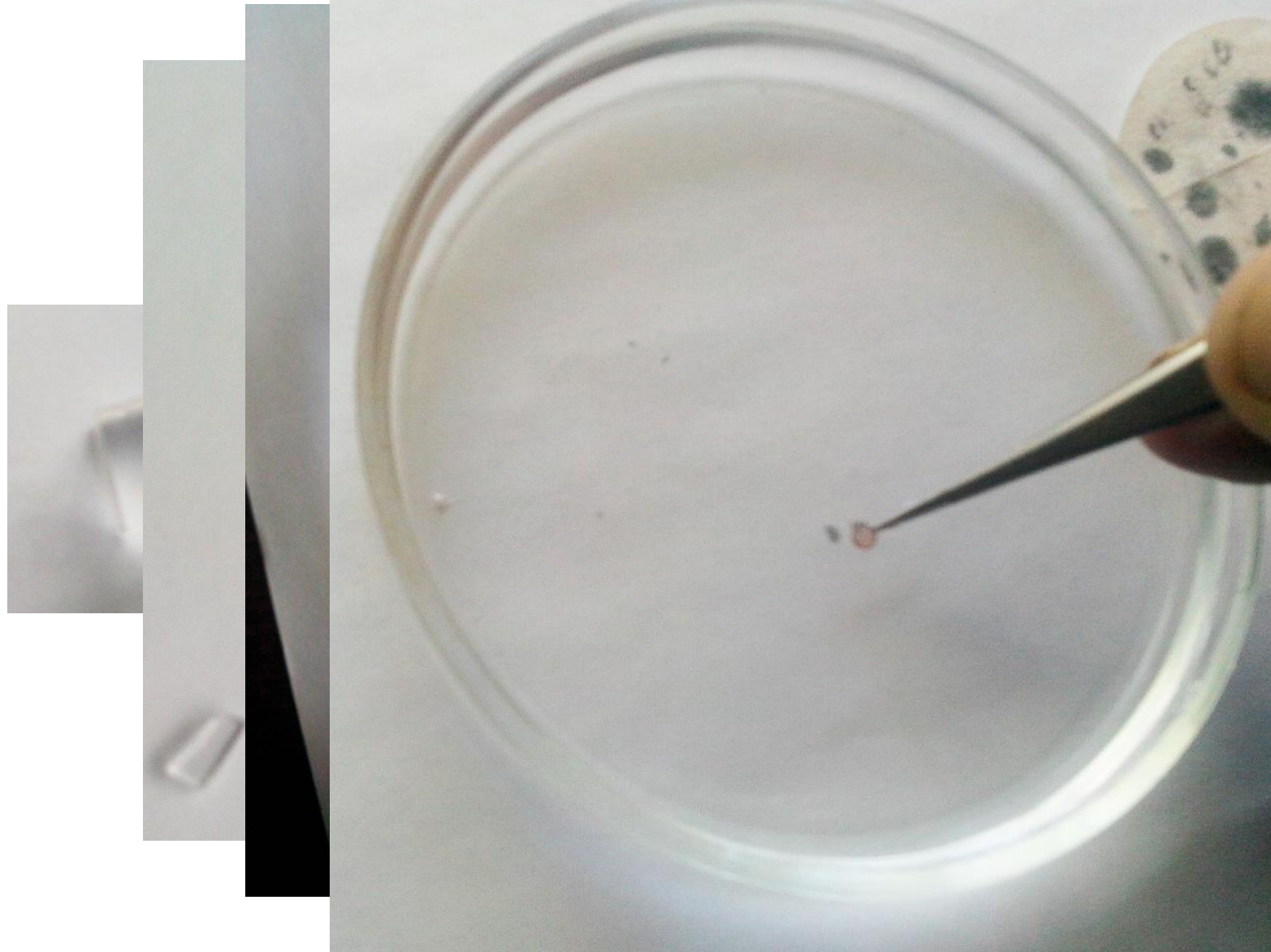
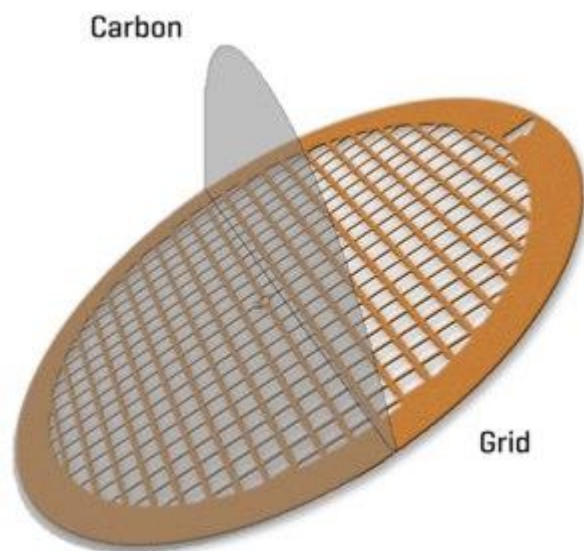
MX0



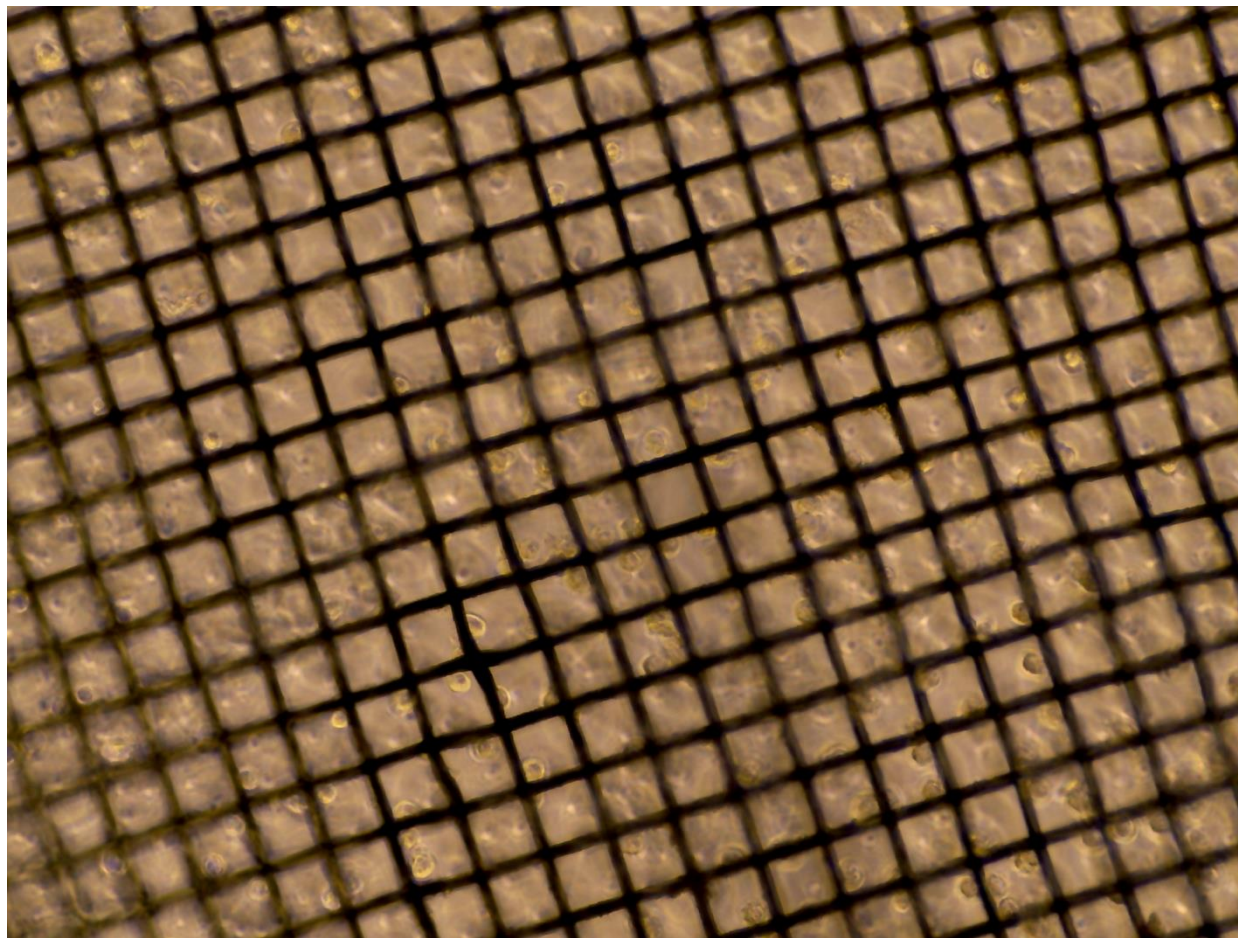
MX+



MX+++

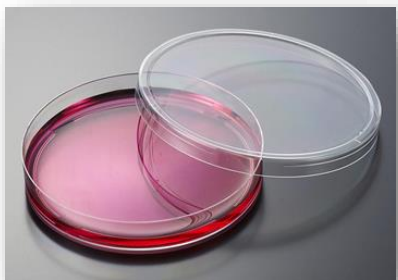


TEM grids are toxic for the cells!





Carbon film deposition

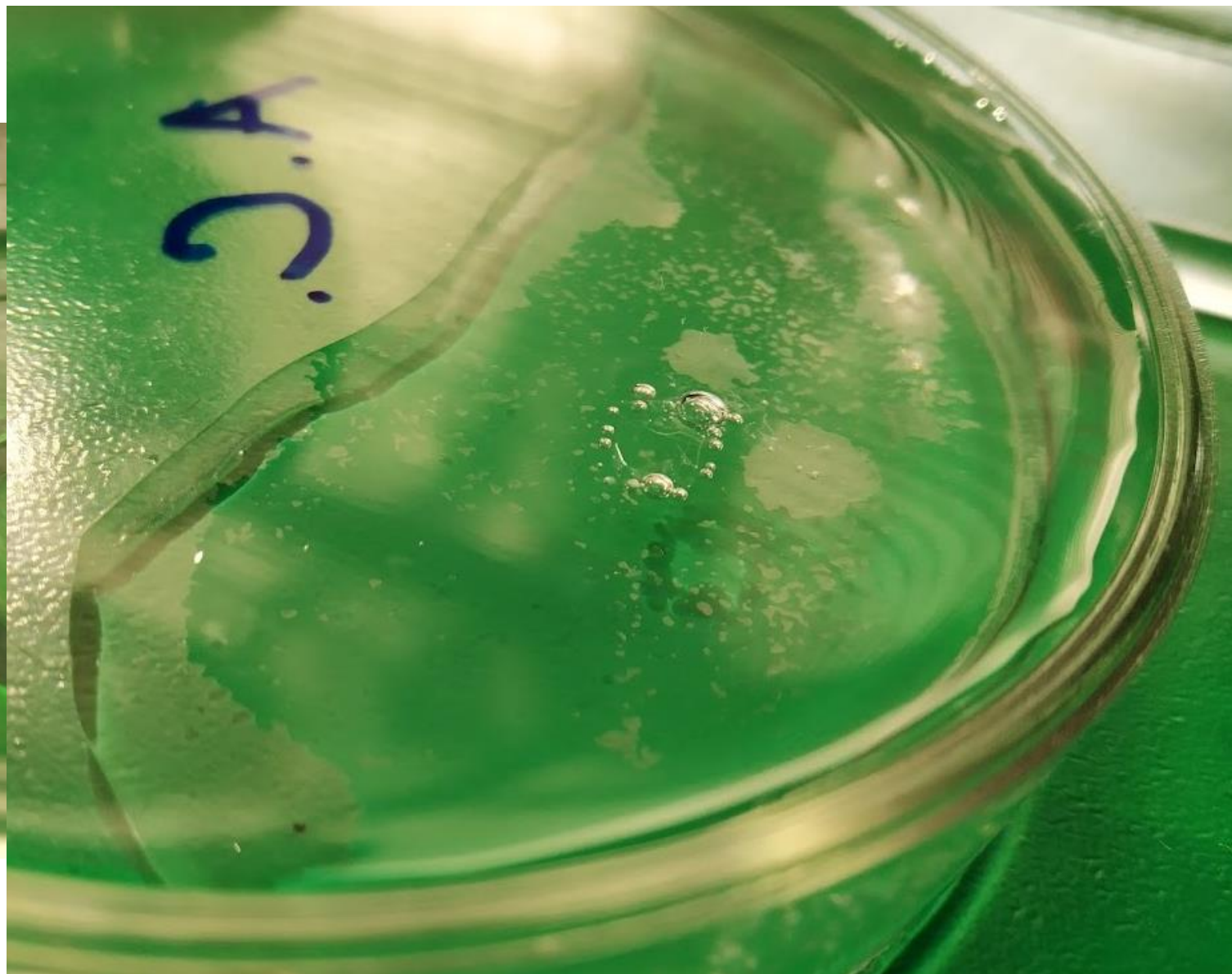


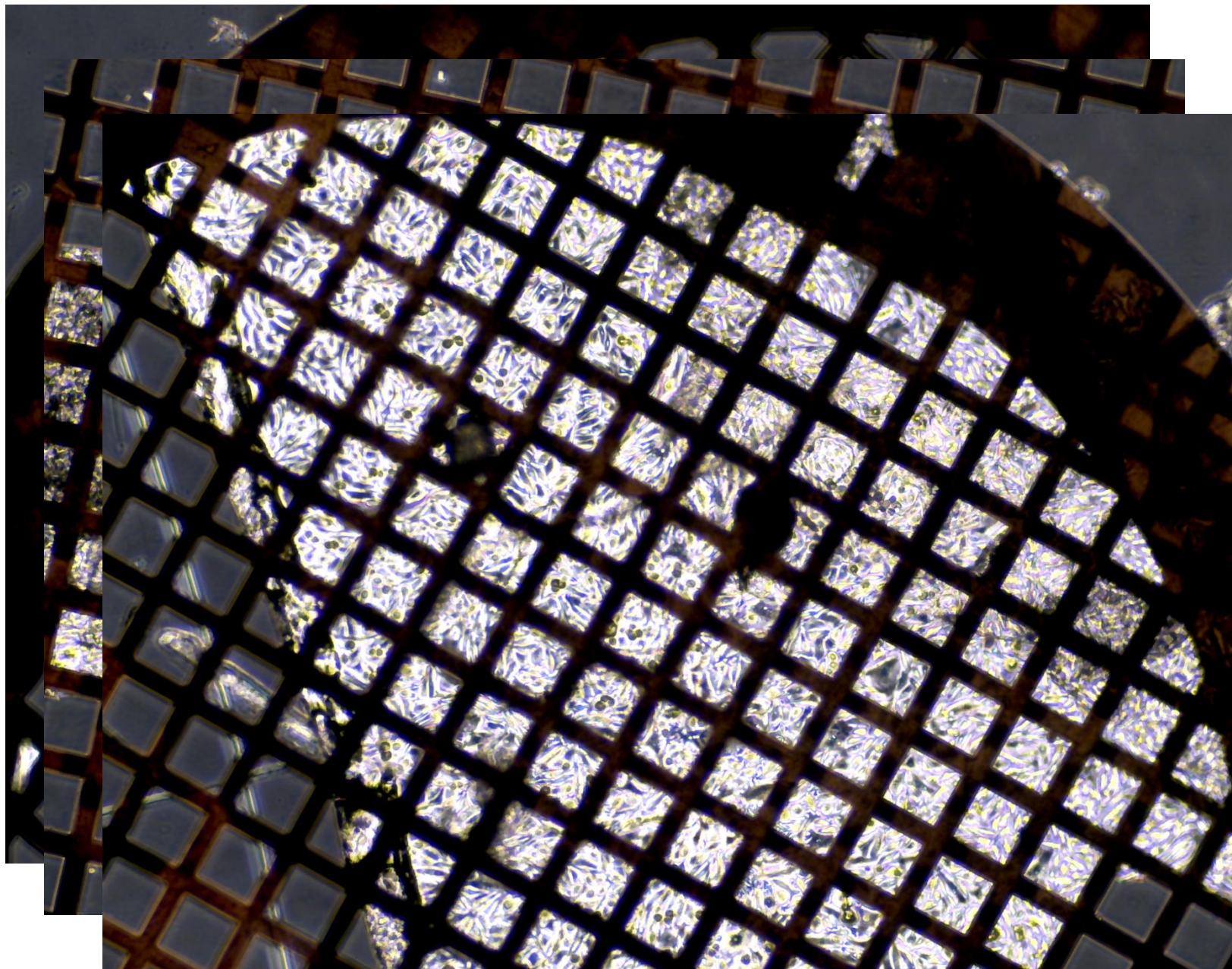
Cell growth

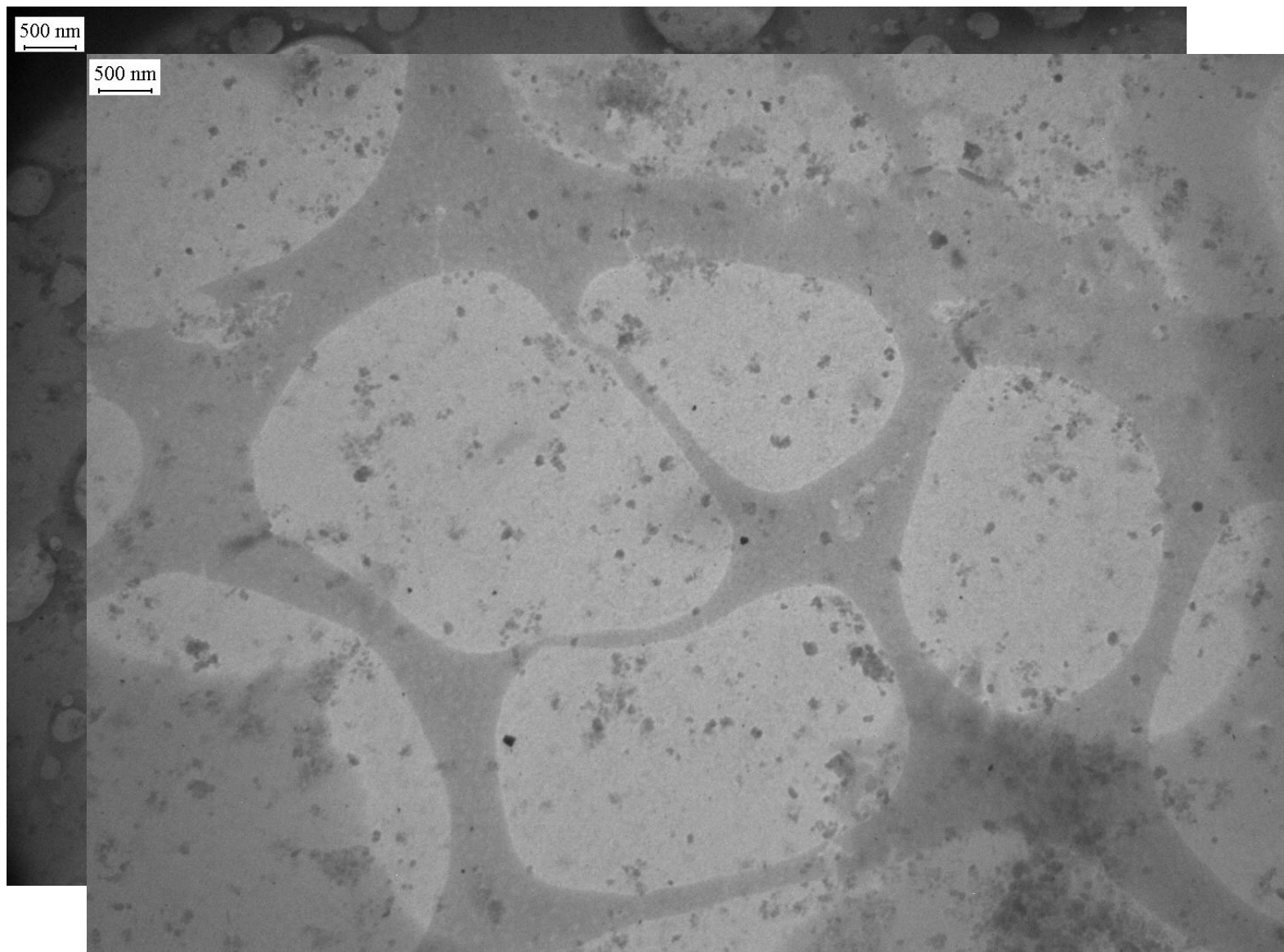
Loading with MXenes

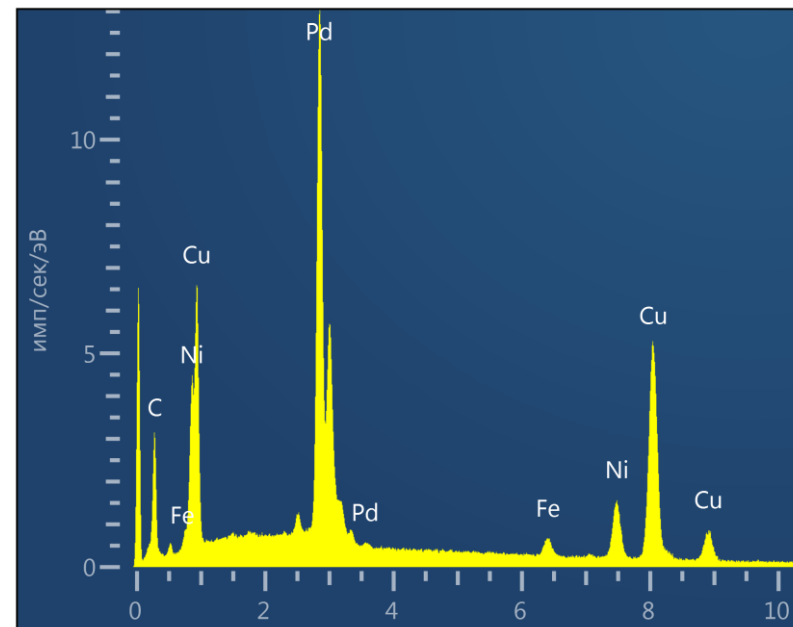
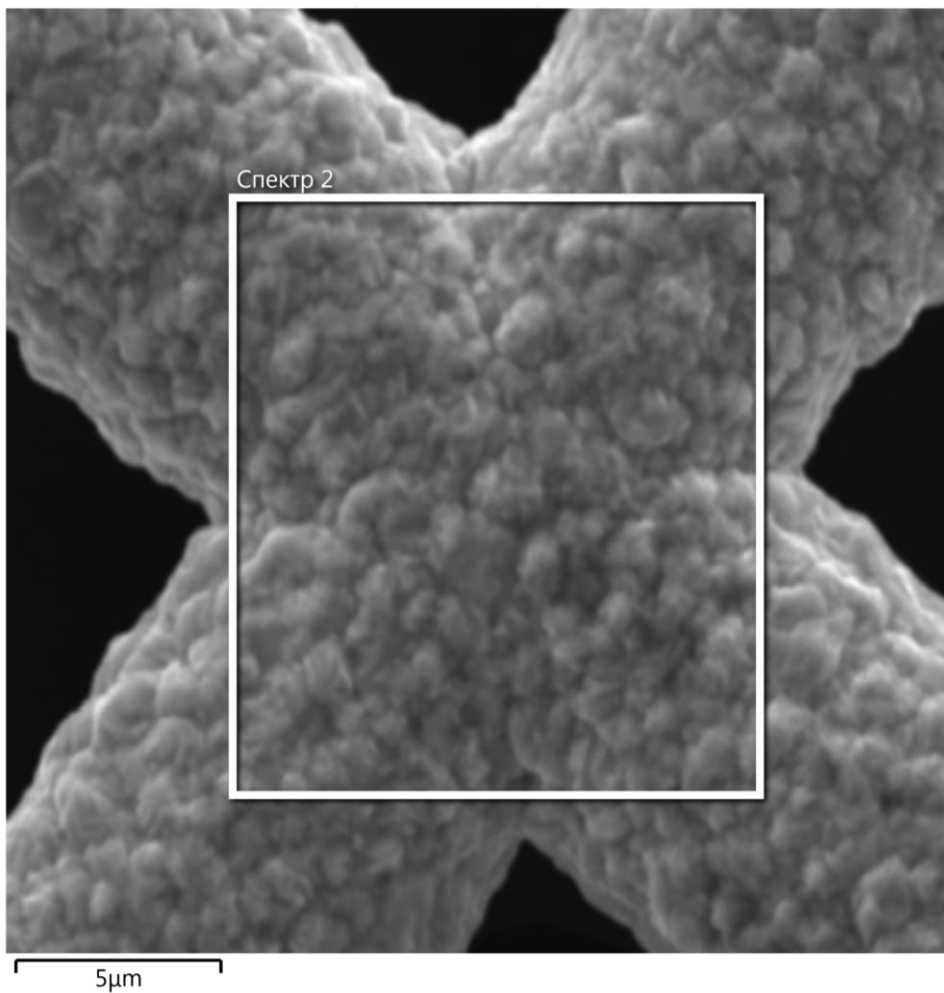
Fixation / dehydration





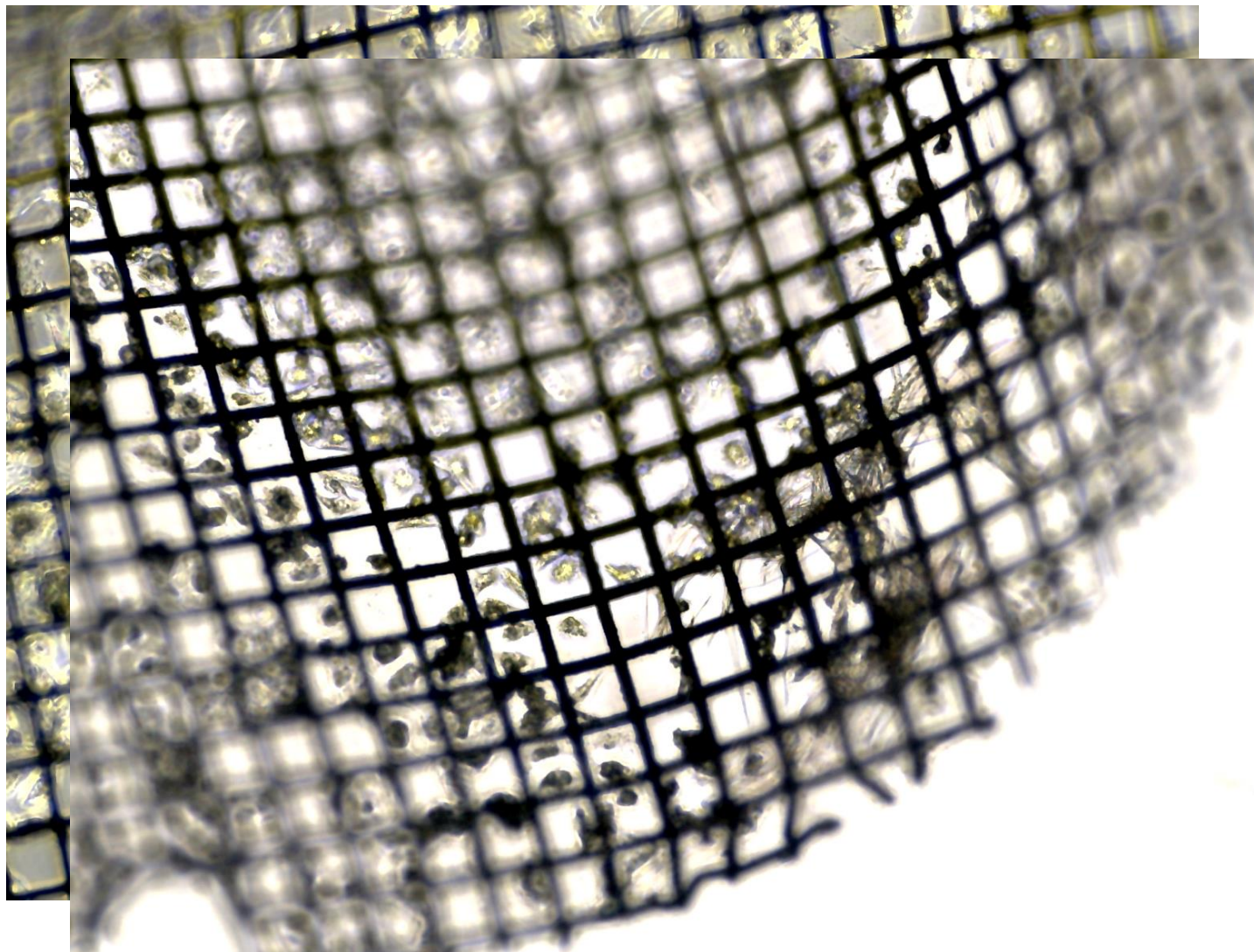




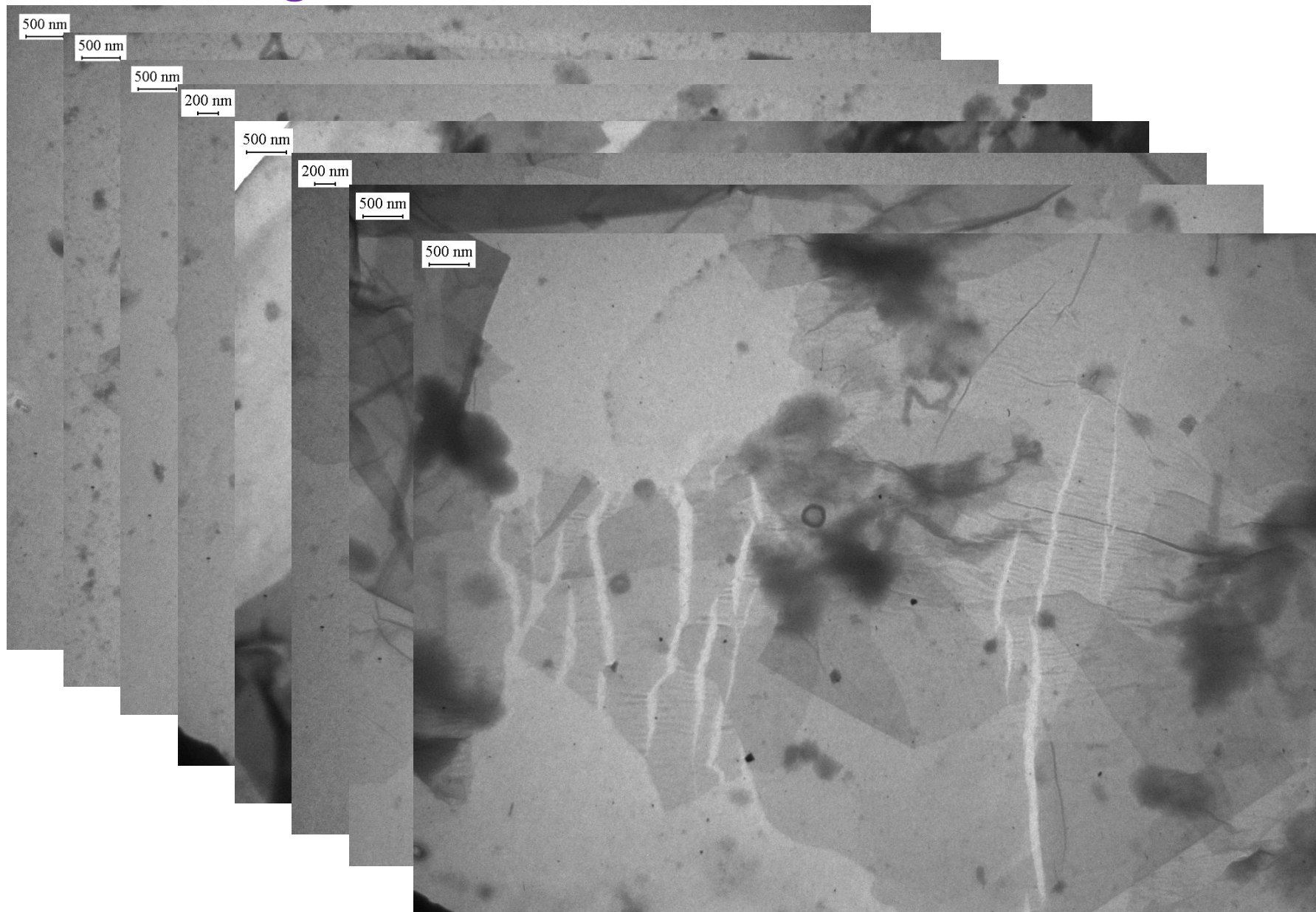


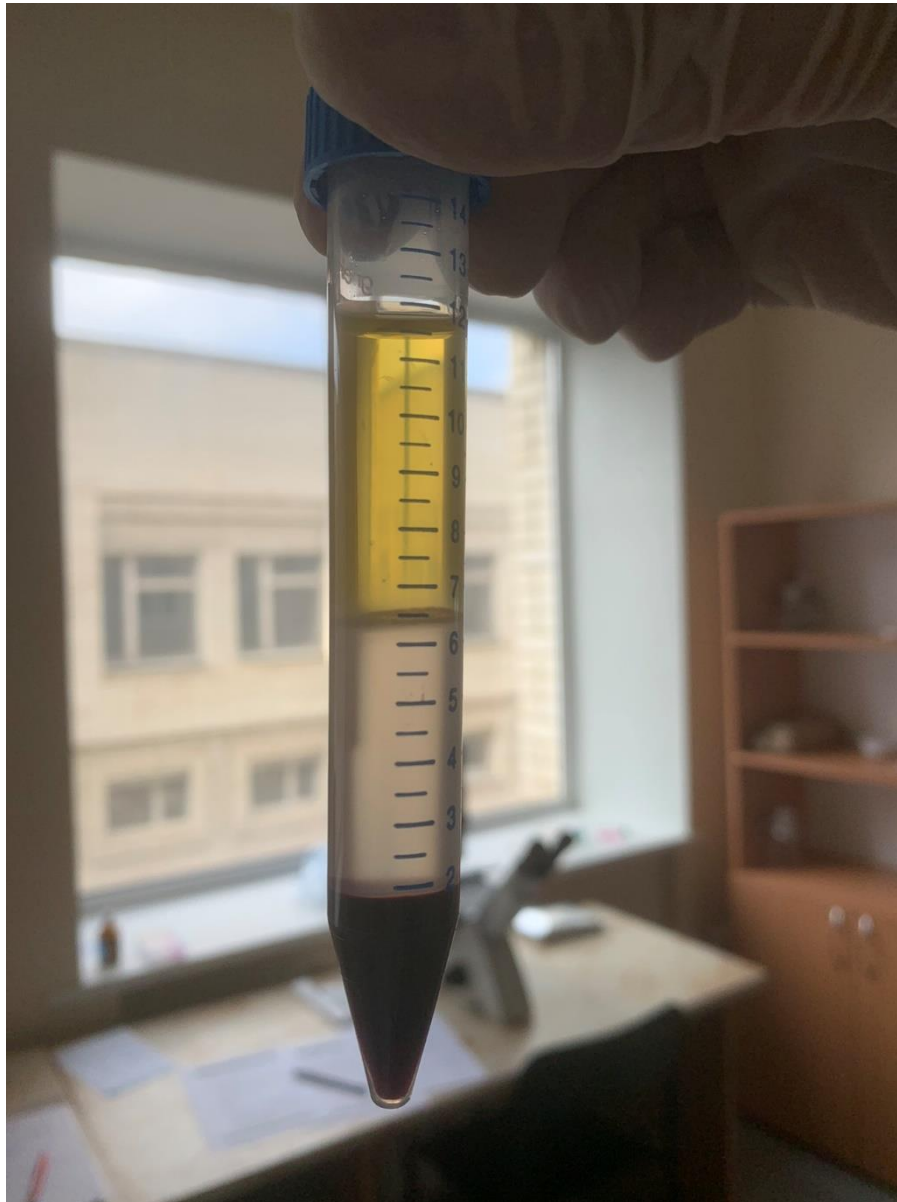
| Spectrum 2 | | | |
|------------|----------|----------------|----------|
| Element | Weight % | Sigma weight % | Atomic % |
| Ni | 8,20 | 0,17 | 7,31 |
| Cu | 41,62 | 0,47 | 34,27 |
| Pd | 39,93 | 0,46 | 19,64 |
| Fe | 1,71 | 0,08 | 1,60 |
| C | 8,54 | 0,91 | 37,18 |
| Total | 100,00 | | 100,00 |

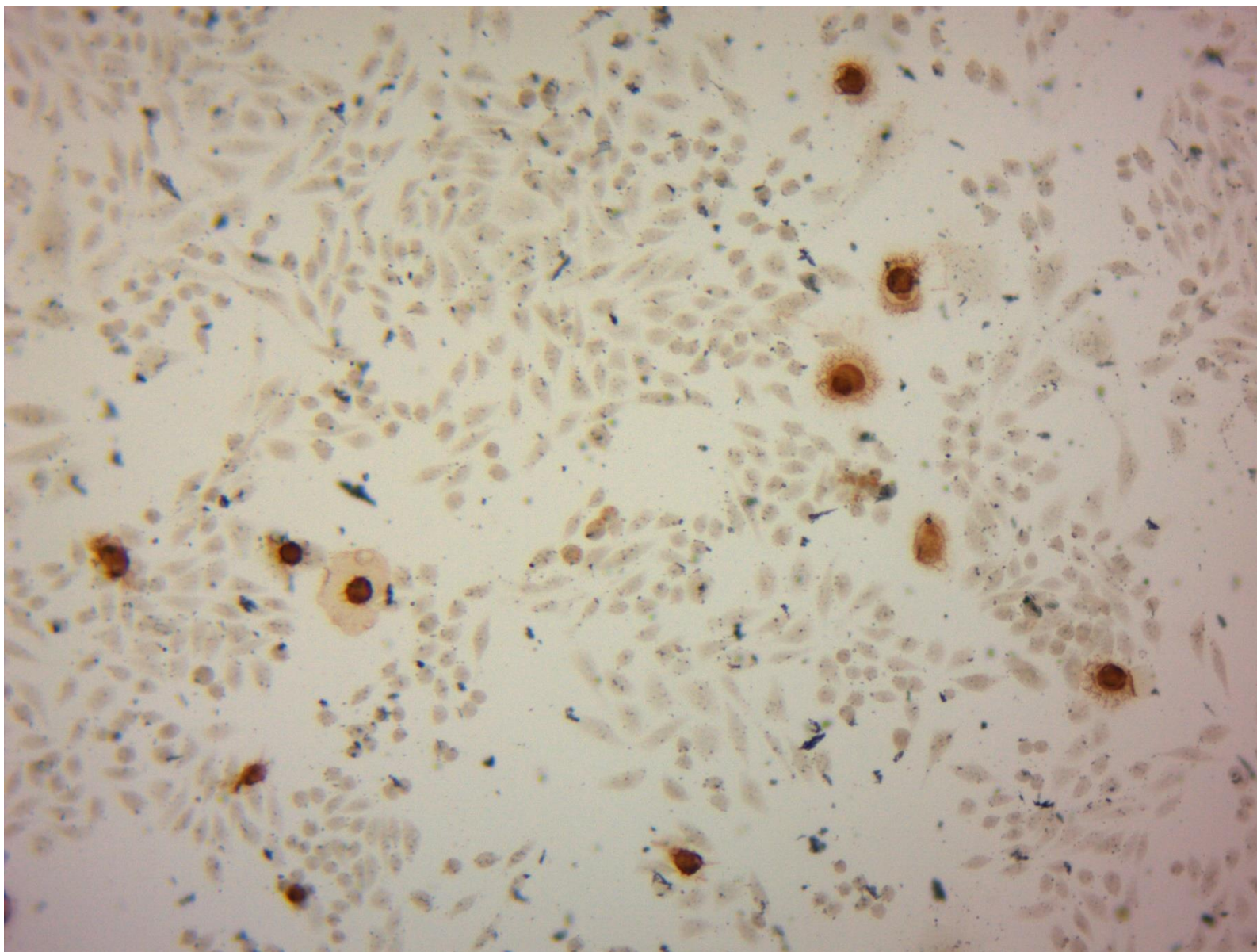
Pd/Cu grids are compatible with cell cultures!



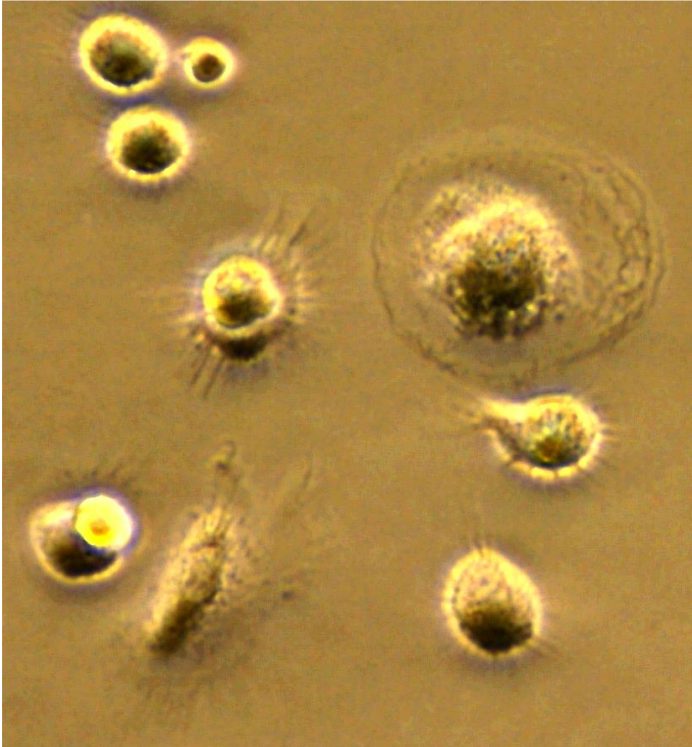
TEM images of $\text{Ti}_3\text{C}_2\text{T}_x$ MXenes within the cells







- Macrophages will recognize the MXene particles and will engulf them, which will follow by metabolism/processing of MXenes



- MXenes can be modified by biological agents in order to render them more biocompatible and e.g. enable their addressed homing to specific sites, for instance to tumours



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