ICPMAT 2024

BRNO, 30th SEPTEMBER—3rd OCTOBER

	30th Sep 2024 MONDAY	1st Oct 2024 TUESDAY	2nd Oct 2024 WEDNESDAY	3rd Oct 2024 THURSDAY
09:00	Check-In 09:00–17:00	Opening	Plenary Lecture III	Plenary Lecture IV
		Plenary Lecture I	Session IV 09:30–10:30	Plenary Lecture V
10:00		Plenary Lecture II		Coffee Break
		Coffee Break	Coffee Break	Session VII 10:30–11:50
11:00		Session I 11:00–12:00	Session V 11:00–12:00	
12:00	Light Lunch 12:00–13:00	Lunch Break 12:00–13:30	Lunch Break 12:00–13:30	Closing Ceremony
				Lunch-to-go 12:30–13:30
13:00	**AI Workshop** Utilization of Machine Learning and Artificial Intelligence in Scientific Practice *(free for all attendees)*			
		Session II 13:30–14:30	Session VI 13:30–16:00	
14:00				
15:00		Session III 14:45–15:45		
16:00		Poster Session 15:45–17:00		
17:00	Welcome Reception 17:00–19:00			
18:00		Guided City Tour 18:00–20:00	Guided Tour of the Museum	
			Gala Dinner 19:00–22:00	

Check-In (Registration)
Monday 30th September 2024 / 9:00–17:00

Check-in will take place at the Institute of Scientific Instruments, the same venue as the workshop and scientific program. Please use the provided QR code or link to view the exact location. Upon arrival, the institute gate will be open. You'll cross the courtyard and take the elevator to the 2nd floor, where the Lecture Hall is located.

Although check-in will primarily be available on Monday, it will remain open for those arriving later.

Scan for route!

**Institute of Scientific Instruments of the CAS,
Královopolská 147, 612 00 Brno**

The easiest way to reach the Institute is by using public transportation. The nearest stop is Skácelová, serviced by the following lines:

- **Tram line 12**
- **Bus lines 44, 67, 72 and 84**
- **Trolleybus line 30**

All public transportation in Brno supports contactless payment (beep and go). Simply tap your card on the onboard validator. For more information, visit *pipniajed.cz/en.html*.

Lunch information
Monday to Thursday

Lunches will be served in the Institute's aula located in front of the lecture hall. On Monday and Thursday, a selection of cold, grab-and-go lunches will be available. During the main conference days, warm meals will be served.

AI Workshop: Utilization of Machine Learning and Artificial Intelligence in Scientific Practice (free for all attendees)
Monday 30th September 2024 / 13:00–17:00

AI Workshop is free for all attendees and will be held at the Institute of Scientific Instruments.

This workshop is designed for researchers, scientists, and professionals with limited or no experience with machine learning, interested in leveraging ML and AI techniques in their work. It is a four-hour session designed to provide a comprehensive introduction to how machine learning (ML) and artificial intelligence (AI) can be applied in scientific research. It will start with an overview of key machine learning concepts and foundational theory. The workshop will then focus on practical applications in several areas: analyzing tabular data, image classification and segmentation, and time series analysis. All examples and programming code shown during the workshop will be written in Python. While participants are encouraged to have a basic understanding of Python, it is not a strict requirement. Attendees are also encouraged, but not required, to bring a laptop, which will allow them to follow along with the exercises in real-time.

Welcome Reception
Monday 30th September 2024 / 17:00–19:00

Join us for the Welcome Reception, an opportunity to connect with fellow attendees in a relaxed and informal setting. Held in the same aula as the lunches and registration, the reception will feature a buffet and a tasting of local wines, offering a delightful introduction to the region's flavors.

The reception will begin immediately following the AI workshop. We look forward to seeing you there!
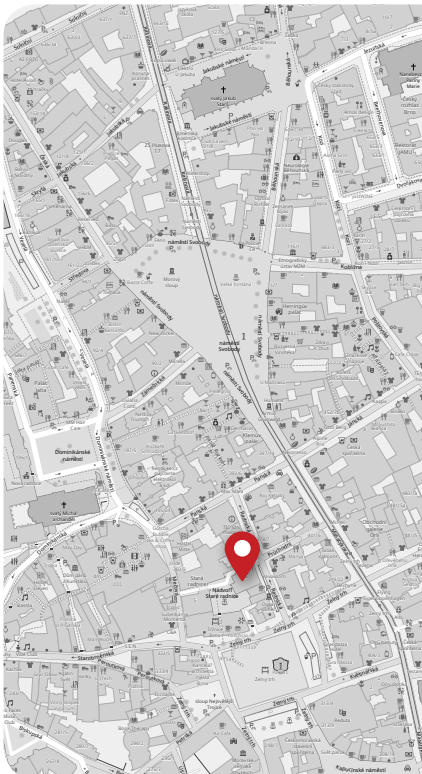
Guided City Tour: First time in Brno
Tuesday 1st October 2024 / 18:00–20:00

This optional part of the program is perfect for those visiting Brno for the first time. Your guide will take you through the city center, introducing you to Brno's key landmarks. You'll have the chance to admire the city's beautiful squares, visit the impressive St. Peter and Paul Cathedral, and hear some of Brno's most famous legends.

The tour will begin at the Old Town Hall (*Radnická 8, 602 00 Brno-střed*). For those who prefer assistance, one of our team members will be at the parking area in front of the Institute until 17:35 to guide you to the meeting point.

No registration is needed—just be sure to arrive on time!

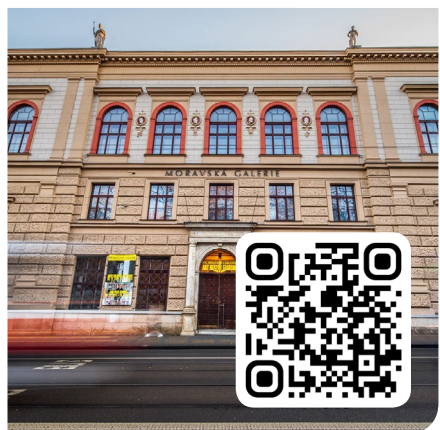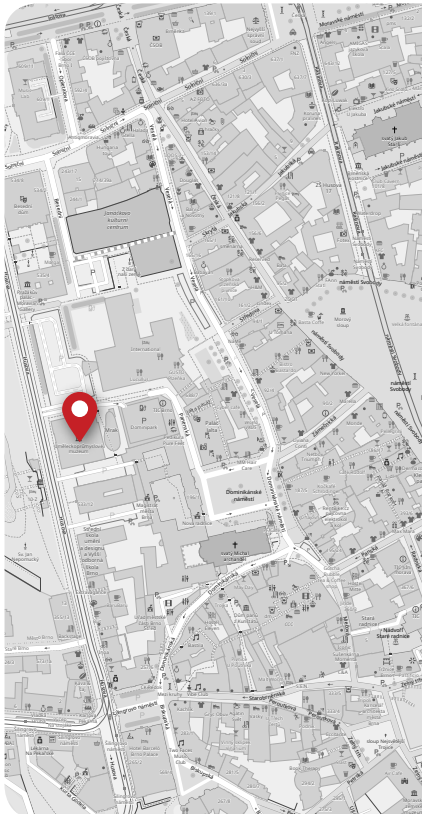### Adress of Old Town Hall: Radnická 8, 602 00 Brno-střed

Guided Museum Tour and Gala Dinner
Wendesday 2nd October 2024 / 18:00–22:00

The Gala Dinner will take place at the Museum of Applied Arts (*Husova 536, 662 26 Brno-město*). This event offers an opportunity to reflect on the conference's proceedings, foster professional connections, and engage in discussions in a more relaxed setting.

- For those interested, a guided tour of the museum will be offered at 18:00. No registration is required, but please be punctual to participate.

- The official part of the Gala Dinner will begin at 19:00. We look forward to your presence at this formal conclusion to the conference.

Adress of Museum of Applied Arts: Husova 536, 662 26 Brno-město

Delivery Instructions for Presentation
Monday to Thursday

- Bring your presentation on a USB drive.

- We encourage you to upload and test your presentation at least one day before your talk or, at the very latest, on the morning of your presentation day.

Delivery Instructions for Posters
Monday to Thursday

- The Poster Session will take place on **Tuesday from 15:45 to 17:00**

- Tools for hanging posters will be provided in the designated poster room.

- The room will be open from Monday 14:00 to Thursday 10:00, but please ensure your poster is hung well in advance of the session.

Monday 30th SEPTEMBER

9:00–17:00	**CHECK-IN (REGISTRATION)**
12:00–13:00	**Light Lunch**
	AI WORKSHOP
13:00–17:00	**Jiří MATERNA** *Machine Learning College, Czechia* Utilization of Machine Learning and Artificial Intelligence in Scientific Practice
17:00–19:00	**Welcome Reception**

	OPENING CEREMONY
9:00–9:30	**Kenji MATSUDA** *University of Toyama, Japan* **Ilona MÜLLEROVÁ** *Institute of Scientific Instruments, Czechia* The Story of Electron Microscopy at the Institute of Scientific Instruments

	PLENARY LECTURES I + II
9:30–10:00	**Toru HARA** *NIMS, Japan* Application of FIB-SEM Serial-Sectioning Technique on Structural Materials
10:00–10:30	**Guanghui MIN** *Shandong University, China* Al Induced Engineered Cluster Evolution of Ag for Approaching of Highly Transparent Flexible Thin Film Heaters

10:30–11:00	**Coffee Break**

	SESSION I
11:00–11:20	**Taiki TSUCHIYA** *University of Toyama, Japan* TEM observation of precipitates in Al-7%Si-0.3%Mg alloy
11:20–11:40	**Seungwon LEE** *University of Toyama, Japan* TEM microstructure observation of Cu added excess Si-type Al-Mg-Si alloys
11:40–12:00	**Artenis BENDO** *Luxembourg Institute of Science and Technology, Luxembourg* Understanding the Interplay of Microstructure Planar Defects for Improving the Mechanical Properties and Electric Conductivity Performance of Copper Foils

12:00–13:30	**Lunch Break**

SESSION II

13:30–13:50 **Dongting WU**
Shandong University, China
Study Of the Intergranular Liquefaction Behavior
of Precipitation Strengthened Nickel Based Superalloys

13:50–14:10 **Takuya ISHIMOTO**
University of Toyama, Japan
Solidification Segregation-Derived Heterostructure
Formation in Titanium-Iron Alloy

14:10–14:30 **Yusuke NOMURA**
University of Toyama, Japan
Development of New Alloys for Biomaterials by Solvent
Multicomponentization of Metastable Beta Ti Alloys

14:30–14:45 **Coffee Break**

SESSION III

14:45–15:05 **Miroslaw STYGAR**
AGH University of Krakow, Poland
Structures and Properties of High-Entropy Oxide-based
Ceramic/Metallic Layered Systems for SOFC Interconnects

15:05–15:25 **Ján RONČÁK**
TESCAN GROUP, Czechia
DSC Analysis as a Tool for Determining Reaction
Temperatures in Welded Joints

15:25–15:45 **Ewa DURDA**
AGH University of Krakow, Poland
Physicochemical properties of the layered steel/ceramic
systems for interconnect application in Proton Ceramic Fuel
Cells

15:45–17:00 **Poster Session with refreshment**

18:00–20:00 **Guided City Tour**

LIST OF POSTERS

P1
Tung DO CUONG
Kyungpook National University, South Korea
The Effect of pH, Concentration and Temperature
Of Electrolyte For Uniform Gold Electrodeposition

P2
Haruki KITAHARA
University of Toyama, Japan
Effect of the Addition of Sm to Pyrochlore-structured
Potassium Tantalate on its Photocatalytic Activity

P3
Changgyun KIM
Kyungpook National University, South Korea
Exothermic Reactivity of Aluminum Powders Coated With
Copper And Nickel

P4
Injoon SON
Kyungpook National University, South Korea
Hardness Improvement by Adding Bismuth in Silver
Electroplating

P5
Sho MAEGAWA
University of Toyama, Japan
Analyses of Phase Stability, Microstructure, and Mechanical
Properties of Laser Powder Bed Fusion-Produced Ti-6Al-4V/
Ti-15Mo-5Zr-3Al Interface

P6
Moosung KIM
Kyungpook National University, South Korea
Soft magnetic properties of Fe-Si-C-P amorphous ribbons

P7

Hyungjin NAM
Kyungpook National University, South Korea
Soft Magnetic Properties of Fe-based Amorphous Core
Prepared by Various Sintering Methods

P8

SangYeop LEE
Kyungpook National University, South Korea
Reduction Behavior of NCM-Based Lithium-Ion Battery
Cathode Materials by CO and Li Recovery by Water Leaching

P9

Eunjin PARK
Kyungpook National University, South Korea
Investigation of crystallization behavior and magnetic
property changes of Fe-P-B-Si-C-Cu alloys under heat
treatment

PLENARY LECTURE III

9:00–9:30 **Tetsuya AIDA**
University of Toyama, Japan
Development of lead-free solder paste material containing cellulose nanofibers

SESSION IV

9:30–9:50 **Wanting YANG**
Johannes Gutenberg University Mainz, Germany
Metamagnetic phase transition induced large magnetocaloric effect

9:50–10:10 **Takahiro NAMIKI**
University of Toyama, Japan
Superconductng properies of $Zr_2(Co_{1-xTx})(T = Pd, Pt)$

10:10–10:30 **Kengo KATO**
University of Toyama, Japan
Si Removal from Molten Aluminum through Liquid-Liquid Partitioning Using Molten Sodium

10:30–11:00 **Coffee Break**

SESSION V

11:00–11:20 **Takashi MICHIKAWA**
RIKEN, Japan
Image Processing Technology Toward Multi-Modal Analysis of Steels

11:20–11:40 **Martin ZOUHAR**
Institute of Scientific Instruments, Czechia
Circular Line Method Application: Image Processing For Steel Industry

11:40–12:00 **Guifang HAN**
Shandong University, China
Fabrication of Al_2O_3 and SiC ceramics by digital light processing technology

12:00–13:30 **Lunch Break**

	SESSION VI
13:30–16:00	**Advances in Microscopy: Brno Industry Session** *Brno, Czechia*
18:00–19:00	**Guided Museum Tour** *Museum of Applied Arts, Husova 536, 662 26 Brno-město*
19:00–22:00	**Gala Dinner** *Museum of Applied Arts, Husova 536, 662 26 Brno-město*

	PLENARY LECTURES IV + V
9:00–9:30	**Hideki ONO** *University of Toyama, Japan* A new principle of Silicon Removal from Aluminum through Selective Extraction and Phase Separation
9:30–10:00	**Yong ZOU** *Shandong University, China* Effect of aging precipitation behavior on corrosion resistance of Al-Mg-Zn high strength aluminum alloys
10:00–10:30	**Coffee Break**

	SESSION VII
10:30–10:50	**Atsushi SAIKI** *University of Toyama, Japan* Surface Modification of Recycled Aluminum Material Using a Laser
10:50–11:10	**Lin ZHANG** *Shandong University, China* Modification of sulfur-based solid-state electrolyte films and properties of all-solid-state batteries
11:10–11:30	**Jae-Ho HWANG** *Kyungpook National University, South Korea* Lithium Recovery from Spent NCM Lithium Ion Battery by Hydrogen Reduction
11:30–11:50	**Chaiyasit BANJONGPRASERT** *Chiang Mai University, Thailand* Enhanced Anode Performance of Al-air Battery by Severe Plastic Deformation
11:50–12:30	**CLOSING CEREMONY**
12:30–13:30	**Lunch-to-go**

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