

The 45th Annual NANO Testing Symposium



Senri Life Science Center
(Toyonaka, Osaka, Japan)

11–13 November 2025

<https://inanot.sakura.ne.jp/nanots/>

secretariat@inanot.sakura.ne.jp

Sponsored by The Institute of NANO Testing
In cooperation with

- The Institute of Electronics, Information and Communication Engineers
- The Japan Society of Applied Physics
- Reliability Engineering Association of Japan
- Union of Japanese Scientists and Engineers

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1 Location

Technical Sessions:

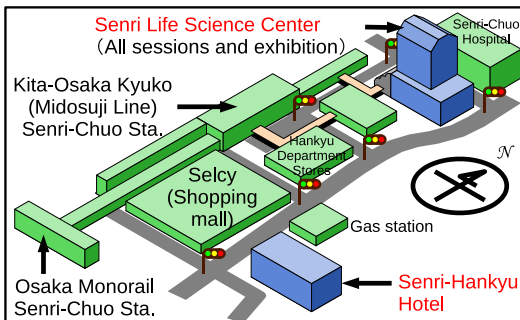
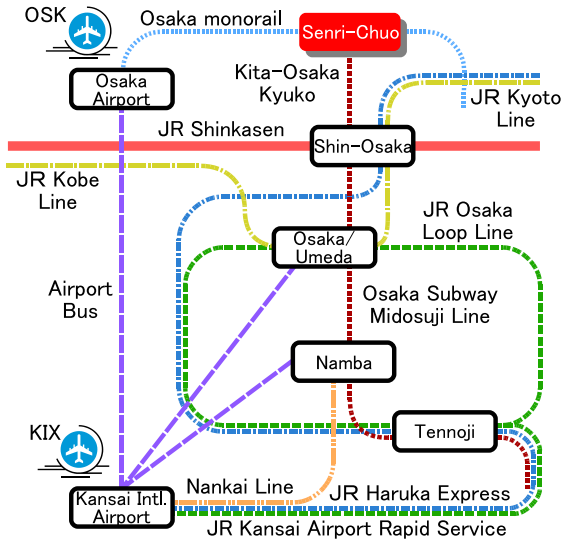
Life Hall, the 5th floor, Senri Life Science Center
1-4-2, Shin-Senri-Higashi-Machi, Toyonaka
Osaka, 560-0082 JAPAN
Phone: +81-6-6873-2010, FAX: +81-6-6873-2011

Exhibition:

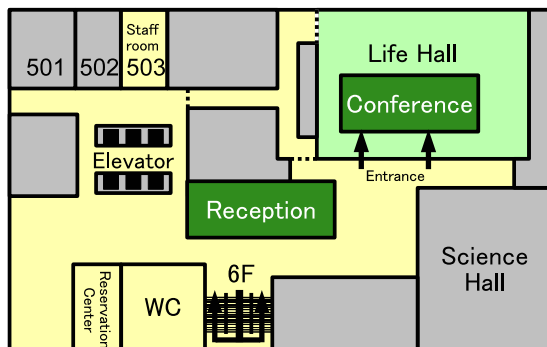
Senri Room, the 6th floor, Senri Life Science Center

Evening Session:

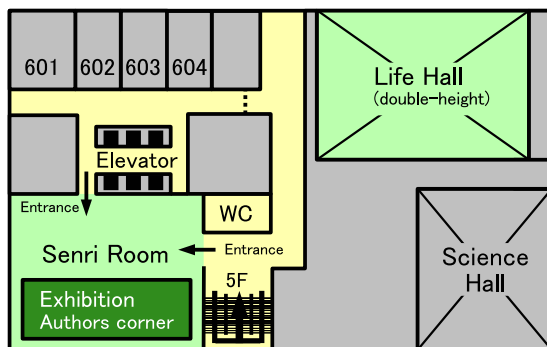
Life Hall, the 5th floor, Senri Life Science Center



2 Floor Map



Senri Life Science Center 5F



Senri Life Science Center 6F

3 Invited Talk

The following invited talks will be given.

13:30–14:30, Tuesday, 11 November:

“Generative AI-assisted knowledge building for equipment and maintenance, and developing maintenance applications”

by Dr. Tomoaki HIRUTA, *Hitachi, Ltd.*

13:26–14:26, Wednesday, 12 November:

“The Invisible Force Behind Rapidus’ Challenge and Innovation — The True Value of Inspection and Measurement Technologies”

by Dr. Hiroshi AKAHORI, *Rapidus Co., Ltd.*

09:30–10:30, Thursday, 13 November:

“Fundamentals and Trends of Semiconductor Quantum Bit Research”

by Prof. Tetsuo KODERA, *Institute of Science Tokyo*

4 Tutorial Session

The following tutorial sessions will be given.

13:15–15:15, Thursday, 13 November:

“Visualization Technology for Lattice Defects Distributed over the Entire Surface of a Semiconductor Wafer”

by Prof. Yongzhao YAO, *Mie University*

5 Authors Corner

Authors corner, a place for audience to meet with and discuss with authors, will be given just after the sessions (except for commercial sessions) in Senri room on 6F.

6 Evening Session

Evening session of NANOTS is a special session for introducing recent activities related to semiconductor failure analysis technology in JEITA and REAJ and discussing on research trend around the world and the future perspective. The session will be held on 18:00–20:00, Wednesday, 12 November. (Life Hall on 5F).

7 Exhibition and Commercial Session

The Symposium will feature the latest in service providers, equipment manufacturers and suppliers. A large exhibit floor will give the opportunity to key-vendors to represent the core business area in these fields. Furthermore, a commercial session will give the opportunity to introduce new products with short presentation.

8 Luncheon Seminar

Luncheon seminars will be given in lunch break time. You must pre-register to attend the seminar. In some cases, your registration may not be accepted because of a business policy of the sponsor.

Hitachi High-Tech Luncheon Seminar: Tuesday, 11 November

Theme: Introduction to Hitachi’s Latest In-Lens FE-SEM SU9600

Abstract : Combining the Highest Resolution with High Throughput: Introducing Hitachi's Flagship Model SU9600, Supporting Semiconductor Research.

JEOL Luncheon Seminar: Wednesday, 12 November

Theme: Semiconductor Analysis Empowered by JIB-PS500i and JEM-ACE200F

Abstract : Introducing the Expanding Possibilities of Semiconductor Nanostructure Analysis through FIB-SEM and TEM.

9 Official Languages

The official languages of the symposium are Japanese and English. Papers included in the proceeding will be written in Japanese or English. Papers in Japanese will have an abstract written in English. We will have no interpreter.

10 Registration Fee

Course	Fee	Including
Non-student	JPY 13000	All sessions, exhibition, and proceeding (download only)
Student	JPY 5000	

Please pay the fee by 24 October 2025 in one of the following ways.

Wire Transfer: Please send Japanese YEN (JPY) to the following account by wire transfer:

Bank Name: Resona Bank, Ltd.

SWIFT (BIC) Code: DIWAJPJT

Branch Name: Senri-Kita Branch

Branch Code: 222

Address: 4-2-D2-201, Furuedai, Suita, Osaka, 565-0874, Japan

Phone: +81-6-6872-0651

Account Number: 6843152

Account Name: The Institute of NANO Testing
Nakamae Koji

Note: All bank charges JPY 5,000 (= the sending bank charge + the receiving bank charge) must be paid by the participant.

Credit card: After you register on the web, the secretariat

will send information on how to pay the registration fee by credit card to your e-mail address.

11 Symposium Registration

Please register on line by using our following website by 24 October 2025 (punctuality).

<https://inanot.sakura.ne.jp/nanots/en/>

This symposium is for pre-registration only, and we will not accept participation on the day. Thank you for your understanding.

12 Cancellation Policy

Cancellations must be submitted in an e-mail. Cancellations received by 17:00, 24 October 2025 (in Japan Standard Time) are entitled to a refund minus an administrative fee (all bank charges plus a 10 % processing fee). No refunds will be given to registrants who cancel after 24 October 2025 or who fail to attend the event.

13 Accommodation Information

There is Senri Hankyu Hotel around the symposium site. The hotel is located close to the symposium site. You can go to the symposium site from the hotel by 5 minutes walk. If you want to stay at Senri Hankyu Hotel, please visit the hotel's web site and book a room. Please keep in mind that the reservation will be closed in the case all available rooms are booked.

<http://www.senri-htl.co.jp/>

14 Proceedings

Technical papers will be provided on electronic media (download). Download information will be announced on November 6, 2025. The conference program will be provided on print media.

15 Latest Information

You can find latest information on all aspects of NANOTS at <https://inanot.sakura.ne.jp/nanots/en/>.

16 Steering & Program Committee

Chairman:

Koji NAKAMAE (The University of Osaka)

Member:

Shunsuke ASAHINA	(JEOL.Ltd.)
Yasuo CHO	(Tohoku University)
Yasuhisa HIGUCHI	(Hitachi, Ltd.)
Kazunobu KOJIMA	(The University of Osaka)
Toru KOYAMA	(Fuji Electric Co., Ltd.)
Hitoshi MAEDA	(Renesas Electronics Corp.)
Hideo MORISHITA	(Hitachi. Ltd.)
Kiyoshi NIKAWA	(Device Evaluation Technology Lab.)
Makoto SAKAKIBARA	(Hitachi High-Tech Corp.)
Hirotooshi TERADA	(Hamamatsu Photonics)
Masahiko TSUJITA	(Sony Semiconductor Manufacturing Corp.)
Yuichiro YAMAZAKI	(TASMIT Inc.)
Yuki WAKISAKA	(Kioxia Corp.)

17 Secretariat

Yoshihiro MIDOH and Koji NAKAMAE
Secretariat of the Institute of NANO Testing
Miura Lab., Dept. Information Systems Engineering,
Grad. Sch. Information Science and Technology
The University of Osaka
1-5, Yamada-Oka, Suita, Osaka, 565-0871 JAPAN
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E-mail: secretariat@inanot.sakura.ne.jp
Web: <https://inanot.sakura.ne.jp/nanots/en/>

18 Technical Program

Tuesday, Nov. 11, a.m. / Life Hall

- (1) Opening remarks
09:20 K. Nakamae / The Institute of NANO Testing

Preprocessing

a.m., Tue 11

Chairman Masahiko Tsujita

- (2) Advances in X-ray Source Technology for
09:30 High-Resolution nanoCT in Semiconductor
Packaging Inspection
N. Seimiya^(a), N. Achilles^(b), L. Michalewicz^(b), D.
Stickler^(b) / ^(a)Comet Technologies Japan K.K., ^(b)Comet
Yxlon GmbH
- (3) The Silicon Thinning Process by using Inward
09:55 Plasma
C. Iwase, R. Kanou, Y. Shirayama, S. Takahashi /
Sanyu Co.,Ltd.

..... 10:20~10:40 Authors corner & break

Metrology and Inspection I

a.m., Tue 11

Chairman Toru Koyama

- (4) Defect Extraction Model Using Schlieren
10:40 Images in Wafer Back Side Grinding Process
G. Kataoka, K. Komenaka, T. Yokoi, M. Kimoto, R.
Furusawa, O. Yamane / KIOXIA Corporation
- (5) False Positive Discrimination Technology Using
11:05 Contrastive Learning for Image Inspection of
Semiconductors
Y. Azuma^(a), M. Ouchi^(b), H. Shindo^(c), K. Fukaya^(c) /
^(a)Hitachi, ^(b)Hitachi, ^(c)Hitachi High-Tech
- (6) Development of Technology to Identify Defect
11:30 Depths in Ultra-sonic Void Inspection
H. Takayanagi^(a), Y. Okada^(a), H. Tamura^(a), A.
Hamaguchi^(a), Y. Xiong^(b), S. Nishiyama^(b) / ^(a)KIOXIA
Corporation, ^(b)Sandisk G.K

..... 11:55~12:15 Authors corner & break

Luncheon seminar

a.m., Tue 11

- (L1) Hitachi High-Tech Luncheon seminar
12:15 H. Ito, Y. Nakajima / Hitachi High-Tech

Tuesday, Nov. 11, p.m. / Life Hall

Invited Talk I

p.m., Tue 11

Chairman Hideo Morishita

- (11) Generative AI-assisted knowledge building for
13:30 equipment and maintenance, and developing
maintenance applications
T. Hiruta / Hitachi, Ltd.

..... 14:30~14:50 Authors corner & break

Artificial intelligence

p.m., Tue 11

Chairman Hirotooshi Terada

- (7) AI-Powered Knowledge Management for Nano
14:50 Testing: A Large Language Model Approach
Y. Midoh / The University of Osaka
- (8) Application of SEM Image Generation AI
15:15 Models to Dimensional Measurement of
Semiconductor Patterns
S. Nakamichi, Y. Midoh, S. Asano, J. Shiomi, N. Miura
/ The University of Osaka

..... 15:40~16:00 Authors corner & break

Metrology and Inspection II

p.m., Tue 11

Chairman Yuki Wakisaka

- (9) Advanced pattern contour extraction function
16:00 for see-through BSE images of high voltage
SEM
M. Oya^(a), Y. Okamoto^(a), S. Nakazawa^(a), K.
Maruyama^(a), Y. Yamazaki^(a), S. Murakami^(b), Y.
Midoh^(b), N. Miura^(b) / ^(a)TASMIT, Inc., ^(b)The
University of Osaka
- (10) Effectiveness Evaluation of Contour Extraction
16:25 Approaches for SEM Images of Semiconductor
Multilayer Patterns
S. Murakami^(a), M. Oya^(b), Y. Okamoto^(b), S.
Nakazawa^(b), K. Maruyama^(b), Y. Yamazaki^(b), Y.
Midoh^(a), N. Miura^(a) / ^(a)The University of Osaka,
^(b)TASMIT, Inc.

..... 16:50~17:10 Authors corner & break

Wednesday, Nov. 12, a.m. / Life Hall

Equipment and systems

a.m., Wed 12

Chairman Shunsuke Asahina

- (11) In-situ SEM Nanoscale Mechanical Testing for
09:30 Characterizing Single-Walled Carbon
Nanotubes

T. Namazu / Kyoto University of Advanced Science

- (12) Correlative analysis between SEM voltage
09:55 contrast imaging and AFM local electric
property measurement

T. Aiso, T. Sunaoshi, S. Takeuchi / Hitachi High-Tech
Corporation

..... 10:20~10:40 Authors corner & break

Commercial Session

a.m., Wed 12

Chairman Hitoshi Maeda

- (C1) Introduction to Alps Alpine's Semiconductor
10:40 Design Capabilities

Y. Hattori / IC Engineering Dept.

- (C2) Hamamatsu Photonics TD Imaging, a new
10:47 method for thermal measurement using
Emission Microscopy.

K. Koshikawa / TOKI COMMERCIAL CO.,LTD.

- (C3) Introduction of Zoom Scan for High-Resolution
10:54 CT Imaging

N. Seimiya^(a), N. Achilles^(b), L. Michalewicz^(b) /

^{a)}Comet Technologies Japan K.K., ^{b)}Comet Yxlon
GmbH

- (C4) Recent Enhancements of LAVIS-plus for
11:01 Failure Analysis

T. Imoto / TOOL Corporation

- (C5) Imina Technologies Application of Nanoprobing
11:08 Method to Semiconductor Device Failure
Analysis

Y. Nakayama / APOLLOWAVE Corporation

- (C6) Optimized Prober Shuttle for Failure Analysis
11:15 Applications

S. Kamada, K. Takahashi / AD Science Inc.

- (C7) Introduction of Semiconductor Device Failure
11:22 Localization Method LI EBAC

T. Shimamori, J. Fuse, Y. Nara, N. Bito / Hitachi
High-Tech Corporation

- (C8) The Thermo Fisher Scientific MK4 ESD Simulator and Latch-Up Tester Provides the Highest Throughput and Most Extensive Features in Industry
 11:29 S. Nohara^(a), M. Hernandez^(b), T. Meuse^(b), H. Tanaka^(b)
 / ^(a)The OYAMA Company, ^(b)Thermo Fisher Scientific
- (C9) Introducing new functions of the CAD navigation system "AZSA-HS"
 11:36 S. Isa / Sales
- (C10) Real-time dedicated 4D-STEM; TENSOR
 11:43 S. Taga, Y. Kodama, N. Suzuki / TOYO Corporation
- (C11) Introducing the High-End FE-SEM JSM-IT810 with Newly Developed Enclosure and Automation Features
 11:50 Y. Uetake / JEOL
- (C12) The Thermo Fisher Scientific Talos F200E (S)TEM Efficiency and Reliability for Each Sample
 11:57 M. Schneider, H. Lin, H. Tanaka / Thermo Fisher Scientific
- (C13) SiC Power Device AC-BTI Test
 12:04 K. Takamori / Oki Engineering Co., Ltd.

Luncheon seminar

a.m., Wed 12

- (L2) JEOL Luncheon seminar
 12:11 I. Kawano, N. Endo / JEOL

Wednesday, Nov. 12, p.m. / Life Hall

Invited Talk II

p.m., Wed 12

Chairman Yuichiro Yamazaki

- (I2) The Invisible Force Behind Rapidus' Challenge and Innovation — The True Value of Inspection and Measurement Technologies
 13:26 H. Akahori / Rapidus Co., Ltd.

..... 14:26~14:31 Group Photo

..... 14:31~14:46 Authors corner & break

Chairman Kiyoshi Nikawa

- (13) Electrical Property Estimation Using an
14:46 Electron Microscope
S. Soraya^(a), N. Yohei^(a), S. Minami^(a), O. Kazuo^(b) /
^(a)HITACHI.LTD, ^(b)Hitachi High-Tech Corporation
- (14) Electrical Characterization of Semiconductor
15:11 Devices using Transient Analysis of Secondary
Electrons in SEM
S. Minami^(a), Y. Shirasaki^(a), Y. Nakamura^(a), K. Yachi^(b)
/ ^(a)Hitachi Ltd., ^(b)Hitachi High-Tech Corp.,
- (15) In-situ SEM observation of electron
15:36 beam-induced local electrical actuation of
MOSFETs using GaN semiconductor-based
photoelectron beam technology
T. Nishtiani^(a), D. Sato^(a), Y. Arakawa^(a), K. Niimi^(a), A.
Koizumi^(a), H. Iijima^(a), Y. Honda^(b), H. Amano^(b) /
^(a)Photo electron Soul Inc., ^(b)Center for Integrated
Research of Future Electronics, Institute of Materials and
Systems for Sustainability, Nagoya University

..... 16:01~16:21 Authors corner & break

Evening Session

p.m., Wed 12

- 18:00 Evening session of NANOTS is a special session for
| discussing on research trend around the world and the
20:00 future perspective. This session will be held at Life Hall,
Senri Life Science Center 5F.

Chairman Koji Nakamae

..... 18:00~18:20 NANOTS2024 Awards etc.

Recent activities related to semiconductor
failure analysis technology in JEITA (Japan
Electronics and Information Technology
Industries Association) and REAJ (Reliability
Engineering Association of Japan)
K. Nikawa / Device Evaluation Technology Laboratory

..... 20:00 Close

Thursday, Nov. 13, a.m. / Life Hall

Invited Talk III

a.m., Thu 13

Chairman Yasuhisa Higuchi

- (13) Fundamentals and Trends of Semiconductor
09:30 Quantum Bit Research
T. Kodera / Institute of Science Tokyo

..... 10:30~10:50 Authors corner & break

Metrology and Inspection IV

a.m., Thu 13

Chairman Makoto Sakakibara

- (16) Comprehensive Analysis of High-bandwidth
10:50 Memory (HBM) with Helios 5 Laser PFIB:
Integrating 2D High-Resolution SEM Imaging
and 3D Metrology
H. Lin, X. Hu, A. S. Hall, J. Zhou, R. Dai, V. Yang /
Thermo Fisher Scientific
- (17) Assessment of topography metrology using
11:15 in-line SEM
A. Hiroaki, I. Chihiro, T. Hironobu, H. Akira /
KIOXIA Corporation.

..... 11:40~12:00 Authors corner & break

..... 12:00~13:15 Lunch Break

Thursday, Nov. 13, p.m. / Life Hall

Tutorial

p.m., Thu 13

Chairman Kazunobu Kojima

- (T1) Visualization Technology for Lattice Defects
13:15 Distributed over the Entire Surface of a
Semiconductor Wafer
Y. Yao / Mie University

..... 14:15~14:35 Authors corner & break

- (18) Chemical state observation using photomission
14:35 electron microscopy

T. Taniuchi, H. Fujiwara, M. Okawa, C. Bareille, S.
Shin / The university of Tokyo

- (19) A new method for visualizing local structure
15:00 distribution in amorphous materials: nanoscale
analysis by combining STEM-EELS and
deformation distance indices

Y. Yuzawa, T. Asano, K. Nakamura, Y. Aiba, D.
Hagishima, H. Tanaka / Kioxia Corp.

..... 15:25~15:45 Authors corner & break

- (20) Visualization of low concentration diffusion
15:45 layers in power semiconductor devices using
TCAD simulation

T. Oyama / Fuji Electric Co.,Ltd.

- (21) Evaluation of the Effectiveness of "Spectrum
16:10 Image" Using Auger Electron Spectroscopy for
SiC Device Analysis

K. Ikita, F. Nabeshima, T. Uchida, N. Taguchi, A.
Tanaka, T. Ohama, K. Yokouchi, K. Tsutsumi / JEOL
Ltd.

- (22) Local DLTS/CV profiling of a SiO₂/SiC interface
16:35 by variable-temperature scanning nonlinear
dielectric microscopy

K. Yamasue / Tohoku University

..... 17:00~17:20 Authors corner & break

- (23) Closing remarks

17:20 K. Nakamae / The Institute of NANO Testing

19 Author Index

※ Numbers show presentation numbers in the technical program.

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20 Exhibition

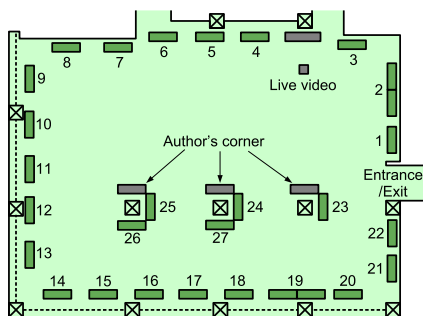
Date & time:

Tuesday, 11 November 2025, 13:00–17:00

Wednesday, 12 November 2025, 9:30–17:00

Thursday, 13 November 2025, 9:30–16:00

Venue: Senri room on 6rd floor



(The exhibition floorplan is subject to change without notice.)

1. **ITES Co.,Ltd.:**
Introduction of power semiconductor evaluation and analysis
2. **Thermo Fisher Scientific: (C8, C12)**
Thermo Fisher Scientific
3. **Marubun Corp.:**
Marubun failure analysis solution
4. **Qualtec Co.,LTD:**
Evaluation of Micro VIA Junction Vulnerability of Advanced Semiconductor Package Substrates
5. **Toshiba Nanoanalysis Corp.:**
Nano-level physical analysis of semiconductors
6. **YAMAZEN Corp.:**
High-Precision Laser Marking/Ultra-High Magnification Optical Microscope
7. **Hanwa Trading Corp.:**
Signatone, semiconductor inspection equipment
8. **Oki Engineering Co., Ltd.: (C13)**
SiC Power Device AC-BTI Test
9. **Nippon Scientific Co. Ltd.:**
Valid Decapsulation systems
10. **AD Science Inc.: (C6)**
Nano probing system for failure analysis using SEM/FIB
11. **APOLLOWAVE Corp.: (C5)**
Imina Technologies Nano Probing Solutions
12. **Hitachi High-Tech Corp.: (C7)**
Innovation, Synergy, Solutions -New EM Lineup
13. **Nippon Barnes Co., Ltd.:**
TDM_Warpage and CTE measurement during thermal profile
14. **INABATA & Co., Ltd.:**
Scalable Raman smart sensor ' Raman Eye ' and Temperature system 'MPI Thermal Air'

15. SEIKO FUTURE CREATION INC.:
Advanced Techniques in IC Circuit Repair: "FIB Modifications" and "3D Cross-Sectional Analysis for Foreign Object Detection using FIB/TEM"
16. Sanyu Co.,Ltd.:
Introduction of Our Products Centered on " ELLMID, " a Local Polishing Machine for Semiconductor Devices
17. Tool Corp.: (C4)
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18. TOKI COMMERCIAL CO., LTD: (C2)
A new method TD Imaging for thermal measurement using Emission Microscopy.
19. Hamamatsu Photonics K.K.:
Luminescent materials measurement system, Laser engine for FIB-SEM, Charge neutralization light source, Semiconductor failure analysis systems
20. Plasma-Therm-Japan K.K.:
Dry Etching Removal System with Endpoint Detection Function for Failure Analysis of Wafers, Chips, and Packaged Dies
21. TOYO Corp.: (C10)
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22. Astron,Inc.: (C9)
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26. SEMILAB JAPAN KK:
For all your Metrology Needs
27. LTEC corporatoin:
Semiconductor Analysis service

21 List of Associate Members

(in alphabetic order, 27 October 2025)

- AD Science Inc.
- ADVANTEST CORPORATION
- AlpsAlpine Co., Ltd.
- AMETEK Co. Ltd.
- APOLLOWAVE Corp.

- Applied Materials, Inc.
- ASTRON Inc.
- ATE Service Corp.
- Carl Zeiss Co.,Ltd.
- Comet Technologies Japan K.K.
- Excillum AB
- FEI Company Japan Ltd.
- Hamamatsu Photonics K.K.
- Hanwa Trading Corp.
- HiSOL, INC.
- Hitachi High-Tech Corporation
- INABATA & Co.,Ltd.
- IR System Co., Ltd.
- ITES CO., Ltd.
- JEOL Ltd.
- LTEC Co.
- MARUBUN CORPORATION
- MA-tek Japan Inc.
- Nano Tech Solutions Inc.
- NIKON SOLUTIONS CO., LTD.
- Nippon BARNES Company, Ltd.
- Nippon Scientific Co., Ltd
- Oki Engineering Co., Ltd.
- Plasma-Therm-Japan K.K.
- Qualtec Co., Ltd.
- Sanyu Co.,Ltd.
- SEIKO FUTURE CREATION INC.
- Semilab Japan
- TASMIT, Inc.
- Toki Commercial Co., Ltd.
- TOOL CORPORATION
- Toshiba Nanoanalysis Corporation
- TOYO Corporation
- Yamazen Corporation