CEPLANT

International Summer School on Plasma-Surface Engineering.

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3 0 J U N E – 3 J U L Y 2 0 2 6

Faculty of Science, Masaryk University

Brno, Czech Republic

TU **WE** **TH** **FR**

30 JUNE
Networking

1 JULY
Fundamentals

2 JULY
Applications

3 JULY
Laboratories

■ DAY 1 · 30 JUNE 2026 · TUESDAY

ARRIVAL DAY AND NETWORKING.

Registration · Welcome · Innovation Lab Briefing · Networking

13:00 – 16:00	**Registration & check-in**
16:00 – 16:15	CEREMONY **Official welcome** *CEPLANT, organisers*
16:15 – 16:30	**Summer School programme overview**
16:30 – 17:00	INNOVATION LAB **Innovation Lab briefing** *Challenges, format, schedule, mentors*
17:00 – 17:45	NETWORKING **Icebreaker & team formation** *6 mixed teams × ~6 people · challenge selection · first brainstorm*
17:45 – 18:00	**Group photo**
18:00 – 21:00	NETWORKING **Welcome reception / networking buffet**

DAY 2 · 1 JULY 2026 · WEDNESDAY

FUNDAMENTALS & SURFACE CHARACTERISATION.

+ Innovation Lab intensive co-work

BLOCK I — Fundamentals & Reactor Design

08:30 – 08:40	**Opening of the day**
08:40 – 09:15	***01*** **Physics of Low-Temperature Plasmas: From Ionisation to Reactive Species** Speaker: ***Prof. Tomáš Hoder*** *CEPLANT*
09:15 – 09:50	***02*** **Understanding Plasmas through Diagnostics: Optical and Electrical Methods** Speaker: ***Assoc. Prof. Zdeněk Navrátil*** *CEPLANT*
09:50 – 10:20	BREAK **Break I**
10:20 – 10:55	***03*** **Plasma–Surface Interactions: Mechanisms and Surface Modification Processes** Speaker: ***Prof. Mirko Černák*** *CEPLANT*
10:55 – 11:30	***04*** **Design and Scaling of Advanced Plasma Reactors for Materials Processing** Speaker: ***Dr. Richard Krumpolec*** *CEPLANT*
11:30 – 12:05	***05*** **HV Power Supplies for DBDs: Resonant Transformers and Driving Electronics** Speaker: ***Dr. Michal Pazderka*** *CEPLANT*
12:05 – 13:05	LUNCH **Lunch**

BLOCK II — Innovation Lab Intensive Work

13:05 – 15:05	INNOVATION LAB **INNOVATION LAB — Intensive co-work session** *2h of team work with mentors*
15:05 – 15:35	BREAK **Break II**

BLOCK III — Surface Characterisation & Coatings

15:35 – 16:10	***06*** **Characterisation of Plasma-Treated Surfaces I: SEM / AFM** Speaker: ***Dr. Zlata Kelar Tučeková*** *CEPLANT*
16:10 – 16:45	***07*** **Characterisation of Plasma-Treated Surfaces II: XRD** Speaker: ***Dr. Mojmír Meduňa*** *Department of Condensed Matter Physics, MUNI*
16:45 – 17:05	BREAK **Break III**
17:05 – 17:40	***08*** **Characterisation of Plasma-Treated Surfaces III: XPS** Speaker: ***Dr. Monika Stupavská*** *CEPLANT*
17:40 – 18:15	***09*** **Characterisation of Plasma-Treated Surfaces IV: Optical methods** Speaker: ***Dr. Jiří Vohánka*** *CEPLANT*
18:15 – 18:50	***10*** **Plasma-Assisted Functional Coatings (PVD / CVD / ALD)** Speaker: ***Assoc. Prof. Pavel Souček*** *CEPLANT*
18:50 →	**Free programme**

■ DAY 3 · 2 JULY 2026 · THURSDAY

APPLICATIONS.

+ Final presentations · BBQ

BLOCK I — Energy & Environmental (Morning)

08:30 – 08:40	**Opening of the day**
08:40 – 09:15	***11*** **Plasma in Environmental Applications I: CO_2 Conversion and Green Fuels** Speaker: ***Dr. Ondřej Jašek*** *CEPLANT*
09:15 – 09:50	***12*** **Plasma Treatments in Energy Devices I: Solar Cells** Speaker: ***Assoc. Prof. Tomáš Homola*** *CEPLANT*
09:50 – 10:20	BREAK **Break I**
10:20 – 10:55	***13*** **Plasma Treatments in Energy Devices II: Supercapacitors** Speaker: ***Assoc. Prof. Tomáš Homola*** *CEPLANT*
10:55 – 11:30	***14*** **Plasma–Water Interactions and Reactive Species Chemistry** Speaker: ***Assoc. Prof. Mário Janda*** *Comenius University*
11:30 – 12:30	LUNCH **Lunch**

BLOCK II — Innovation Lab Preparation + Applications

12:30 – 13:30	INNOVATION LAB **INNOVATION LAB — Presentation preparation** *Teams finalise slides / demo (1h)*

13:30 – 14:05 — *15* **Plasma Technologies for Wastewater Treatment**
Speaker: ***Dr. Milan Šimek*** *IPP CAS Prague*

14:05 – 14:40 — *16* **Plasma Agriculture**
Speaker: ***Assoc. Prof. Veronika Medvecká*** *Comenius University*

14:40 – 15:15 — *17* **Plasma in Environmental Applications II: Heterogeneous Catalysis**
Speaker: ***Assoc. Prof. Karol Hensel*** *Comenius University*

15:15 – 15:40 — BREAK
Break II

15:40 – 16:15 — *18* **Plasma Biomedicine**
Speaker: ***Prof. Zdenko Machala*** *Comenius University*

16:15 – 16:50 — *19* **Bridging Science and Industry: Case Studies in Plasma Technology Transfer**
Speaker: ***Assoc. Prof. Dušan Kováčik*** *CEPLANT*

BLOCK III — Innovation Lab Finale & Closing

16:50 – 17:00 — **Break — team preparation for presentations**

17:00 – 18:00 — FINALE
INNOVATION LAB — Final presentations
6 teams × ~10 min including Q&A

18:00 – 18:30 — CEREMONY
Innovation Lab evaluation, closing remarks, certificates

18:30 → — BBQ
BBQ / Farewell dinner

DAY 4 · 3 JULY 2026 · FRIDAY

LABORATORY TOUR.

+ Informal farewell

09:30 – 12:00

TOUR

CEPLANT laboratory tour

Group rotation across the laboratories

12:00 →

NETWORKING

Informal farewell

Joint lunch / coffee · participants depart at leisure

SEE APPENDIX

Laboratory Tour

Eight CEPLANT laboratories are open to participants during the tour. See the next page for the full overview.

APPENDIX

LABORATORY TOUR.

Participants rotate in smaller groups across the CEPLANT laboratories. The plasmachemical laboratory accommodates larger groups for an extended slot; other laboratories host shorter visits in parallel.

LABORATORIES

L1 Plasmachemical Laboratory
Multiple plasma sources and related experiments

L2 XPS Laboratory
X-ray photoelectron spectroscopy

L3 SEM Laboratory
Scanning electron microscopy

L4 PVD and HiPiMS Laboratory
Physical vapour deposition & High-Power Impulse Magnetron Sputtering

L5 ALD Laboratory
Atomic layer deposition of functional thin films

L6 Nanospider Laboratory
Industrial-scale electrospinning of nanofibres

L7 Laser Laboratory
Laser-plasma interactions

L8 Optical Diagnostics Laboratory
Optical diagnostics of plasma

APPENDIX

INNOVATION LAB TIMELINE.

The Innovation Lab runs throughout the entire Summer School in four phases. Teams form on the first evening and work asynchronously between formal sessions.

01 BRIEFING & TEAM FORMATION

When: ***Tuesday 30 June · 16:30 – 17:45*** · **Duration:** ***1h 15min***

Mentors present the challenges. Teams are formed and choose their challenge during the icebreaker activity. First brainstorm in teams.

02 INTENSIVE CO-WORK SESSION

When: ***Wednesday 1 July · 13:05 – 15:05*** · **Duration:** ***2h***

Main working session. Teams develop their solution with mentors providing expert feedback on the spot.

03 PRESENTATION PREPARATION

When: ***Thursday 2 July · 12:30 – 13:30*** · **Duration:** ***1h***

Teams finalise their presentation slides, demo or solution prototype.

04 FINAL PRESENTATIONS

When: ***Thursday 2 July · 17:00 – 18:00*** · **Duration:** ***1h · 6 teams × 10 min***

Teams present their solutions in front of the jury and all participants. Evaluation and ceremonial handover of certificates follow.

■ ABOUT

THE ORGANISER.

CEPLANT.

R&D Centre for Plasma and Nanotechnology Surface Modifications

Department of Plasma Physics and Technology, Faculty of Science, Masaryk University · Brno, Czech Republic

Established in December 2010, CEPLANT is a Large Research Infrastructure operating within the Department of Plasma Physics and Technology at Masaryk University. It builds on more than 60 years of tradition in applied plasma physics research at the Faculty of Science.

CEPLANT conducts both fundamental and applied research in low-temperature plasma physics, electric discharges, and nanotechnology — covering the full value chain from basic research through applied research with industry to technology transfer of plasma technologies for specific industrial applications. The centre offers Czech and international researchers access to its experimental facilities and state-of-the-art laboratories in Open Access mode.

> ***Our research should not end in the lab — it should solve real problems and create real value.***
>
> — Assoc. Prof. Dušan Kováčik, Director

LEADERSHIP

Director **Assoc. Prof. Dušan Kováčik**

Deputy for Fundamental Research **Prof. Tomáš Hoder**

Deputy for Applied Research **Assoc. Prof. Tomáš Homola**

Deputy for Infrastructure and Development **Prof. Petr Vašina**

LEARN MORE ***ceplant.cz/about-us***