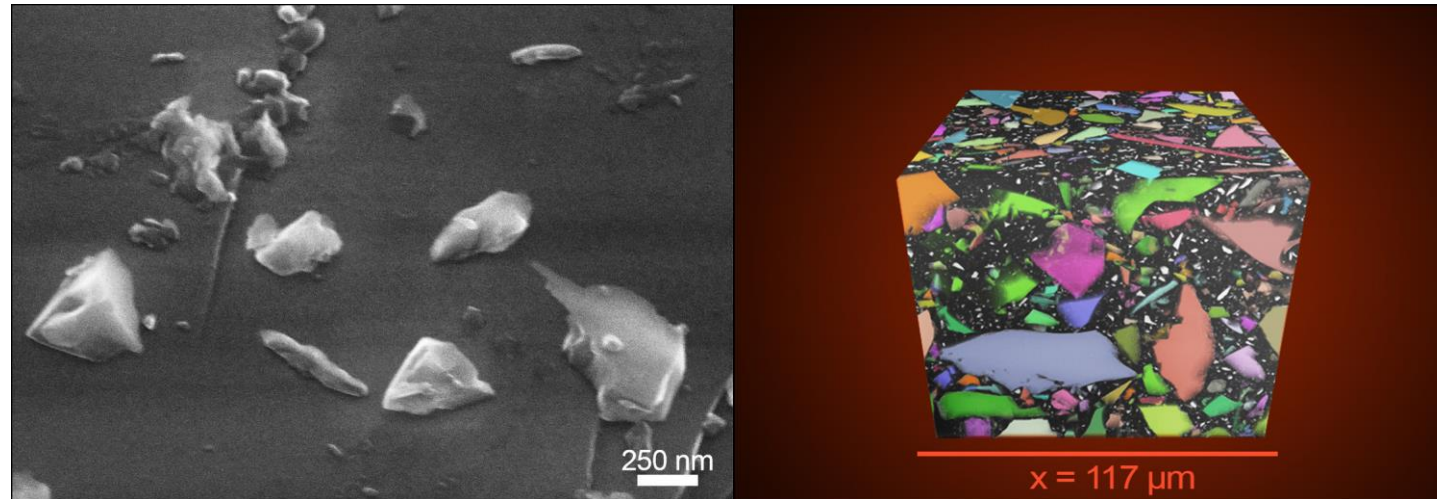


Brno region - electron microscopy centre for academic-industrial research and development

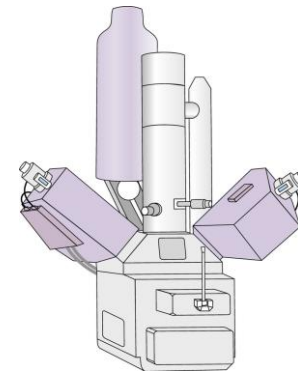


Complex analysis of micro- to nano- quartz particles using advanced microscopic methods

WHY QUARTZ POWDER?

- Widely used in industry
- Analyzed mostly by laser diffraction
 - Very difficult to image

RAW QUARTZ
POWDER



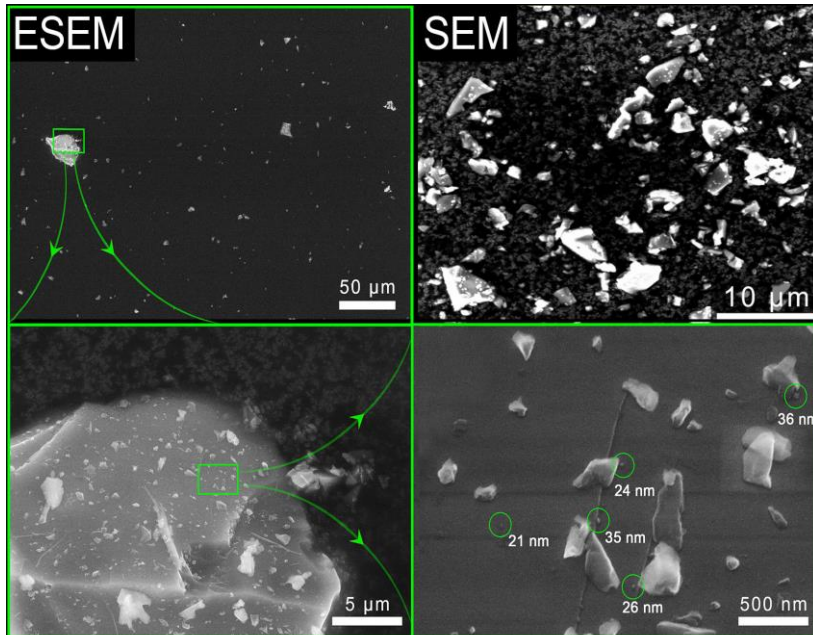
APPLICATION PROCESS

RESIN-CURED
QUARTZ POWDER

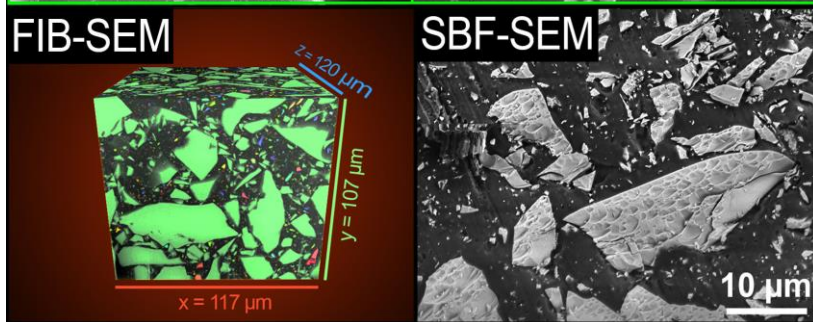


ELECTRON MICROSCOPIC METHODS

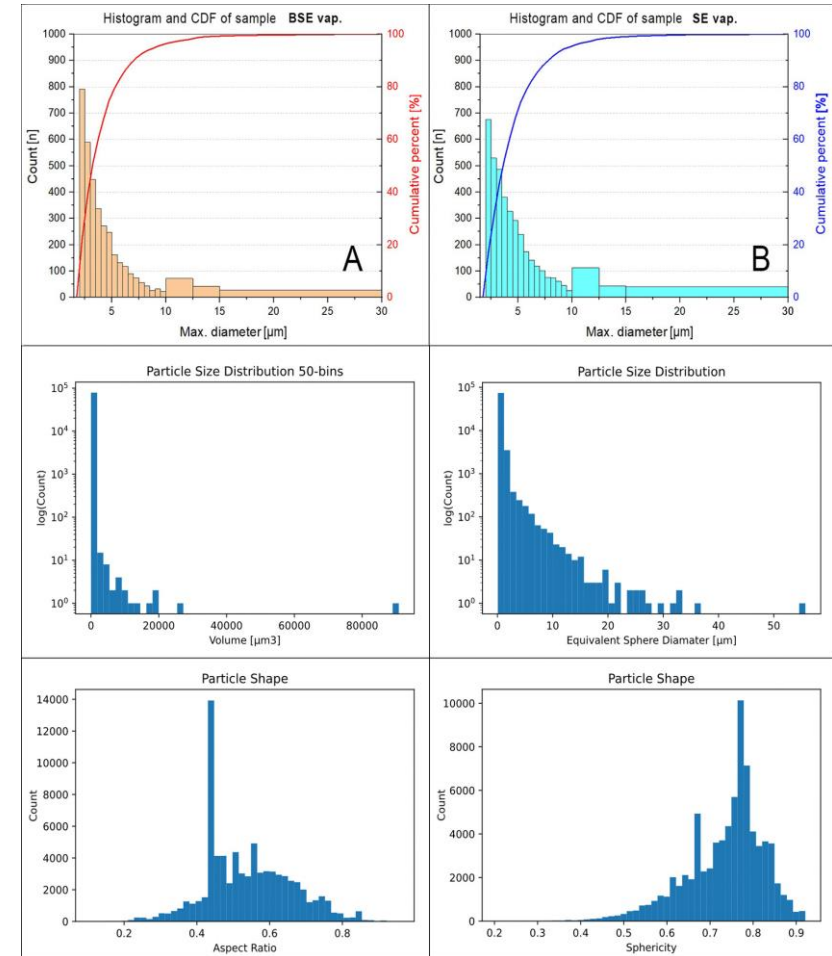
Morphology analysis



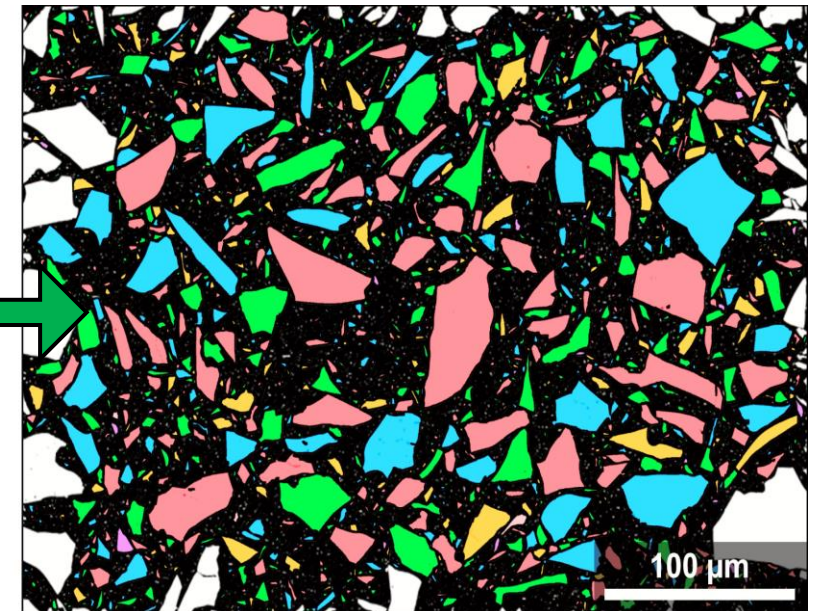
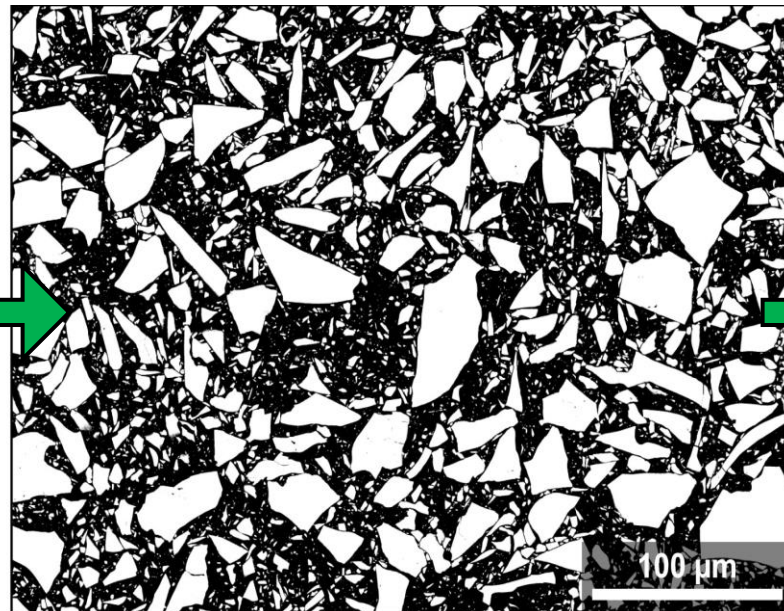
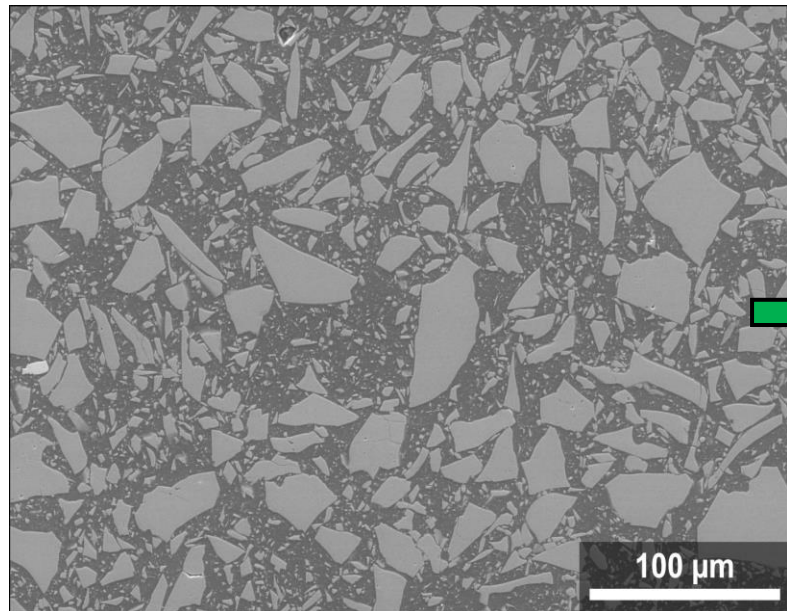
Volume analysis



COMPLEX PARTICLE ANALYSIS



- Essential step for statistical evaluation
- The creation of a binary mask separating particles from the background
- Follow-up labelling of particles by specialized software



CONCLUSIONS

- Application of various microscopic methods:
 - SBF-SEM proved to be unsuitable due to the high hardness of the sample
 - FIB-SEM provides volumetric analysis
 - SEM provides size and morphological statistical evaluation with high accuracy
 - A-ESEM partially combines the mentioned methods, and brings additional benefits



FINAL MESSAGE?





INSTITUTE



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The Czech Academy of Sciences

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A **unique know-how** for morphological and 3D
particle analysis of **hard-to-image** samples, using
high-end **microscopic** methods.

