Program

2025 International Conference on Semiconductor Technology for Ultra Large Scale Integrated Circuits and Thin Film Transistors (ULSIC VS TFT 9)

March 30 - April 3, 2025

Grand Hotel San Michele
Cetraro (Calabria), Italy

Conference Chair

Yue Kuo
Texas A&M University, USA; National Yang Ming Chiao Tung University, Taiwan, ROC

Engineering Conferences International
369 Lexington Avenue, 3rd Floor #389 - New York, NY 10017, USA
www.engconfintl.org – info@engconfintl.org

Grand Hotel San Michele

Contrada BOSCO 30

87022 - Cetraro (CS), Italy

Phone: +39-0982-91012

Email: info@sanmichele.it

Engineering Conferences International (ECI) is a not-for-profit global engineering conferences program, originally established in 1962, that provides opportunities for the exploration of problems and issues of concern to engineers and scientists from many disciplines.

Chair of ECI Conferences Committee: Nick Clesceri

ECI Technical Liaison for this conference: Norman Li

ECI Executive Director: Barbara K. Hickernell

ECI Associate Director: Kevin M. Korpics

ECI Conferences Manager: Tressa D’Ottavio

ECI Conferences Registration Manager: Renee Smith

Scientific Advisory Committee

Olivier Bonnaud, U. Rennes & GIP-CNFM
Stefan De Gendt, IMEC
Andrew Flewitt, Cambridge University
Hideo Hosono, Tokyo Institute of Technology
Cheol Seong Hwang, Seoul National University
Jin Jang, Kyung Hee University
Po-Tsun Liu, National Yang Ming Chiao Tung University
Junichi Murota, Tohoku University
Kenji Nomura, University of California, San Diego
Michael Shur, Rensselaer Polytechnic Institute
Yukiharu Uraoka, Nara Institute of Science and Technology

Previous conferences in this series

Semiconductor Technology for Ultra Large Scale Integrated Circuits and Thin Film Transistors
July 29-Aug 3, 2007
Barga, Italy
Conference Chairs:
Yue Kuo, Texas A&M University, USA
Michael Shur, Rensselaer Polytechnic Institute, USA
Dieter Ast, Cornell University, USA

Semiconductor Technology for Ultra Large Scale Integrated Circuits and Thin Film Transistors II
July 5-10, 2009
Xi'an, China
Conference Chairs:
Yue Kuo, Texas A&M University, USA
Michael Shur, Rensselaer Polytechnic Institute, USA
Dieter Ast, Cornell University, USA
William Milne, Cambridge University, UK
Shaozhen Xiong, Nankai University, China

Semiconductor Technology for Ultra Large Scale Integrated Circuits and Thin Film Transistors III
June 26-July 1, 2011
Hong Kong, China
Conference Chairs:
Yue Kuo, Texas A&M University, USA
Gennadi Bersuker, Sematech, USA

Semiconductor Technology for Ultra Large Scale Integrated Circuits and Thin Film Transistors IV
July 8-11, 2013
Grenoble, France
Conference Chairs:
Yue Kuo, Texas A&M University, USA
Gennadi Bersuker, Sematech, USA
C. Claeys, IMEC, Belgium

Semiconductor Technology for Ultra Large Scale Integrated Circuits and Thin Film Transistors V
June 14-18, 2015
Lake Tahoe, California, USA
Conference Chairs:
Yue Kuo, Texas A&M University, USA
Gennadi Bersuker, Sematech, USA
Olivier Bonnaud, University of Rennes, France

Semiconductor Technology for Ultra Large Scale Integrated Circuits and Thin Film Transistors VI
May 21-25, 2017
Hernstein, Austria
Conference Chairs:
Yue Kuo, Texas A&M University, USA
Olivier Bonnaud, University of Rennes, France

Semiconductor Technology for Ultra Large Scale Integrated Circuits and Thin Film Transistors VII
May 19-23, 2019
Kyoto, Japan
Conference Chairs:
Yue Kuo, Texas A&M University, USA
Prof. Junichi Murota, Tohoku University, Japan
Prof. Yukiharu Uraoka, Nara Advanced Institute of Science and Technology

Semiconductor Technology for Ultra Large Scale Integrated Circuits and Thin Film Transistors VIII
May 14 – 18, 2023
Otaru (Sapporo), Japan
Conference Chairs:
Yue Kuo, Texas A&M University, USA

Conference Sponsor

SEL

SEMICONDUCTOR ENERGY LABORATORY

Technical Co-sponsors

Electrochemical Society Electronics and Photonics Division

Korean Physical Society Semiconductor Division

Society for Information Display Taipei Chapter

French National Coordination for Higher Education in Microelectronics and Nanotechlogies

SEL Semiconductor Energy Laboratory

Sunday, March 30, 2025

17:30 – 18:30	Conference Check-in (Great Room)
18:30 – 19:30	Welcome Reception (Great Room)
19:30 – 21:00	Dinner (Dining Room)

Locations and Notes

- *Technical Sessions will be in the Conference Center*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).*
- *Speakers – Please leave at least 3-5 minutes for questions and discussion.*
- *Please do not smoke at any conference functions.*
- *Turn your mobile telephones to vibrate or off during technical sessions.*
- *After the conference, ECI will send an updated participant list to all participants. Please check your listing now and if it needs updating, you may correct it at any time by logging into your ECI account.*
- *Audiotaping, videotaping and photography of presentations are prohibited*

Monday, March 31, 2025

07:30 – 09:00	Breakfast (Breakfast Room)
09:00 – 09:05	**Opening remarks** (Conference Center) Yue Kuo, Texas A&M University & National Yang Ming Chiao Tung University
09:05 – 09:40	**Plenary** **Materials issues in oxide semiconductors for ULSIC and TFTs** Hideo Hosono, Institute of Science Tokyo & National Institute for Materials Science
	Session: Challenges of TFTs in ULSICs Chair: Andrew Flewitt, University of Cambridge
09:40 – 10:10	**Invited** **Nano-scale IGZO FET** Di Geng, Ling Li, Chinese Academy of Sciences
10:10 – 10:40	**Invited** **Monolithic Integration of Heterogeneous Complementary Thin-Film Transistors for Advanced Logic Circuits Applications** Po-Tsun Liu, Tsung-Che Chiang, Cheng-Wei Wang, Pei-Yun Huang, National Yang Ming Chiao Tung University
10:40 – 11:10	Coffee Break (Patio)
11:10 – 11:40	**Invited** **Flexible 2D transition metal dichalcogenide transistors** Quynh Thi Phung, University of Freiburg, Germany; Alwin Daus, University of Stuttgart
	Session: Flexible Electronics Chair: Niko Münzenrieder, Free University of Bozen-Bolzano
11:40 – 12:10	**Invited** **Flexible nanoscale organic thin-film transistors** Hagen Klauk, Max Planck Institute for Solid State Research
12:15 – 14:00	Lunch (Dining Room)
14:00 – 19:30	Networking / Free-time
16:00 – 16:30	Afternoon refreshments (Patio) & Networking
19:30 – 21:00	Dinner (Dining Room)
21:00 – 21:30	Panel Discussion: Challenges of TFTs in IC Applications

Tuesday, April 1, 2025

07:30 – 09:00	Breakfast (Breakfast Room)
	Session: Processes and Devices Chairs: Hideo Hosono, Institute of Science Tokyo Helmut Baumgart, Old Dominion University
09:00 – 09:30	**Invited** **'Nano-In-Nano': Unlocking The Potential of Nanomaterials Through Low Cost, Bottom-Up Processing** Andrew Flewitt, Umer Farooq Ahmed, Gwenhivir Wyatt-Moon, University of Cambridge
09:30 – 10:00	**Invited** **Process and Reliability of Ferroelectric Aluminum Scandium Nitride Films** Kuniyuki Kakushima, Institute of Science Tokyo
10:00 – 10:30	**Investigating RF Sputtered a-IGZO Substrate Dependency: The Role of Power Density** Inês Santos, NOVA University of Lisbon; Henrique Gomes, University of Coimbra; Tobias Cramer, University of Bologna; Pedro Barquinha, NOVA University of Lisbon
10:30 – 11:00	Coffee Break (Patio)
11:00 – 11:30	**Invited** **Low-temperature $HfZrO_2$ Ferroelectric Thin-Film Transistors with IGZO Channels** I-Chun Cheng, Chun-Wei Chang, Che-Chuan Lee, Kuan-Chou Buu, Sie Beng Ting, National Taiwan University
11:30 – 12:00	**Invited** **Optimization of Oxide TFT Device Characteristics Borrowing a-Si:H TFT Experience** Yue Kuo, National Yang Ming Chiao Tung University
12:00 – 12:30	**Invited** **Charge Trapping Kinetics in Back-end Compatible Zinc-based Oxide Semiconductor Thin-Film Transistors with Aluminum Oxide Gate Dielectrics** Chadwin Young, Mohammad Abousaba, Md Abdullah Al Mamun, Rodolfo A. Rodriguez-Davila, Shumiya Alam, Jongchan Kim, Tanvir Haider Pantha, Adam A. Gruszecki, Manuel Quevedo-Lopez, Kyeongjae Cho, Sourav Dutta; University of Texas at Dallas
12:30 – 14:00	Lunch (Dining Room)
14:00 – 19:30	Networking / Free-time
16:00 – 16:30	Afternoon Refreshments (Patio)

Tuesday, April 1, 2025 (continued)

19:30 – 21:00	Dinner (Dining Room)
21:00 – 21:15	**Poster presentation** **Over 5000-PPI OLED display with Multi-Function circuits using OSFET/Si-FET structure** Akitsugu Miyairi, Minato Ito, Munehiro Kozuma, Yuichi Yanagisawa, Takashi Shingu, Yasumasa Yamane, Yuto Yakubo, Shunpei Yamazaki, Semiconductor Energy Laboratory Co.
21:15 – 22:15	Panel Discussion: Challenges in TFT and IC Materials and Fabrication Processes

Wednesday, April 2, 2025

07:30 – 09:00	Breakfast (Breakfast Room)
	Session: Sensors, Memories, Imagers, Displays Chairs: Hagen Klauk, Max Planck Institute Po-Tsun Liu, National Yang Ming Chiao Tung University
09:00 – 09:30	**Invited** **Metal-Oxide Thin-Film Transistor: Technology Development and Applications to In-Memory and In-Sensor Computation** Man Wong, Hong Kong University of Science and Technology
09:30 – 10:00	**Invited** **Oxide Semiconductor Based Thin-Film Transistors and Sensors on Unconventional, Flexible and Natural Substrates** Niko Münzenrieder, Free University of Bozen-Bolzano
10:00 – 10:30	**Invited** **Low Power Metal Oxide Semiconductor Gas Sensor for Oral H_2S Detection** Hsiao-Wen Zan, Moumita Deb, Chia-Jung Lu, Ding-Han Wang, National Yang Ming Chiao Tung University
10:30 – 11:00	Coffee Break (Patio)
11:00 – 11:30	**Invited** **New Applications for Flexible Oxide Transistors: Energy Management, Ionizing Radiation Detectors and Active Crossbar Arrays** Pedro Barquinha, NOVA FCT and NOVA University Lisbon
11:30 – 12:00	**Invited** **TFT-Based Pixel Circuits With Enhanced Compensation and Driving Schemes for AMOLED and Micro-LED Displays** Chih-Lung Lin, National Cheng Kung University
12:00 – 12:30	Discussion
12:30 – 14:15	Lunch (Dining Room)
14:30 – 18:30	Excursion (Meet at HOTEL LOBBY) to Diamante and Belvedere
19:00 – 19:30	Reception (Great Room)
19:30 – 21:30	Gala Dinner (Dining Room)

Thursday, April 3, 2025

07:30 – 09:00	Breakfast (Breakfast Room)
	Session: Advanced and Novel Applications Chairs: Olivier Bonnaud, University of Rennes & GIP-CNFM Pedro Barquinha, NOVA FCT and NOVA University Lisbon
09:00 – 09:30	**Invited** **Challenges of Digital World Based on ULSI and TFT Technologies Involving New Neuromorphic Approaches** Olivier Bonnaud, University of Rennes & GIP-CNFM
09:30 – 10:00	**Invited** **Oxide Semiconductor LSI device for the AI age** Yuto Yakubo, Shunpei Yamazaki, Semiconductor Energy Laboratory Co.
10:00 – 10:30	**Invited** **TFT X-ray Image Sensor with In-pixel Computation** Kai Wang, Sun Yat-sen University
10:30 – 11:00	Coffee Break (Patio)
11:00 – 11:30	**Invited** **Review of recent Progress in the thermoelectric Figure of Merit** Helmut Baumgart, Old Dominion University and Thomas Jefferson National Accelerator Laboratories
11:30 – 12:00	**Invited** **Group IV Mid-Infrared Integrative Optoelectronics** Oussama Moutanabbir, École Polytechnique de Montréal
12:00 – 12:30	**Closing Remarks** Yue Kuo
12:45 – 14:15	Lunch (Dining Room) and Departures

Engineering Conferences International

369 Lexington Ave., Suite 389 – New York, NY 10017
Tel: 1-212-514-6760 / Fax: 1-212-514-6030 /
www.engconfintl.org

Calendar of ECI Conferences

Celebrating 64 years of international, interdisciplinary engineering conferences

2025

March 17-20	**25AU**	**SINGLE USE TECHNOLOGIES VII: REVOLUTIONIZING MANUFACTURING FOR TOMORROW'S MEDICINES** (Malta) N. Montenay, Sartorius; A. Rayat, University College London; K. Neutsch, Roche Genentech
March 30-April 3	**25AM**	**MICROBIAL ENGINEERING III: NEW GENERATION OF CELL FACTORY TO MEET THE FUTURE CHALLENGES AND TO SEIZE NEW OPPORTUNITIES** (Porto, Portugal) E. Keshavarz-Moore, University College London; T. Sauer, Sanofi
March 30-April 3	**25AY**	**2025 INTERNATIONAL CONFERENCE ON SEMICONDUCOR TECHNOLOGY FOR ULTRA LARGE SCALE INTEGRATED CIRCUITS AND THIN FILM TRANSISTORS (ULSIC VS TFT 9)** (Cetraro, Italy) Yue Kuo, Texas A&M University and National Yang Ming Chiao Tung University
April 27–May 2	**25AC**	**CELL CULTURE ENGINEERING XIX** (Tucson, AZ) A. Khetan, BMS; M. Yu, Gilead; M. Betenbaugh, Johns Hopkins University
May 19-23	**25AG**	**ALKALI ACTIVATED MATERIALS AND GEOPOLYMERS: HIGH-END TECHNICAL APPLICATIONS** (Finland) C. Leonelli, Universita' degli Studi di Modena e Reggio Emilia; J. Yliniemi, University of Oulu; W.M. Kriven, University of Illinois at Urbana-Champaign; J.L. Provis, University of Sheffield; A.R. Boccaccini, University of Erlangen-Nuremberg
May 18-23	**25AB**	**BIO-CHAR IV** (Santa Marta, Colombia) F. Berruti, Western University, Canada; F,C, Janna, The National University of Colombia
May 18-22	**25AO**	**ADVANCES IN OPTICS FOR BIOTECHNOLOGY, MEDICINE AND SURGERY XVIII** (Cork, Ireland) S. Gibbs, M. Skala and S. Andersson-Engels
June 1-6	**25AP**	**POLYMER REACTION ENGINEERING** XII (Clearwater, Florida) I. Konstantinov, The Dow Chemical Company; P. Iedema, University of Amsterdam; M. Grady, Axalta
June 22-27	**25AT**	**THERMAL AND ENVIRONMENTAL BARRIER COATINGS VII** (Irsee, Germany) B. Pint, Oak Ridge National Laboratory; E. Opila, University of Virginia; B. Hazel, Pratt & Whitney; Uwe Schulz, German Aerospace Center; Ram Darolia, GE Aviation (retired); B. Harder, NASA
July 6-11	**25AW**	**MICRO- AND NANOPLASTICS IN WATER: CHARACTERIZATION, CURE AND PREVENTION** (Davos, Switzerland) D. Hunkeler, Aqua+Tech
September 14-19	**25AQ**	**PYROLIQ III – 2025: Pyrolysis and Liquefaction of Biomass and Wastes** (Calabria, Italy) M. Garcia-Perez, Washington State University; Paulta Gauthier-Maradei, Institute of Science and Technologies for Sustainable Energy and Mobility, CNR; Axel Funke, KIT
Oct 5-9	**25-AJ**	**INTEGRATED CONTINUOUS BIOMANUFACTURING VII** (Dubrovnik, Croatia) I. Ramos, AstraZeneca; M. Brower, Merck; A. Jungbauer, BOKU; K. Brower, Sanofi
Oct 12-16	**25AD**	**ELECTROPHORETIC DEPOSITION VIII: FUNDAMENTALS AND APPLICATIONS** ((Calabria, Italy) A.R. Boccaccini, University of Erlangen-Nuremberg; B. Ferrari, Institute for Ceramic and Glass, Spanish Research Council; **A.** J. Pascall Center for Functional Nanomaterials, Brookhaven National Laboratory; F. Grasset, IRL LINK, CNRS; K. Katagiri, Hiroshima University
October 19-24	**25AE**	**ENZYME ENGINEERING XXVIII** (Helsinger, Denmark) J. Woodley, DTU; D. Hededam-Welner, DTU

October 26-31	**25AS**	**CERAMIC MATRIX COMPOSITES III** (Yamanashi, Japan) R. Darolia, GE Aerospace; K. Goto, JAXA; G. Vignoles, University of Bordeaux; S. Kitaoka, Japan Fire Ceramics Center; T. Akatsu, Tokyo University of Technology
November 2-7	**25AI**	**BENEFICIATION OF PHOSPHATES X** (Hanoi, Vietnam) Chair: P. Zhang, Florida Industrial and Phosphate Research Institute, USA; Co-Chairs: P. Vo, Ardaman & Associates Inc, USA; E. Rova, Yara Suomi Oy, Finland; A. C. Silva, Federal University of Goiás, Brazil; E. Wingate, Bechtel Australia

2026

January 11-16	**26AG**	**INNOVATIVE MATERIALS & METHODS FOR ADDITIVE MANUFACTURING III (IM2AM)** (Savannah, GA)) B. Compton; University of Tennessee, Knoxville; E. Eastwood, KCNSC; N. Gupta, New York University; D. Schmidt and J. Gonzalez-Gutierrez, Luxembourg Institute of Technology; P. Cortes, University of Texas at El Paso
Feb TBA	**25AA**	**ADVANCED MEMBRANE TECHNOLOGY VIII: ENVIRONMENT, FOOD, HEALTH AND NEW FRONTIERS** (TBA) J. Hestekin, University of Arkansas; U. Beusche, W.L. Gore, Inc.; D. Bhattacharyya, University of Kentucky
February 1-5	**26AT**	**ADVANCING MANUFACTURE OF CELL AND GENE THERAPIES IX** (Hilton Head, SC) J. Moscariello, BMS; C. Hoesli, McGill University; B. Marques, CenturyTC
TBA Spring	**26AD**	**CATBIOINNOV – 2026: INTERNATIONAL CONFERENCE ON INNOVATION IN CATALYTIC BIOMASS VALORIXZATION** (TBA) R. Wojcieszak, CNRS, University of Lorraine; L. Rossi, IQ, USP; K. Wilson, Griffith University; D. Vlachos, University of Delaware
April 9-13	**26AC**	**DELIVERY OF NUCLEIC ACID THERAPEUTICS III: BIOLOGY, ENGINEERING & DEVELOPMENT** (Dubrovnik, Croatia) L. Sepp-Lorenzino, Intellia Therapeutics; S. F. Dowdy, University of California San Diego School of Medicine; M. Stanton, Generational Bio
April 12-17	**26AA**	**VACCINE TECHNOLOGY X** (Porto, Portugal) T. Tagmyer, PATH; N.E. Alteras, Moderna; S. Frank, UCL; D. Cowley, AstaZeneca
May/June TBA	**26AH**	**NANOTECHNOLOGY IN MEDICINE V: PHYSICAL TRIGGERS AND ADVANCED MATERIALS** (TBA) R. Fernandes, George Washington University; J. Nguyen, University of North Carolina at Chapel Hill; A. Schroeder, Technion
June 7-12	**26AW**	**WASTELCA 5: LIFE CYCLE SUSTAINABILITY ASSESSMENT FOR WASTE MANAGEMENT AND RESOURCE OPTIMIZATION** V (Cetraro (Calabria), Italy) U. Arena, University of Campania “Luigi Vanvitelli”
TBA	**26AM**	**BIOCHEMICAL AND MOLECULAR ENGINEERING XXIV (TBA)** D. Tullman-Ercek, Northwestern University; M. Blenner, University of Delaware; A. Lewis, Moderna
TBA	**26AV**	**ENG2WINE:** An International Conference on Wine and Spirits Engineering (TBA) **(Anthony Dufour and Franco Berruti)**
TBA	**25AR**	**CHEMREC II: THERMOCHEMICAL RECYCLING OF PLASTICS** (Dubrovnik, Croatia) S. Kersten, University of Twente; M. Pilar Ruiz, Maastricht University; E. Heeres, University of Groningen

Engineering Conferences International

Engineering Conferences International (ECI) is a not-for-profit global engineering conferences program that has served the engineering/scientific community since 1962 as successor program to Engineering Foundation Conferences. ECI has received recognition as a 501(c)3 organization by the U.S. Internal Revenue Service and is incorporated in the State of New York as a not-for-profit corporation.

The program has been developed and is overseen by volunteers both on the international Board of Directors and international Conferences Committee. More than 1,900 conferences have taken place to date. The conferences program is administered by a professional staff and the conferences are designed to be self-supporting.

ECI Mission

To serve the engineering/scientific community with international, interdisciplinary, leading edge engineering research conferences

ECI Purposes

The advancement of engineering arts and sciences by providing a forum for the discussion of advances in the field of science and engineering for the good of mankind by identification and administration of international interdisciplinary conferences

To work with engineering, scientific and social science societies and the interested general public to jointly sponsor conferences and to take other actions that will foster complementary programming.

To initiate conferences that will have a significant impact on engineering education, research practice and/or development.

ECI Encouragement of New Conference Topics

The ECI Conferences Committee invites you to suggest topics and leaders for additional conferences and encourages you to submit a proposal for an ECI conference.

Ideally, proposals should be submitted from 18 to 24 months in advance of the conference although the staff can work on a shorter timeline.

The traditional format for an ECI conference is registration Sunday afternoon with technical sessions held each morning and evening through Thursday or Friday noon. Afternoons are used for informal gatherings, poster sessions, field trips, subgroup meetings and relaxation. This format has served well to build important professional networks in many areas.

ECI welcomes proposals for shorter conferences and for conferences which span weekends in order to reduce the number of working days participants are away from their offices.

ECI Works With You

ECI works with conference chairs in two complementary ways. First, an experienced member of the Conferences Committee acts as your technical liaison from the proposal stage through the conference itself. He or she is always available to consult with you on any conference issue.

Second, after your proposal has been approved by the Conferences Committee, the ECI staff will assume responsibility for the administration of the conference.

Your primary responsibilities will be recruiting the organizing committee, developing the technical program and securing third-party funding necessary to support the travel of key speakers.

The responsibilities of ECI's "full service" staff include -- but are not limited to -- the following:

- Recommend, negotiate, contract and make substantial deposits for housing, meals, meeting space, A/V equipment and tours.
- Maintain web sites for the conference and for submission of abstracts.
- Publicize via electronic and print media.
- Administer all finances including grants, contributions and purchase orders. (ECI makes grant funds available as soon as a grant is approved.) There is no need for chairs to set up a conference bank account or file tax returns for their conference.
- Process all applications and registrations.
- Produce bound program/abstracts book.
- Contract for the publication of print or electronic proceedings, if any.
- Provide on-site staff during the conference.

For more information, please contact the ECI Director at Barbara@engconfintl.org