## Ginestra® Every atom matters

## Deep in Physics

Ginestra platform integrates advance physics knowledge to manage the complexity of new architectures. The Ginestra team has published more than 350 papers & conference presentations.

Year	Title	Jounal/ Conference
2024	Self-rectifying non-volatile tunneling synapse: multiscale modeling augmented development	2024 IEEE International Memory Workshop (IMW)
2024	Blocking Oxide Material Engineering to Improve Retention Loss in 3D NAND: a Modeling Process Optimization Study	2024 IEEE International Reliability Physics Symposium (IRPS), 1-5
2024	Characterization and Multiscale Modeling of TDDB in State-of-the-art BEOL	2024 IEEE International Reliability Physics Symposium (IRPS), 10A. 3-1-10A. 3-6
2024	Low-PBTS defect-engineered high-mobility metal-oxide BEOL transistors	2024 IEEE International Reliability Physics Symposium (IRPS), 4A. 2-1-4A. 2-6
2023	The Role of Carrier Injection in the Breakdown Mechanism of Amorphous Al2O3 Layers	IEEE Electron Device Letters
2023	A Multiscale-Multiphysics simulation platform for technology virtualization: from process chamber modeling to device electrical prediction	2023 IEEE Nanotechnology Materials and Devices Conference (NMDC), 805-809
2023	Electrically active defects in Al2O3-InGaAs MOS stacks at cryogenic temperatures	2023 IEEE International Integrated Reliability Workshop (IIRW), 1-5
2023	Modeling Degradation and Breakdown in SiO2 and High-k Gate Dielectrics	2023 International Conference on Simulation of Semiconductor Processes and Devices (SISPAD)
2023	High-k/InGaAs interface defects at cryogenic temperature	Solid-State Electronics 207, 108719
2023	Device-to-materials pathway for electron traps detection in amorphous GeSe-based selectors	Advanced Electronic Materials 9 (4), 2201224
2023	Insights into device and material origins and physical mechanisms behind cross temperature in 3D NAND	2023 IEEE International Reliability Physics Symposium (IRPS), 1-8
2023	Towards a universal model of dielectric breakdown	2023 IEEE International Reliability Physics Symposium (IRPS), 1-8
2023	Impact of Device Geometry, Physical Doping and Electrostatic Doping on the Frequency CV- dispersion of TFT Devices with IWO Channels	2023 7th IEEE Electron Devices Technology & Manufacturing Conference (EDTM), 1-3
2023	A HydroDynamic model for trap-assisted tunneling conduction in ovonic devices	IEEE Transactions on Electron Devices 70 (4), 1808-1814
2023	Impact of Poly-Si channel: Multiscale modeling insight from first-principles to device simulation	APS March Meeting Abstracts 2023, UU01. 007
2022	Atomic Defects Profiling and Reliability of Amorphous Al <sub>2</sub> O <sub>3</sub> Metal-Insulator-Metal Stacks	IEEE Transactions on Electron Devices (2022)
2022	Towards hole-spin qubits in Si pMOSFETs within a planar CMOS foundry technology	Bulletin of the American Physical Society (2022).
2022	Investigating Defects in the High-k/Ingaas System at Cryogenic Temperature.	ECS Meeting Abstracts 2022 Jul 7 (No. 19, p. 1056). IOP Publishing
2022	Variability and disturb sources in ferroelectric 3D NANDs and comparison to Charge- Trap equivalents	2022 IEEE International Memory Workshop (IMW) (pp. 1-4). IEEE
2022	Electron-assisted switching in FeFETs: Memory window dynamics-retention- trapping mechanisms and correlation	IEEE International Reliability Physics Symposium (IRPS), pp. 4A-1. IEEE, 2022.
2022	Reliability of Non-Volatile Memory Devices for Neuromorphic Applications: A Modeling Perspective	IEEE International Reliability Physics Symposium (IRPS) (pp. 3C-4). IEEE.
2022	Investigation of Coercive Field Shift During Cycling in HfZrO <sub>x</sub> Ferroelectric Capacitors	IEEE Transactions on Electron Devices, 69(5), pp.2384-2390.
2022	The electrons' journey in thick metal oxides	Applied Physics Letters, 121(1), p.012902



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2021	Pulse optimization and device engineering of 3D charge-trap flash for synaptic operation	Journal of Applied Physics 132, no. 11 (2022): 114501.
2021	Dielectric breakdown in HfO2 dielectrics: Using multiscale modeling to identify the critical physical processes involved in oxide degradation	Journal of Applied Physics, 131(23), 234501.
2021	Pulse Optimization and Device Engineering of Charge Trap Flash for Synaptic Operation	Journal of Applied Physics
2021	Decoupling the Sequence of Dielectric Breakdown with Single Device Bilayer Stack by Radiation Dosage Design of Experiments	IEEE EDL
2020	Extraction of Defects Properties in Dielectric Materials From IV Curve Hysteresis	Physical Review Materials
2020	Variability sources and reliability of 3D—FeFETs	2021 IEEE International Reliability Physics Symposium (IRPS)
2020	Extraction of Defects Properties in Dielectric Materials From IV Curve Hysteresis	IEEE Electron Device Letters
2020	Engineering Atom Scale Defects in Materials for Future Electronic Devices	2020 4th IEEE Electron Devices Technology & Manufacturing Conference (EDTM)
2020	Analysis and Simulation of Interface Quality and Defect Induced Variability in MgO Spin-Transfer Torque Magnetic RAMs	IEEE Electron Device Letters
2020	Effect of electric field on defect generation and migration in HfO2	Physical Review B
2020	Memory technology—a primer for material scientists	Reports on Progress in Physics
2020	Multiscale modeling of CeO2/La2 O3 stacks for material/defect characterization	2020 IEEE 33rd International Conference on Microelectronic Test Structures (ICMTS)
2020	Multiscale Modeling of Atom Scale Defects for Electronic Devices Engineering	ECS Meeting Abstracts
2019	Hot electrons as the dominant source of degradation for sub-5nm HZO FeFETs	2020 IEEE Symposium on VLSI Technology
2019	Demonstration and Endurance Improvement of p-channel Hafnia-based Ferroelectric Field Effect Transistors	2019 Device Research Conference (DRC)
2019	Properties of intrinsic point defects and dimers in hexagonal boron nitride	Journal of Physics: Condensed Matter
2019	Understanding the Impact of Annealing on Interface and Border Traps in the Cr/HfO <sub>2</sub> /Al <sub>2</sub> O <sub>3</sub> /MoS <sub>2</sub> System	ACS Applied Electronic Materials
2019	Boron vacancies causing breakdown in 2D layered hexagonal boron nitride dielectrics	IEEE Electron Device Letters
2019	Role of Defects in the Reliability of HfO2/Si-Based Spacer Dielectric Stacks for Local Interconnects	2019 IEEE International Reliability Physics Symposium (IRPS)
2019	Spatio-Temporal Defect Generation Process in Irradiated HfO2 MOS Stacks: Correlated Versus Uncorrelated Mechanisms	2019 IEEE International Reliability Physics Symposium (IRPS)
2019	Understanding and variability of lateral charge migration in 3D CT-NAND flash with and without band-gap engineered barriers	2019 IEEE International Reliability Physics Symposium (IRPS)
2019	Statistical Simulation to Predict Variability of TANOS Program/Erase Characteristics for Non-Volatile Memory Applications	2019 Electron Devices Technology and Manufacturing Conference (EDTM)
2019	A Sensitivity Map-Based Approach to Profile Defects in MIM Capacitors From I– V, C –V, and G–V Measurements	IEEE Transactions on Electron Devices
2019	Investigation of I-V Linearity in TaO <sub>x</sub> -Based RRAM Devices for Neuromorphic Applications	IEEE Journal of the Electron Devices Society
2019	Multiscale modeling for application-oriented optimization of resistive random-access memory	Materials

