

## Updates from the Centre of Molecular Structure

Since July 2021 the Centre of Molecular Structure participates in the EU Horizon 2020 project MOSBRI ([mosbri.eu](https://mosbri.eu)) focused on transnational access to molecular biophysics techniques. The project covers full costs of access (including travel) to biophysics at the MOSBRI centres across Europe. You are also welcome to tell your foreign collaborators to use this opportunity to apply for access at our facilities with full coverage for their stay. A part of our activities under the project is devoted to standardisation of biophysics data and development of a pilot database for selected biophysical techniques.

### CF Crystallization of Proteins and Nucleic Acids



The CF was supplied with the new SpectroLight 600 for measurement of dynamic light scattering in drops (including crystallisation experiments). Detection of suitability of samples for crystallization or CryoEM grid preparation, together with in situ time lapse monitoring of protein crystallization and detection of nanocrystals for electron diffraction.

The facility also installed and offers the new equipment for preparation of samples suitable for electron diffraction and cryoEM experiments. Vitrobot from Thermo Scientific is able to vitrify samples on grids using liquid ethane. Instrumentation like this is crucial for the reproducibility of the procedure during the process of sample optimization.



CF Crystallization of biomolecules is also keeping up with updates of the closest synchrotrons and offers sample preparation into both SPINE pucks and UNIPUCKS.

### CF Protein Production

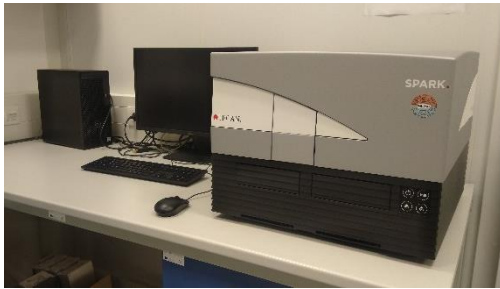
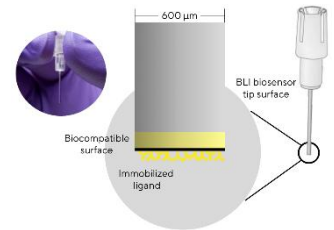
The Protein Production CF is moving into a new space and getting new equipment. Pavel Mikulecký, who managed the facility, left for another job. We would like to thank him for his great contribution for starting this facility up. Jiří Pavlíček took the place of manager of the facility for this moment. Currently, projects including the preparation of DNA plasmid constructs, prokaryotic protein expression and protein purification are supported. Please, direct all new applications via the [CIISB project portal](#).

### CF Diffraction Techniques

The facility keeps improving its flagship technologies. The X-ray source of the single crystal diffractometer was upgraded to MetalJet D2+, which brings even higher X-ray intensity. The instrument can be used for high quality data collection, diffraction quality screening, both cryo-cooled and in crystallization plates, and for advanced sample preparation using controlled humidity.

### CF Biophysical Techniques

The facility purchased an OCTET R8 (Sartorius) system for the kinetic and quantitative measurements using BiLayer Interferometry (BLI). It enables label-free analysis for the determination of kinetics and affinity of biomolecular binding based on BLI. Octet R8 is a fluidics-free, low maintenance detection system. Eight parallel, independent channels provide maximum speed, sensitivity and flexibility.



Another addition to the facility is a Spark microplate reader which offers absorbance (from 200 to 1 000 nm), fluorescence, including FRET and fluorescence polarization, and luminescence (ex 230 – 900 nm, em 280 – 900 nm) measurements. This technique provides a solution for ELISAs, low volume DNA/protein quantification and fast spectral scanning. It offers cuvettes and microplate formats up to 1536 wells, has a higher performance, sensitivity and flexibility.

We are looking forward to meeting you in CMS,

**Tatsiana Charnavets** (Biophysical Techniques), **Olga Dzmitruk** (Biophysical Techniques), **Tereza Nepokojová** (Protein Production), **Jiří Pavlíček** (Crystallization of Proteins and Nucleic Acids, Protein Production), **Petr Pompach** (Structural Mass Spectrometry), **Pavla Vaňková** (Structural Mass Spectrometry), **Jan Stránský** (Diffraction Techniques), **Michal Strnad** (IT), **Lubica Škultétyová** (technician), **Magdalena Schneiderová** (admin), **Jan Dohnálek** (CMS Head)

You can realize your projects at CMS via an online application at [ciisb.org/open-access/proposal-submission](https://ciisb.org/open-access/proposal-submission).

Access to the CMS techniques can be granted via the funding scheme of Instruct-ERIC as well ([instruct-eric.org/submit-proposal](https://instruct-eric.org/submit-proposal)).

Commercial subjects are also welcome to use CMS facilities. For offered services see [ibt.cas.cz/cs/servisni-pracoviste/centrum-molekularni-struktury/#companies](https://ibt.cas.cz/cs/servisni-pracoviste/centrum-molekularni-struktury/#companies)

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