Program

Monday 23 March 2026	
18:00	**Registration**
18:00	**Welcome reception**
21:00	**Expected end of the welcome reception**

Tuesday 24 March 2026	
8:00	**Registration**
9:00	**Welcome** **Kamila Hrubanová** (president of the Czechoslovak Microscopy Society) **Jiří Gregor** (president of International Institute of Refrigeration (IIR), Commission C1) **Pavel Urban** (Cryogenics Conference Organising Committee)
9:10	**Workshop Introduction and Objectives** **Vladislav Krzyžánek** (Institute of Scientific Instruments, Czech Academy of Sciences, Brno)
9:25	**Session I: Cryogenic Electron Microscopy In Life Sciences** Chairs: Vladislav Krzyžánek & Jana Nebesářová
9:30	**EM and CryoEM in structural biology** **Richard Henderson** (MRC Laboratory of Molecular Biology, Cambridge)
10:00	**What is the best temperature for electron cryomicroscopy of biological specimens?** **Christopher J. Russo** (MRC Laboratory of Molecular Biology, Cambridge)
10:30	**High-resolution Cryo-FIB-SEM volume EM enables sub-volume averaging of cellular structures with CLEM targeting** **Pavel Křepelka** (CEITEC, Masaryk University, Brno)
10:45	**Coffee break**
11:15	**From Atoms to Cells: Cryo-EM and Cryo-FIB Enabling In Situ Structural Biology** **Radovan Spurný** (Thermo Fisher Scientific, Brno)
11:30	**Correlative CryoSEM for Structural and Chemical Identification in Hydrated Frozen Samples** **Marie Vancová** (Biology Centre, Czech Academy of Sciences, České Budějovice)
11:45	**Cryogenic SEM at the Institute of Scientific Instruments of the CAS: Bridging Microbiology and Polymer Science** **Kamila Hrubanová** (Institute of Scientific Instruments, Czech Academy of Sciences, Brno)
11:55	**Panel Discussion: Current Challenges and Opportunities in Cryo-EM for Life Sciences**
12:25	**Lunch**
13:30	**Session II: Low-Temperature Physics & Cryogenic Instrumentation** Chairs: Ladislav Skrbek & Rafal E. Dunin-Borkowski
13:30	**Helium: an introduction to extraordinary properties of its cryogenic phases** **Ladislav Skrbek** (Faculty of Mathematics and Physics, Charles University, Prague)
14:00	**Imaging and spectroscopy with a liquid He-cooled sample stage** **Ondrej L. Krivanek** (Bruker AXS (formerly Nion R&D), Kirkland & Department of Physics, Arizona State University, Tempe)
14:30	**Cryogenic sample cooling in TOMO and BIO microscopes in Forschungszentrum Jülich** **Rafal E. Dunin-Borkowski** (Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons, Forschungszentrum Jülich)
14:45	**Liquid Helium TEM Sample Holder: Swift Cool-Down and Long Holding Time** **Denys Sutter** (condenZero, Zürich)
15:00	**Coffee break**
15:30	**Cryogenic conversion of room-temperature EM systems using custom LHe/LN_2 cooling technologies** **Pavel Urban** (Institute of Scientific Instruments, Czech Academy of Sciences, Brno)

15:50	**The Design of a Reverse Brayton Liquefaction and Refrigeration System Equipped with a Turbomachine for Small-Scale Applications** **Vojtech Kohut** (European Cryogenics, Prague)
16:00	**Cryo stage designs for 3-coincidental system** **Sander den Hoedt** (DELMIC, Delft)
16:15	**Managing Cryogenic Sample Preparation Workflows for Cryo FIB applications** **Andreas Nowak** (Leica microsystems, Vienna)
16:30	**Influence of condensed water and other contaminants on thermal absorptivity at cryogenic temperatures** **Tomáš Králík** (Institute of Scientific Instruments, Czech Academy of Sciences, Brno)
16:40	**Panel Discussion: Current Trends and Challenges in Cryogenic Instrumentation**
17:10	**Coffee break**
17:25	**Session III: Cryogenic Fixation & Spectroscopy I.** Chairs: Thomas Burg & Dominik Heger
17:25	**Low-temperature fluidic microsystems for cryo-CLEM** **Thomas P. Burg** (Integrated Micro- and Nanosystems, Technical University, Darmstadt)
17:45	**Ultra-rapid cryo-arrest directly during fluorescence live cell microscopy for high resolution fluorescence cryo-nanoscopy and microspectroscopy** **Jan Hübinger** (Max Planck Institute of Molecular Physiology, Dortmund)
18:00	**Microfluidics and Cryo-EM: A Powerful Partnership for New Experimental Approaches at the Nanoscale** **Thomas Braun** (Biozentrum, University of Basel / cryoWrite, Basel)
18:15	**Bridging Cryo EM and Volume EM: A Unified High Pressure Freezing Pipeline for Correlative Workflows** **Xavier Heiligenstein** (CryoCapCell, Paris)
18:30	**Dinner**
19:30	**Poster Flash Presentations**
	short talks of selected posters
20:00	**Poster Session & Informal Networking (Beer & Wine)**
	Preparation of mammalian cells specimen for cryo-electron microscopy using the HPF "Waffle" method **Jana Moravcová** (CEITEC, Masaryk University, Brno)
	High-Quality Graphene for Advanced Electron Microscopy Applications **Eliška Materna Mikmeková** (Institute of Scientific Instruments, Czech Academy of Sciences, Brno)
	Cryogenic fluorescence microscopy – not only CLEM. Example of Cryo-FLIM sensing **Piotr Jurkiewicz** (Imaging Methods Core Facility BIOCEV, Charles University, Prague)
	Sample chamber for LHe-Insitu-TEM investigations **Alexander Horst** (IFW Dresden)
	An LN_2 optical cryostat for UV–Vis spectroscopy of water ice and aqueous solutions **Vojtěch Krutil** (Institute of Scientific Instruments, Czech Academy of Sciences, Brno)
	BarSerNew simulation software for designing thermal links in cryogenics **Miroslav Gašpar** (Institute of Scientific Instruments, Czech Academy of Sciences & Masaryk University, Brno)
	TITAN upgrades by a probe corrector and a spectrometer with DED cameras: New horizons for TEM in the Brno region **Jan Michalička** (CEITEC, Brno University of Technology, Brno)
	Exploring the physics of plunge freezing through high-speed videography **Alok Bharadwaj** (Delft University of Technology, Delft)
	The Physics of Plunge Freezing: Revisiting Vitrification in Cryo-EM Sample Preparation **Dariush Ashtiani** (Delft University of Technology, Delft)

	Microfluidic chip for high-pressure freezing of biological samples: Progress towards cryo-FIB-SEM and Raman micro-spectroscopy **Tomáš Láznička** (Institute of Scientific Instruments, Czech Academy of Sciences, Brno) **Quantifying liquid film propagating from a solid frozen sample** **Radim Štůsek** (Masaryk University, Brno) **Design and Performance Characterization of a Cryoliquid Target System for kHz Laser–Plasma Applications** **Nina Gamaiunova** (ELI Beamlines, Dolní Břežany) **Metastable hydrates of CsCl discovered** **Ľubica Vetráková** (Institute of Scientific Instruments, Czech Academy of Sciences, Brno) **Spectroscopic and Microscopic Study of Freeze-Concentrated Solutions** **Lukáš Veselý** (Masaryk University, Brno)
22:30	**Expected end of the session**

Wednesday 25 March 2026	
8:30	**Registration**
9:00	**Session IV: Cryogenic Fixation & Spectroscopy II.** Chairs: Thomas Burg & Dominik Heger
9:00	**Water in No Man's Land & Microsecond Time-Resolved Cryo-EM** **Ulrich J. Lorenz** (Laboratory of Molecular Nanodynamics, EPFL, Lausanne)
9:20	**Spectroscopy and Microscopy of Frozen Aqueous Solutions and their Sublimates** **Dominik Heger** (Faculty of Science, Masaryk University, Brno)
9:40	**Cryogenic Systems in Laser-Driven Particle Acceleration** **Timofej V. Chagovets** (ELI ERIC, Dolní Břežany)
9:50	**Femtosecond Structural Dynamic of Molecules and Biological Photoreceptors** **Miroslav Kloz** (ELI ERIC, Dolní Břežany)
10:05	**Panel Discussion: Current Trends and Challenges in Cryogenic Fixation & Spectroscopy**
10:25	**Coffee break**
10:40	**Session V: Cryogenic Biology** Chairs: Miroslav Kloz & Pavel Urban
10:40	**Role of the IIR C1 Commission and Cryobiology Activities at the Tissue Establishment of the University Hospital Hradec Králové** **Jiří Gregor** (Tissue Bank, University Hospital Hradec Králové)
10:50	**Potential Role of Electron Cryo-microscopy in Detection of Freezing and Thawing Damage in Cryopreservation of Cells, Tissues, and Organs: A Review** **Pavel Měřička** (Tissue Bank, University Hospital Hradec Králové)
11:05	**Physical events in cryopreservation and methods for their characterization** **Ivan Klbik** (Institute of Physics, Slovak Academy of Sciences, Bratislava)
11:20	**Principles of cell cryopreservation and working examples of STEM cell cryopreservation for clinical use** **Yuriy Petrenko** (Institute of Experimental Medicine, Czech Academy of Sciences, Prague)
11:30	**Concluding Panel Discussion: Grand Challenges in Cryogenic Microscopy**
12:00	**Workshop Conclusions and Outlook**
12:10	**Lunch**
13:00	**Official Opening Ceremony of the New UltraSTEM Laboratory**
13:00	**Inaugural Addresses & Introductory Talks**
13:50	**Live UltraSTEM Demonstration**
14:25	**Lab Excursions & Guided Tours** **UltraSTEM inaugural demo: rotating cycles** **Parallel ISI Brno Tours: Cryogenic Technologies & Electron Microscopy**
16:25	**Expected end of the inauguration**

	Thursday 26 March 2026
	Registered participants for industrial excursions to Brno companies:
8:20	Meeting point for those interested in an excursion to Brno companies at ISI Brno (workshop venue)
8:30	Shuttle Transfer: ISI Brno – Thermo Fisher Scientific
9:00	**Excursion at Thermo Fisher Scientific**
10:30	Shuttle Transfer: Thermo Fisher Scientific – TESCAN
11:00	**Excursion at TESCAN**
12:00	Bus TESCAN – ISI Brno (or hotel)

	Registered participants for excursions to ISI Brno labs (Thursday morning):
9:00	Meeting point for those interested in an excursion to ISI Brno labs (Thursday morning)
9:10	**Excursion at ISI Brno labs**
11:10	Expected end of excursions

	Registered participants for excursions to ISI Brno labs (Thursday afternoon):
13:20	Meeting point for those interested in an excursion to ISI Brno labs (Thursday afternoon)
13:30	**Excursion at ISI Brno labs**
15:30	Expected end of excursions

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