



# 6<sup>th</sup> IEEE Electron Devices Technology and Manufacturing (EDTM) Conference 2022

Oita, Japan, March 6<sup>th</sup>- 9<sup>th</sup>, 2022

<http://ewh.ieee.org/conf/edtm/2022>

*Conference Theme: “Semiconductor Devices and Manufacturing Innovations for a More Sustainable World”*

*Three-page camera-ready paper submission deadline: November 1st 2021, 23:59(JST) Notification for Acceptance: End of December, 2021*

*Conference format: Please visit website for details.*

## IEEE Electron Devices Technology and Manufacturing (EDTM)

6<sup>th</sup> EDTM (Electron Devices Technology and Manufacturing) conference is a full four-day meeting to be held at Oita, Japan from March 6 to 9th, 2022, fully sponsored by the IEEE Electron Devices Society (EDS). As semiconductor technology scaling challenges continues to grow, so should the industries collaborative efforts to overcome them must increase. EDTM is intended to serve as a forum for the electron devices community to collaborate on topics ranging from devices, materials, and tools, to create new and innovative technologies. EDTM will provide the following new formats.

### Technical Areas

EDTM 2022 solicits papers in all areas of electron devices, including materials, processes, devices, packaging, modeling, reliability, manufacturing and yield, tools, testing, and any emerging device technologies. Authors should select a technical category based on the detailed descriptions in this flyer during online submission of papers.

### Oral and Poster Sessions

EDTM 2022 will include parallel technical sessions of oral and poster presentations. Best Paper Award, Best Student Paper Awards and Best Poster Awards will be selected. *Partial travel supports may be requested by students from the IEEE recognized financially challenged countries to present their accepted papers at the conference.*

### Publications

EDTM 2022 papers will be subjected to IEEE standard review processes and publishing guidelines. The accepted and presented papers will be published in the EDTM 2022 Proceedings included in *IEEE Xplore*. The authors of a selected number of high-impact papers will be invited to submit extended versions for publication in the *IEEE Journal of Electron Devices Society* (J-EDS), subjected to J-EDS review and publication policy.

### Short Courses and Tutorials

EDTM 2022 will start with a set of short courses and tutorials on March 6<sup>th</sup>, 2022. Tutorials teach selected topics from the basics to the state-of-the-arts, allowing the attendees to catch up a topic quickly. Short Courses discuss the latest research and challenges on hot and advanced topics encompassing the EDTM 2022 Theme.

### Exhibition

EDTM 2022 offers vendors to showcase their newest products and technologies, allowing attendees to learn about new tools and techniques that can help them to succeed at work.

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### Secretariat:

JTB Communication Design, Inc.  
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**Original papers solicited in the following, but not limited to, technical areas:**

**Materials:** All device-related materials, including semiconductors, magnetics, ferroelectrics, insulators, metals, liquid crystals, photoresist, organic films, etching gas, filaments, and phase-changing materials. Materials engineering for reducing costs, and improving reliability/yield/manufacturability. Smart materials enabling intelligent devices are highly welcome.

**Process, Tools, Yield, and Manufacturing:** Semiconductor processes and equipment, including process modules (deposition, dry/wet etch, cleaning, planarization, isolation, dielectrics, metals, silicides, lithography, self-assembly techniques), process integration, process control, equipment impact on devices/reliability, process sensing, process enhancement by AI/ML, etc. Topics on semiconductor manufacturing technologies and yield enhancement are highly welcome, including clean-room management, wafer handling, uniformity of process, repeatability of tool, design-for-manufacturability (DFM), design-for-test (DFT), defect density, yield management using sensing, connectivity, AI/ML and big data techniques.

**Semiconductor Devices:** All semiconductor devices including Si/Ge CMOS, interconnects, compound semiconductors, oxide semiconductor, low-dimensional nanomaterials (van der Waals heterostructures, nanowires, nanotubes, nanosheets, quantum dots), ferroelectric, spintronics, 3D devices, RF/THz devices, etc. Emerging device concepts for future computing are encouraged, such as tunnel FET, negative capacitance FET, topological insulators, phase transitions, Qubit devices, etc.

**Memory Technologies:** All memories, including embedded/standalone memories, volatile/nonvolatile memories, in-memory/neuromorphic computing. Topics on charge-based memories, RRAM, MRAM, PCM, FeRAM, cross-point/selectors, bio-inspired memory, regarding: scaling, processing, characterization, reliability, modeling, 3D integration, read/write/erase, novel hierarchies/architectures for memory-centric computing.

**Photonics, Imaging and Display:** Topics on photonics, photonics for energy, optoelectronics, microwave photonics, nano-photonics, optical sensor, optical communications/networking, optical switch, bio-photonics, lasers, optical systems, imagers, display, and other emerging technologies in photonics, imaging and display.

**Power and Energy Devices:** Device technologies related to high-voltage devices, power/RF devices, energy harvesting devices, photovoltaics, energy storage devices, discrete/integrated power devices, power modules/systems. Power device structures such as diodes, BJTs, FETs, IGBTs. Power device materials such as wide bandgap and ultra-wide bandgap materials (SiC, GaN, GaAs, AlN, GaO, etc.). Power device fabrication processes, modeling and simulation.

**Modeling and Simulation:** Advances in modeling/simulation of devices, packages, and processes, including numerical, analytical, and statistical modeling/simulation of electronic, optical or hybrid devices, interconnects, heterogeneous integration, parasitic elements, fabrication processes, physical phenomena, mechanical systems, electro-thermal effects, test structures and methodologies.

**Reliability:** Advances in reliability of materials, processes, devices, modules and systems including interconnects, ESD, latch-up, soft errors, radiation, noises/mismatch, hot-carrier effects, self-heating, biasing/thermal instabilities, test structures, methodologies, defect monitoring/control, electromagnetic robustness, and design-for-reliability.

**Packaging and Heterogeneous Integration:** Advances in packaging and heterogeneous integration technologies, including 2.1D, 2.5D and 3D integrations. Topics on advanced packaging and manufacturing technologies, such as wafer-level packaging, chiplets, ultra-fine-pitch interconnection, sub-micron package-level wiring, optical/wireless interconnect, power/sensor device packaging, controlling thermal-expansion coefficient, thermal management.

**Sensor, MEMS, Bio-Electronics:** Advances in sensors, transducers, actuators, MEMS/NEMS, resonators, micro/nano-fluidic devices, bio-sensors, implantable biomedical devices, biomolecular-based memories, bio-transistors, semiconductor synthetic biological devices/systems, semiconductor synaptic/neural devices, brain-inspired computing, brain-interface devices, and heterogeneous integration with CMOS, etc.

**Flexible and Wearable Electronics:** Topics on flexible and wearable electronics including flexible sensors, RFID, thin-film transistors, lighting and display, energy harvesting/storage devices, materials for flexible electronics, etc.

**Nanotechnologies:** Advances in nanotechnologies including nanomaterials, nanoelectronics, low-dimensional systems including 2D materials and devices, nanophotonics, nanofabrication, nanoenergy, nanobiomedicine, nanosensors, and related nano characterization/modelling techniques.

**Disruptive Technologies - IoT, AI/ML, Neuromorphic & Quantum Computing:** Topics on disruptive technologies including quantum computing, neuromorphic and bio-inspired computing, AI/ML, IoET, cloud/edge computing, etc.

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Notification for Acceptance: **End of December, 2021***