

## Cryo-EM and ED are driving structural studies at the University of Warsaw

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### Background incl. aims

In 2019 the University of Warsaw purchased and installed one of the first cryo-EM microscopes in the country - the 200kV Glacios equipped with a Falcon3EC camera and a phase plate solution. In the next few years the Cryomicroscopy and Electron Diffraction Core Facility has been established and started providing many local structural biologists and chemists with a direct access to this groundbreaking and Noble-winning cryo-EM technology. To date, there have been only two cryo-EM Core Facilities operating in Poland which provide services in all cryo-EM modalities.

### Methods

This poster shows the current possibilities of our Core Facility and a range of services which are offered to our users. We follow the open-access policy and welcome users from both national and international academic institutions as well as industry.

### Results

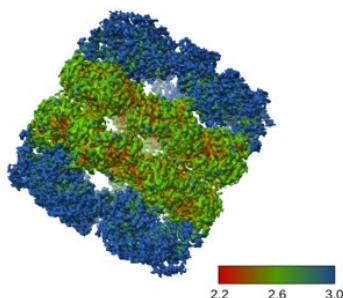
Our recent developments include benchmarking the Single Particle Analysis (SPA) reconstruction of GroEL with GroTAC peptide at the 2.45Å resolution level with local resolution reaching 2.2Å (PDB: 8S32) and the 2.27Å reconstruction of the AbiK bacterial polymerase (PDB:7R06). The results are further enhanced with the upgrade of the microscope to the micro-ED functionality allowing for a rapid structure determination of small molecules and/or proteins based on electron diffraction data. On top of that, we have recently completed a process of building up a €0.5M-worth IT infrastructure support for the cryo-EM data storage (up to 1.6PB dedicated storage space) and expanding on the data processing capabilities (utilising our 200 GPU-based computer cluster) which will be a unique set-up of its kind not only in Poland but also in Central Europe.

### Conclusion

We highlight the importance of smaller cryo-EM Core Facilities such as ours to serve as a first point of contact for users, in particular for those who are new to the cryo-EM field and would like to explore different possibilities of getting high quality data prior to applying for the measurement time on high-end 300kV microscopes. We also show that being able to offer all cryo-EM

modalities in one instrument (SPA, cryo-ET and micro-ED) significantly boosts a research potential and opens up new possibilities across many Life Science applications.

**Graphic:**



**Keywords:**

cryo-EM, SPA, micro-ED, cryo-ET

**Reference:**

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