

## DAY 1 | OPENING & VISIONARY SCIENCE

### Lasers and Photonics in the World of 2040

Target Audience: Researchers, industry professionals, policy-makers, students, and the public

Languages: Simultaneous translation (JP | EN)

#### 09:00 – 10:00 | Registration & Refreshments

#### 10:00 – 10:30 | Opening Ceremony

Welcome by Czech and Japanese representatives, EXPO framing

Chairperson: Roman Hvězda (ELI ERIC)

- Czech Pavilion Host – General Commissioner – Ondřej Soška
- Czech Ambassador to Japan – H.E. Martin Klučar
- Representative of ELI ERIC – Roman Hvězda
- Representative of the Czech Optical Cluster – Petr Přikryl
- Representative of Japanese partners

#### 10:30 – 12:30 | BLOCK 1

##### Vision 2040 of Future Energy & Sustainable Technology

*This block combines laser-driven energy concepts, energy-efficient devices, and foundational quantum and photonic systems that enable sustainable infrastructure.*

Chairperson: Roman Hvězda (ELI ERIC)

##### Keynote speakers

JP **Akifumi Yogo** (ILE/U. OSAKA)

High Power Lasers for Global Innovation in Energy and Science,

CZ **Martin Formánek** (ELI)

Probing the Frontiers of Strong-Field Quantum Electrodynamics with High-Intensity Lasers,

##### Contributed talks

CZ **Jan Brajer** (HILASE CENTRE, IOP-CAS)

Advanced solid-state lasers for energy and industrial resilience,

JP **Hitoki Yoneda** (ILS/UEC):

Next generation high-power lasers free from laser damage, [Revolution of high-power lasers with damage-free optics]

JP **Yoshitaka Mori** (GPI/EX FUSION INC.)

Laser fusion energy: Powering a Sustainable Future

#### 12:30 – 13:30 | Lunch

#### 13:30 – 15:30 | BLOCK 2

##### Health, Precision & Societal Infrastructure

*Keynotes on laser-enabled diagnostics, quantum clocks, cyber-physical systems, and X-ray inspection*

Chairperson: Martin Brajer

##### Keynote speakers

CZ **Sergei Bulanov** (ELI)

Laser-generated high-energy particle and photon beams for fundamental science and applications,

## DAY 2 | COOPERATION & APPLICATIONS IN SOCIETY

### Space research and laser in medicine, quantum technologies and industry – cooperation in action

Languages: Simultaneous translation (JP | EN)

#### 09:00 – 10:00 | Morning Coffee & Networking

#### 10:00 – 12:30 | BLOCK 1

##### Space Technologies and Instrumentation

Chairperson: Jiří Svoboda (ASI, CAS)

##### Speakers

CZ **Jiří Svoboda** (ASTRONOMICAL INSTITUTE OF THE CZECH ACADEMY OF SCIENCES)

Czech Space Programme: Science and International Collaboration

JP **Ikkoh Funaki** (ISAS/JAXA)

Japanese Space Program and Space Science Missions

JP **Yoshifumi Saito** (ISAS/JAXA)

In-situ plasma particle measurements in current and future planetary exploration

JP **Haruna Sugahara** (ISAS/JAXA)

Analytical Chemistry in Space: Sample Return and Onboard Mass Spectrometry

CZ **Masafumi Imai** (INSTITUTE OF ATMOSPHERIC PHYSICS OF THE CZECH ACADEMY OF SCIENCES)

Czech Contribution to the Exploration of the Solar System

JP **Yoshizumi Miyoshi** (NAGOYA UNIVERSITY)

Geospace Research by the Arase Satellite: Contributions to Space Weather Studies through Japan-Czech Collaboration

JP **Hirofumi Noda** (TOHOKU UNIVERSITY)

Scientific Highlights from the X-ray Imaging and Spectroscopy Mission (XRISM)

CZ **Norbert Werner:**

Czech-Japanese collaboration in studying the Hot and Energetic Universe: From Hitomi/XRISM to future projects

JP **Kazuhiro Nakazawa** (NAGOYA UNIVERSITY)

Gamma-ray detector development in Japan-Czech collaborations: space and more

JP **Teruaki Enoto** (KYOTO UNIVERSITY)

From Lunar water exploration to astrophysics from the moon – MoMoTarO

CZ **Peter Oberta** (RIGAKU)

Development of X-ray Optics

#### 12:30 – 13:30 | Lunch

#### 13:30 – 15:10 | BLOCK 2

##### Enabling Technologies & Future Research Infrastructures – Part 1

*Talks on high-power photonic devices, LIBS in space, Laser technologies for future, and Czech-Japanese projects*

Chairperson: Martin Brajer (HILASE CENTRE)

##### Speakers

CZ **Pavel Pořízka** (LIBS LAB, CEITEC)

Prospecting geological material on Earth and in Space with laser spectroscopy

JP **Masao Takatomo** (RIKEN)

Optical Lattice Clocks for Next-Generation Frequency Standards and Future Infrastructure

JP **Kan Takase** (OPT QC)

Beyond Imagination: How Quantum Teleportation Powers the Quantum Computer

## DAY 2 | COOPERATION & APPLICATIONS IN SOCIETY

JP **Susumu Noda** (KYOTO U.)

Future society opened by PCSELS Photonic crystal surface-emitting lasers [Realization of PCSELS with various functions, such as high power, scanning, and new type solar cell]

JP **Noboru Hasegawa** (KPSI/QST)

Laser Driven Smart Infrastructure Management System for Future Society – Towards SDGs

#### 15:10 – 15:40 | Coffee break

#### 15:40 – 16:30 | BLOCK 3

##### Enabling Technologies & Future Research Infrastructures – Part 2

Chairperson:

##### Speakers

CZ **Milan Matějka**

Precise 3D printing and IQnano3D technology.

CZ **Jan Brajer, Martina Řeháková** (HILASE CENTRE)

Industrial Laser Material Processing Advances and HiLASE Laser Training Centre

CZ **Jan Vancí, Ondřej Barkman**

Fiber Optics, Lasers, and the Next Generation of Innovators

#### 16:30 – 18:00 | Blok 4

##### Science Meets Industry (PANEL DISCUSSION)

*Innovation ecosystems, tech transfer, business collaboration*

*Featuring startup stories and institutional partnerships*

Chairperson: Petr Oberta, RiGAKU

Moderator: TBC

##### Czech-Japanese business innovation

CZ **Zuzana Stravová** (CACTUX S.R.O.)

From Lab to Industry – A Czech Startup's story of Applied Research and Global Impact.

CZ **Peter Oberta** (RIGAKU CZECH)

Rigaku early involvement and initial support of CactuX s. r. o.

JP **Rigaku Corporation – CEITEC collaboration**

Signature of a new MoU. A raw model for a decade long Industry – Academia collaboration. Dr.Kazuhiko Omote (DIRECTOR OF RIGAKU R&D), Dr. Tomáš Zikmund (CEITEC), Dr. Peter Oberta (DIRECTOR OF RIGAKU CZECH)

JP **Masashi Yoshimura** (ILE/OSAKA U)

Contribution of CLBO Crystal Invented at Osaka University to the Semiconductor Industry.

CZ **Milan Matějka** (IQS NANO)

unique start up story

#### 18:00 – 18:15 | Wrap-up

#### 18:30 – 21:30 | Evening Networking Cocktail Party

Guests from academia, government, and business

Location: Rooftop of the Czech Pavilion

## DAY 1 | OPENING & VISIONARY SCIENCE

JP **Hironao Sakaki** (QST/KPSI)

Laser-Driven Ion Injector for compact Heavy-ion Radiotherapy Facilities

Contributed talks

JP **Yohei Kobayashi** (ISSP/U. TOKYO)

Cyber -Physical Laser Systems for Laser Manufacturing

CZ **Tomáš Zikmund** (CT LAB, CEITEC)

Advanced X-ray Imaging for Battery Inspection

JP **Alex Pirozhkov** (QST/KPSI)

X-Ray Nanoscale Sources: Revolutionary Terawatt X-Rays

Will Design Tomorrow's World

**15:30 – 16:00 | Coffee Break**

**16:00 – 17:30 | BLOCK 3**

**The Future of Laser Technologies** (Panel Discussion)

*Collaboration models, international infrastructure, tech transfer, youth mobility*

Chairperson: Roman Hvězda (ELI ERIC)

**Participants:** ELI Beamlines, ILE Osaka, Czech Optical Cluster, Japanese industry

**M. Kando** (KPSI/QST): on collaboration model

**T. Okamoto** (OKAMOTO OPTICS)(TBC): on industry academia collaboration

**Y. Kato** (ILE/KPSI): on PIC and OPIE

**S. Bulanov**

**M. Formánek**

1. How can we enhance collaboration and accelerate technology transfer between research and industry?
2. Laser-generated high-energy particle and photon beams for fundamental science and applications
  - Collaboration models
  - International research infrastructure
  - Young researcher mobility

**17:30 – 18:30 | Exhibition booth and networking** (OPTIONAL)

L1 Laser model, laser mirrors, laser piano,

Rutherford scattering demo, simulator demos

Location: Interactive Zone of the Czech Pavilion

**19:00 – 20:00 | Observing the night sky with an astronomical telescope**

(OPTIONAL)

Location: The Roof of Czech pavilion

## DAY 3 | EDUCATION, TRAINING & B2B

**Building Strategic Czech-Japanese Collaboration**

Target Audience: Companies, universities, startups, clusters, students

Languages: Translation as needed

**10:30 – 13:00 | BLOCK 1**

- **ELI Educational Activities** (INTERACTIVE ZONE)
- **HiLASE Scavenger hunt** (INTERACTIVE ZONE)
  - Opportunities for students
- **B2B Meetings & Matchmaking** (CTP ROOFTOP ROOM)
  - MoU signature opportunities
  - Facilitated institutional matching

**13:00 – 14:00 | Lunch break**

**14:00 – 16:00 | B2B Meetings Continued**

Location: CTP Room on the Rooftop

**Continuous Exhibition** (Pavilion Showroom)

- Optical components for space
- Popularization videos
- Laser mirror exhibits
- Hands-on science displays



## CONFERENCE PROGRAM

PHOTONICS, SPACE, LASERS:  
DESIGNING THE FUTURE SOCIETY – VISION 2040

CZECH PAVILION, EXPO 2025, OSAKA  
SEPTEMBER 9 – 11, 2025