

International Symposium

**Towards New Scientific Horizons
with Synchrotron Radiation**



Keynote Speaker

Ian Robinson (University College London)

Invited Speakers

Hendrik Bluhm (Fritz Haber Institute)

Dean DeLongchamp (NIST)

Ana Diaz (Paul Scherrer Institute)

Saw Wai Hla (Ohio University)

Kaye Morgan (Monash University)

Thorsten Schmitt (Paul Scherrer Institute)

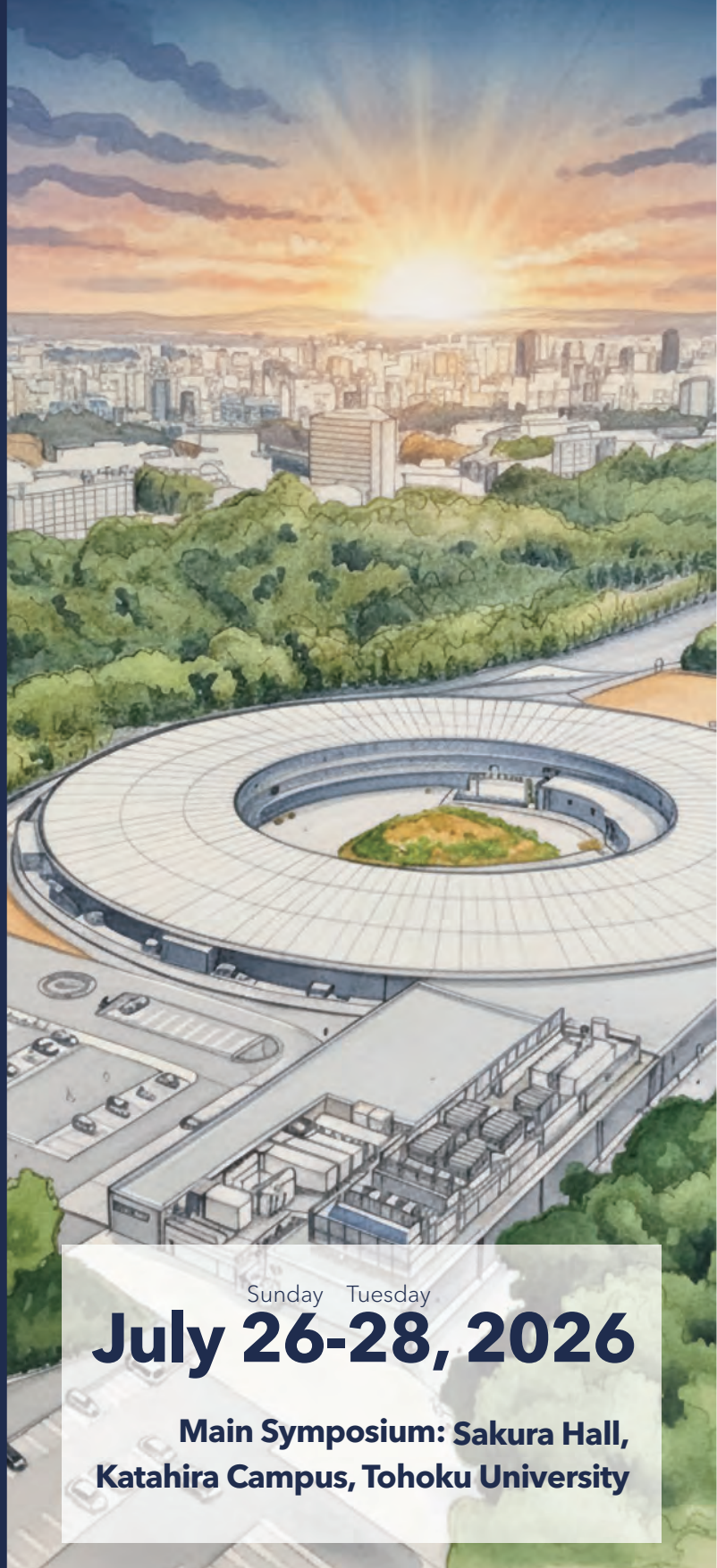
Speakers

Kohsuke Gonda (Tohoku University)
Masahiko Harata (Tohoku University)
Taiki Hoshino (Tohoku University)
Yuta Kimura (Tohoku University)
Shinji Kohara (NIMS)
Tetsuya Nakamura (Tohoku University)
Kosuke Nakayama (Tohoku University)
Maiko Nishibori (Tohoku University)
Shoya Sakamoto (Tohoku University)

Hakuto Suzuki (Tohoku University)
Yukio Takahashi (Tohoku University)
Yuki Takayama (Tohoku University)
Yusuke Wakabayashi (Tohoku University)
Susumu Yamamoto (Tohoku University)
Yuichi Yamasaki (NIMS)
Wataru Yashiro (Tohoku University)
Zhong Yin (Tohoku University)
Ryu Yukawa (Tohoku University)

Details & Registration →

Contact: tfc_pg@grp.tohoku.ac.jp



Sunday Tuesday

July 26-28, 2026

**Main Symposium: Sakura Hall,
Katahira Campus, Tohoku University**

Scope

As the saying goes, “measurement is the foundation of science,” and advances in measurement technologies underpin scientific progress and serve as a driving force for innovation. In this symposium, “Towards New Scientific Horizons with Synchrotron Radiation,” researchers engaged in synchrotron radiation science at Tohoku University will gather to discuss new frontiers in science opened by synchrotron radiation, with NanoTerasu as a central platform. In recent years, synchrotron-based measurement techniques have approached ultimate performance limits in terms of temporal, spatial, and energy resolution. This symposium aims to bring together expertise from within the university and, together with world-leading researchers in areas such as diffraction and scattering, spectroscopy, coherence, and microscopy / imaging, to promote interdisciplinary collaboration centered on NanoTerasu. Through these efforts, we seek to contribute to the exploration of academic frontiers in fields such as medicine, energy, advanced materials, and devices.



Organizers



Daichi CHIBA
*Director, SRIS
Tohoku Univ.*



Yukio TAKAHASHI
*Professor, SRIS
Tohoku Univ.*



Maiko NISHIBORI
*Professor, SRIS
Tohoku Univ.*



Shimpei ONO
*Professor, SRIS
Tohoku Univ.*



Yu-Shan HUANG
*Division Head,
NSRRC*



Changyong SONG
Professor, POSTEC



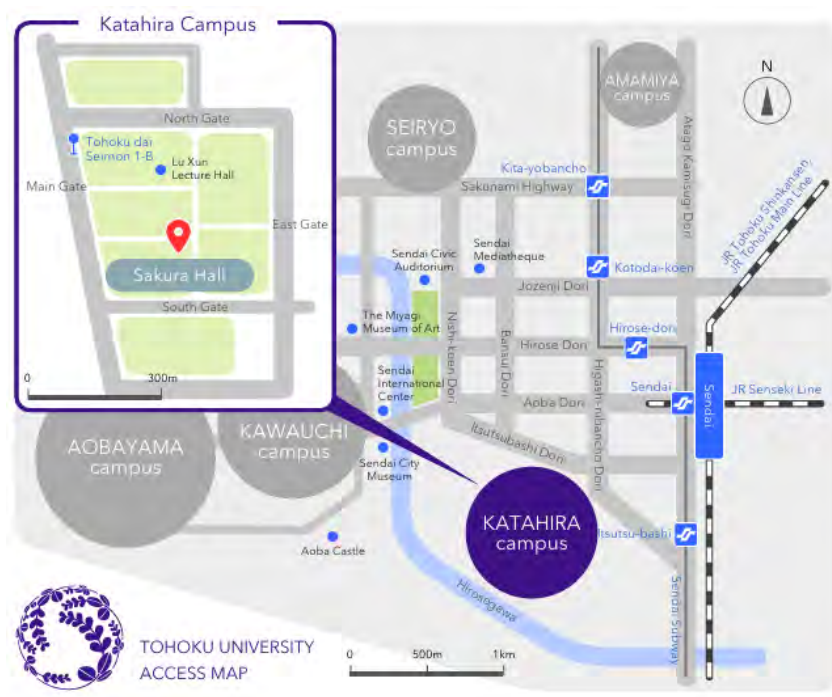
Date

July 26 (Sunday) - 28 (Tuesday), 2026

Venue

Sakura Hall, Katahira Campus, Tohoku University

Address: Katahira 2-1-1, Sendai, Miyagi, Japan



Link to campus map: [interactive](#) and [printable](#)

Details

<https://www.tfc.tohoku.ac.jp/event/4317.html>



Contact

tfc_pg@grp.tohoku.ac.jp



Thematic Programs: Towards New Scientific Horizons with Synchrotron Radiation

2025



Pre-events:
SRIS Colloquium, SRIS NanoTerasu Seminar

2026
July
|
October



International Symposium (July 26, 2026 – July 28, 2026)

Towards New Scientific Horizons with Synchrotron Radiation

Keynote Speaker

Prof. Ian Robinson

University College London

B. E. Warren Award, 2000
Ted Maslen Award, 2003
Surface Structure Prize, 2011
Gregori Aminoff Prize, 2015
Arthur H. Compton Prize, 2025



Invited Speakers

Dr. Hendrik Bluhm

Fritz Haber Institute



Prof. Saw Wai Hla

Ohio University



Invited Speakers

Dr. Dean DeLongchamp

NIST



Prof. Kaye Morgan

Monash University



Dr. Ana Diaz

Paul Scherrer Institute



Dr. Thorsten Schmitt

Paul Scherrer Institute



Prof. Roger H. French

Case Western Reserve University



International Workshop (August 3, 2026 – August 4, 2026)

Accelerating Synchrotron Science: Bridging Measurement, Analysis, and Data Science – Organized as a Session within the CWRU-TU Joint Symposium



Prof. Yeom Han-wong

POSTEC



Public Lecture (October 6, 2026)

Solitons — Collective Electron Waves for Ultra-Low-Power Computing
— Insights from Advanced Characterization



abstract

Scan the QR code to access the full abstract.



Download Abstract (PDF)
<https://x.gd/zHNKc>



Sunday, July 26, 2026

18:00 – 19:30 Welcome Reception (Sendai Kokusai Hotel)
※By invitation only

Monday, July 27, 2026

Opening Session

Chair: Daichi Chiba (SRIS, Tohoku University)

09:00 – 09:10 Opening Remarks
Asako Sugimoto (TFC, Tohoku University)

09:10 – 10:00 Keynote Talk
Ian Robinson (University College London, UK)
Role of Phase Domains in Complex Materials

10:00 – 10:20 Break

Session 1: Diffraction / Scattering

Chair: Tadashi Abukawa (SRIS, Tohoku University)

10:20 – 10:50 Dean DeLongchamp (NIST, USA) [Online]
Polarized resonant soft X-ray scattering for nanoscale composition and orientation in soft materials

10:50 – 11:10 Yusuke Wakabayashi (Graduate School of Science, Tohoku University)
Atomic migration in perovskite oxides induced by electrochemical treatments

11:10 – 11:30 Shinji Kohara (NIMS)
Understanding diffraction from disordered materials: Toward analysis beyond intermediate-range order

11:30 – 11:50 Taiki Hoshino (SRIS, Tohoku University)
Development of X-ray photon correlation spectroscopy for nonequilibrium dynamics studies

11:50 – 12:00 Photo

12:00 – 14:00 Lunch & Poster

Session 2: Microscopy / Coherence

Chair: Yukio Takahashi (SRIS, Tohoku University)

14:00 – 14:30 Ana Diaz (Paul Scherrer Institute, Switzerland)
Advanced X-ray Ptychography: Applications from Semiconductor Devices to Biological Tissues

14:30 – 14:50 Yuki Takayama (SRIS, Tohoku University)
Atmospheric and Cryogenic X-ray Ptychography for Agri-Food Science

14:50 – 15:10 Yuichi Yamasaki (NIMS / SRIS, Tohoku University)
Coherent Soft X-ray Diffraction: Toward Time-Resolved Imaging of Magnetic and Electronic States

15:10 – 15:30 Yukio Takahashi (SRIS, Tohoku University)
High-Resolution Tender X-ray Ptychography at NanoTerasu: Opportunities and Challenges

15:30 – 15:45 Break

Session 3: Imaging

Chair: Wataru Yashiro (SRIS, Tohoku University)

15:45 – 16:15 Kaye Morgan (Monash University, Australia)
Time-resolved Multimodal Synchrotron Imaging of the Lungs

16:15 – 16:35 Masahiko Harata (Graduate School of Agricultural Science / SRIS, Tohoku University)
Toward the utilization of NanoTerasu in Agriculture: Approaches of the Graduate School of Agricultural Science

16:35 – 16:55 Kohsuke Gonda (Graduate School of Medicine / SRIS, Tohoku University)
Synchrotron Radiation CT-Based Multiscale Imaging Reveals Neutrophil Dynamics and Thrombus Architecture in Venous Thrombosis

16:55 – 17:15 Wataru Yashiro (SRIS, Tohoku University)
Where is the future of synchrotron X-ray imaging headed?

18:00 – 19:30 Banquet (Sendai Kokusai Hotel)



Tuesday, July 28, 2026

Session 4: X-ray Spectroscopy

Chair: Maiko Nishibori (SRIS, Tohoku University)

09:00 – 09:30	Thorsten Schmitt (Paul Scherrer Institute, Switzerland) Spin waves and orbital contribution to ferromagnetism in the topological metal Fe₃Sn₂
09:30 – 09:50	Hakuto Suzuki (FRIS, Tohoku University) First results from 2D-RIXS spectrometer: Collective excitations in unconventional superconductors and van der Waals magnets
09:50 – 10:10	Zhong Yin (SRIS, Tohoku University) Observing Chemical Dynamics in Liquids with Ultrafast Spectroscopy
10:10 – 10:30	Maiko Nishibori (SRIS, Tohoku University) Visualization of Framework Ordering via Soft X-ray Emission Spectroscopy and Computational Chemistry
10:30 – 10:50	Break

Session 5: Photoelectron Spectroscopy

Chair: Susumu Yamamoto (SRIS, Tohoku University)

10:50 – 11:20	Hendrik Bluhm (Fritz Haber Institute, Germany) Heterogeneous Chemistry of Liquid-Vapor Interfaces Investigated by X-ray Photoelectron Spectroscopy
11:20 – 11:40	Susumu Yamamoto (SRIS, Tohoku University) Functional Materials Surface Science Opened by Operando X-ray spectroscopies at NanoTerasu
11:40 – 12:00	Ryu Yukawa (SRIS, Tohoku University) Opening New Frontiers in Power Semiconductors through Advanced Materials, Synchrotron Spectroscopy, and Computation
12:00 – 12:20	Kosuke Nakayama (Graduate School of Science, Tohoku University) Visualization of novel electronic states in topological materials using micro-ARPES
12:20 – 13:30	Lunch & Poster

Session 6: Advanced X-ray Applications

Chair: Tetsuya Nakamura (SRIS, Tohoku University)

13:30 – 14:00	Saw Wai Hla (Ohio University, USA) Atomic-resolution SX-STM: Toward the ultimate spatial resolution of synchrotron nanospectroscopy
14:00 – 14:20	Yuta Kimura (IMRAM, Tohoku University) Synchrotron-Based 3D <i>Operando</i> Chemical Imaging of Composite Electrodes in Advanced Rechargeable Batteries
14:20 – 14:40	Shoya Sakamoto (IMR, Tohoku University) Spintronic Functionalities in a Non-collinear Antiferromagnet: Insights Enabled by Synchrotron X-ray Techniques
14:40 – 15:00	Tetsuya Nakamura (SRIS, Tohoku University) Advanced X-ray Applications: Soft X-ray measurement and materials science at NanoTerasu

Chair: Daichi Chiba (SRIS, Tohoku University)

15:00 – 15:30	Closing Session
---------------	-----------------



- P-1** Kakeru NINOMIYA (Tohoku University)
Structure-Driven Electron Localization in Ultrasmall CeO₂ Nanoparticles Revealed by Complementary X-ray Spectroscopies
- P-2** Yukako OMA (Tohoku University)
Synchrotron X-ray Imaging of Developmental Defects in a Histone Variant-Deficient *C. elegans* Mutant
- P-3** Junya YOSHIDA (Tohoku University)
High-Throughput X-ray CT at NanoTerasu: A 100 Gbps Pipeline and Its First Application to Rice Phenotyping
- P-4** Yu Murano (The University of Tokyo)
CO₂ Activation in the Presence of Hydrogen on Ru(0001) Surface Investigated by Ambient Pressure X-ray Photoelectron Spectroscopy
- P-5** Keisuke SAKURAI (Tohoku University)
Efficient and secure beamline operation at NanoTerasu BL09U MX-ES
- P-6** Shota ARAI (Tohoku University)
Prediction of Gas Diffusion Coefficients in Proton Exchange Membrane Fuel Cells Using X-ray Ptychography and Manifold Learning
- P-7** Takashi KUMASAKA (Tohoku University)
Development of a Room-Temperature Time-Resolved Crystallography System and Its Application to Ras Protein Dynamics
- P-8** Yusuke YAMADA (Tohoku University)
NanoTerasu BL09U: User Support for the NanoTerasu Protein Crystal Structure Analysis Experimental Station by the Advanced Research Center for Biomolecular Structure (ARCBS)
- P-9** Kazu HIROSAWA (Paul Scherrer Institute)
Cryogenic X-ray Nano-tomography of Frozen Hydrated Polymer Materials
- P-10** Yuhei SASAKI (Tohoku University)
Development of a Tender X-ray Spectro-Ptychography Measurement System and Three-Dimensional Observation of Sulfur Chemical States
- P-11** Tang JINGMIN (Tohoku University)
A multiscale view of nonequilibrium polymer dynamics enabled by a unified XPCS–TD-NMR platform
- P-12** Yuki TAKAYAMA (Tohoku University)
Atmospheric and Cryogenic X-ray Ptychography for Agri-Food Science
- P-13** Akira YOKO (Tohoku University)
Synchrotron measurements for ultra-fine metal oxide nanoparticles synthesized by supercritical hydrothermal
- P-14** Naru OKAWA (Tohoku University)
Three-Dimensional Nanoscale Imaging of Si-Based Semiconductor Devices Using Tender X-ray Ptychography with Computed Tomography
- P-15** Nozomu ISHIGURO (Tohoku University)
Development of Undulator Gap Synchronized Quick-XAFS System That Combines High Flux and High Throughput

- P-16** Yuta KASAI (Tohoku University)
Correlative Optical Fluorescence Microscopy and XRF Mapping of Gold Nanoparticle-Based Actin Probe for X-ray Ptychographic Imaging
- P-17** Chika KAMEZAWA (Tohoku University)
Three-Dimensional Imaging of Elastic distribution by dynamic X-ray Elastography Using White Synchrotron Radiation
- P-18** Yifu LIU (The University of Tokyo)
Evidence for CO₂ Dissociation on Hydrogen Boride Sheets Studied by Near-Ambient Pressure X-ray Photoelectron Spectroscopy
- P-19** Mingyang SHAO (National Institutes for Quantum Science and Technology)
Observation of Domain Nucleation in BaTiO₃ Nanoparticles by Bragg-CDI
- P-20** Natsuki AKAISHI (Tokyo University of Agriculture and Technology)
Extending Depth of Field in Multislice Ptychography by Subgradient-projection-based Algorithm
- P-21** Mihiro IKENAGA (Tohoku University)
Development of Phase modulated Multi-beam X-ray Ptychography Utilizing Total Reflection Focusing Mirrors
- P-22** Keita HIROMORI (The University of Tokyo)
Autonomous soft X-ray spectroscopy for data-driven materials exploration at NanoTerasu BL08U
- P-23** Kai KAMIJO (Tohoku University)
Self-supervised denoising for ARPES data
- P-24** Hikaru NOMURA (Tohoku University)
A Python-Based Experiment-Control System with AI-Ready Markdown Logs for NanoTerasu BL14U/BL07U
- P-25** Xuhui XU (Tohoku University)
X-ray Structure Analysis of Transition Metal Oxide Thin Films: Observation of Spin Transition Through Structural Changes
- P-26** Yu-Shan HUANG (Taiwan Photon Source, NSRRC)
The hard X-ray ptychography endstation at theTaiwan Photon Source
- P-27** Ryuhei KOHNO (Tohoku University)
XMCD Imaging of Fe₃GaTe₂ toward Strain Control of Magnetism in a Two-Dimensional Layered Ferromagnet using BL14U at NanoTerasu
- P-28** Takanori KODAMA (Tohoku University)
Technical Staff as Cross-Linkers in Food and Agricultural Synchrotron Science: Integrated Support at NanoTerasu
- P-29** Hayato SUZUKI (Tohoku University)
Spatial Modulation of Interlayer Exchange Coupling in Synthetic Antiferromagnets by Ion Irradiation
- P-30** Qicheng Tian (Tohoku University)
High-resolution ARPES study of kagome magnet GdTi₃Bi₄

- P-31** Yuki ARAI (Tohoku University)
SX-ARPES Reveals the Nesting Origin of Multiple Skyrmion phases
- P-32** Yusei MORITA (Tohoku University)
Discovering a saddle-loop band structure using high-resolution ARPES
- P-33** Shuto SUZUKI (Tohoku University)
A versatile uniaxial strain device for ARPES: application to the CDW material 1T-TaS₂
- P-34** Yosuke TOMIOKA (Tohoku University)
Development of an X-ray Fluorescence Microscope for Nanoscale Investigation of Intranuclear Structures
- P-35** Masashi MIZUKAMI (Tohoku University)
A Synchrotron X-Ray Diffraction Study on Various Nano-Confined Liquids
- P-36** Jonghyeok LEE (Tohoku University)
What limits speckle-based dark-field imaging? A high-speed, white-beam case study
- P-37** Toshiaki NISHI (Tohoku University)
Three-dimensional Internal Displacement and Strain Distributions in Rubber During Friction Against a Resin Sphere Revealed by Two-directional Synchrotron X-ray Imaging
- P-38** Zheyuan LIANG (Tohoku University)
Effect of Chemical Ordering on Mn Local Structural Evolution during Stress-Induced Martensitic Transformation Revealed by In Situ Micro-XAFS
- P-39** Tobias LOJEWSKI (The University of Tokyo)
Establishing time-resolved magnetization-induced soft X-ray secondharmonic generation at SACLA BL1
- P-40** Takeyasu NISHIO (Tohoku University)
Development of Imaging XAFS Using NanoTerasu
- P-41** Ryoma Nishida (Tohoku University)
Multi-probe synchrotron X-ray characterization of coupled structure, dynamics, and chemistry in a hydrated starch gel



TOHOKU FORUM
for CREATIVITY

