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This index covers all technical items—papers, correspondence, reviews, etc.—that appeared in this periodical during 2021, and items from previous years that were commented upon or corrected in 2021. Departments and other items may also be covered if they have been judged to have archival value.

The Author Index contains the primary entry for each item, listed under the first author's name. The primary entry includes the coauthors' names, the title of the paper or other item, and its location, specified by the publication abbreviation, year, month, and inclusive pagination. The Subject Index contains entries describing the item under all appropriate subject headings, plus the first author's name, the publication abbreviation, month, and year, and inclusive pages. Note that the item title is found only under the primary entry in the Author Index.

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Biomedical transducers

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Biomedical ultrasonics

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Boron alloys

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Boron compounds

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Broadband communication

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A New Class of High-Overtone Bulk Acoustic Resonators Using Lithium Niobate on Conductive Silicon Carbide. *Wu, J.*, +, *LED July 2021 1061-1064*

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Cadmium compounds

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Calibration

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Calorimetry

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Cancer

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Capacitive sensors

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Cavity resonators

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Charge injection

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Chirality

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Chirp

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Chirp modulation

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Experimental Demonstration of Monolithic Bidirectional Switch With Anti-Paralleled Reverse Blocking p-GaN HEMTs. *Wang, H.*, +, *LED Sept. 2021 1264-1267*

Chromium

Improved Reliability of AlGaIn-Based Deep Ultraviolet LED With Modified Reflective N-Type Electrode. *Zhang, H.*, +, *LED July 2021 978-981*

Circuit breakers

A Monolithically Integrated SiC Circuit Breaker. *Boettcher, N.*, +, *LED Oct. 2021 1516-1519*

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Balanced Drive and Sense CMOS Thermal Piezoresistive Resonators and Oscillators. *Zope, A.A., +, LED Feb. 2021 232-235*

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Technological Design of 3D NAND-Based Compute-in-Memory Architecture for GB-Scale Deep Neural Network. *Shim, W., +, LED Feb. 2021 160-163*

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Cobalt alloys

3D Ferrimagnetic Device for Multi-Bit Storage and Efficient In-Memory Computing. *Zhang, Z., +, LED Feb. 2021 152-155*

Reconfigurable Physical Unclonable Function Based on Spin-Orbit Torque Induced Chiral Domain Wall Motion. *Cao, Z., +, LED April 2021 597-600*

Sub-ns Field-Free Switching in Perpendicular Magnetic Tunnel Junctions by the Interplay of Spin Transfer and Orbit Torques. *Cai, W., +, LED May 2021 704-707*

Cobalt compounds

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Composite materials

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- F**
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- Wakeup-Free and Endurance-Robust Ferroelectric Field-Effect Transistor Memory Using High Pressure Annealing. *Nguyen, M.*, +, *LED Sept. 2021 1295-1298*
- Ferroelectric switching**
- Effects of Process-Induced Defects on Polarization Switching in Ferroelectric Tunneling Junction Memory. *Lee, K.*, +, *LED March 2021 323-326*
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- Ferroelectric thin films**
- Atomic Layer Deposition Plasma-Based Undoped- HfO_2 Ferroelectric FETs for Non-Volatile Memory. *Luo, J.*, +, *LED Aug. 2021 1152-1155*
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- Field effect MIMIC**
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- Impact of Orientation Misalignments on Black Phosphorus Ultrascoped Field-Effect Transistors. *Klinkert, C.*, +, *LED March 2021 434-437*
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- Performance Enhancement of Silicon-Based Sub-Terahertz Detector by Highly Localized Plasmonic Wave in Nano-Ring FET. *Jang, E.*, +, *LED Dec. 2021 1719-1722*
- Performance Optimization of Atomic Layer Deposited ZnO Thin-Film Transistors by Vacuum Annealing. *Wang, M.*, +, *LED May 2021 716-719*
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- Scaled Atomic-Layer-Deposited Indium Oxide Nanometer Transistors With Maximum Drain Current Exceeding 2 A/mm at Drain Voltage of 0.7 V. *Si, M.*, +, *LED Feb. 2021 184-187*
- Simulations of Statistical Variability in n-Type FinFET, Nanowire, and Nanosheet FETs. *Seoane, N.*, +, *LED Oct. 2021 1416-1419*
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- Wakeup-Free and Endurance-Robust Ferroelectric Field-Effect Transistor Memory Using High Pressure Annealing. *Nguyen, M.*, +, *LED Sept. 2021 1295-1298*
- Field emitter arrays**
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Plasma CVD

Drain Current Density Over 1.1 A/mm in 2D Hole Gas Diamond MOSFETs With Regrown p++-Diamond Ohmic Contacts. *Imanishi, S.*, +, *LED Feb. 2021 204-207*

Multi-kV Class β -Ga₂O₃ MESFETs With a Lateral Figure of Merit Up to 355 MW/cm². *Bhattacharyya, A.*, +, *LED Sept. 2021 1272-1275*

Plasma deposition

Atomic Layer Deposition Plasma-Based Undoped-HfO₂ Ferroelectric FETs for Non-Volatile Memory. *Luo, J.*, +, *LED Aug. 2021 1152-1155*

Improving Thermal Stability for Ge p-MOSFET of HfO₂-Based Gate Stack With Ti-Doped Into Interfacial Layer by *In-Situ* Plasma-Enhanced Atomic Layer Deposition. *Li, H.*, +, *LED Aug. 2021 1109-1111*

Plasma devices

Hydrogen-Modulated Step Graded Junction Termination Extension in GaN Vertical p-n Diodes. *Lin, W.*, +, *LED Aug. 2021 1124-1127*

Plasma materials processing

Performance Enhancement of Field-Effect Transistors Based on In₂O₃ Nanofiber Networks by Plasma Treatment. *Wang, J.*, +, *LED Feb. 2021 176-179*

Plasma radiofrequency heating

Generation of 1.5 MW–140 GHz Pulses With the Modular Pre-Prototype Gyrotron for W7-X. *Ioannidis, Z.C.*, +, *LED June 2021 939-942*

Plasma sources

Kilowatt-Range Picosecond Switching Based on Microplasma Devices. *Nikoo, M.S.*, +, *LED May 2021 767-770*

Plasma switches

Kilowatt-Range Picosecond Switching Based on Microplasma Devices. *Nikoo, M.S.*, +, *LED May 2021 767-770*

Plasma temperature

Highly Sensitive Temperature Sensor Using Low-Temperature Polysilicon Oxide Thin-Film Transistors. *Billah, M.M.*, +, *LED Dec. 2021 1864-1867*

Plasma toroidal confinement

Generation of 1.5 MW–140 GHz Pulses With the Modular Pre-Prototype Gyrotron for W7-X. *Ioannidis, Z.C.*, +, *LED June 2021 939-942*

Plasmas

A Coaxial High Power Output Cavity Operating in Hybrid TM₀₁-TM₀₂ Modes for Repetitive Operation. *Ju, J.*, +, *LED Oct. 2021 1551-1554*

A Novel Slow-Wave Structure—Coupled Double Folded Waveguide Operating at High-Order TM₂₀ Mode for Terahertz TWT. *Tian, Y.*, +, *LED Dec. 2021 1871-1874*

Plasmons

Performance Enhancement of Silicon-Based Sub-Terahertz Detector by Highly Localized Plasmonic Wave in Nano-Ring FET. *Jang, E.*, +, *LED Dec. 2021 1719-1722*

Plastics

Through-Plastic-Via Three-Dimensional Integration for Integrated Organic Field-Effect Transistor Bio-Chemical Sensor Chip. *Han, L.*, +, *LED April 2021 569-572*

Plating

Enabling Continuous Cu Seed Layer for Deep Through-Silicon-Vias With High Aspect Ratio by Sequential Sputtering and Electroless Plating. *Zhang, Z.*, +, *LED Oct. 2021 1520-1523*

Platinum

12.7 MA/cm² On-Current Density and High Uniformity Realized in AgGeSe/Al₂O₃ Selectors. *Wan, T.*, +, *LED April 2021 613-616*

Atomistic Simulation Study of Impacts of Surface Carrier Scatterings on Carrier Transport in Pt Nanosheets. *Tanaka, T.*, +, *LED July 2021 1057-1060*

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Dual Buffer Layers for Developing Electrochemical Metallization Memory With Low Current and High Endurance. *Tian, Q.*, +, *LED March 2021 308-311*

High Current Nb-Doped P-Channel MoS₂ Field-Effect Transistor Using Pt Contact. *Ma, Z.*, +, *LED March 2021 343-346*

V₂C-Based Memristor for Applications of Low Power Electronic Synapse. *He, N.*, +, *LED March 2021 319-322*

Platinum alloys

3D Ferrimagnetic Device for Multi-Bit Storage and Efficient In-Memory Computing. *Zhang, Z.*, +, *LED Feb. 2021 152-155*

Platinum compounds

Double-Barrier β -Ga₂O₃ Schottky Barrier Diode With Low Turn-on Voltage and Leakage Current. *Xiong, W.*, +, *LED March 2021 430-433*

Polarization

Spontaneous Polarization in Nanoparticles. *Troy, W.*, +, *LED Dec. 2021 1838-1840*

Poles and zeros

Millimeter-Wave Dual-Band Bandpass Filter With Large Bandwidth Ratio Using GaAs-Based Integrated Passive Device Technology. *Shen, G.*, +, *LED April 2021 493-496*

Polymer blends

Investigation of Thermal Behavior on High-Performance Organic TFTs Using Phase Separated Organic Semiconductors. *Hung, Y.*, +, *LED June 2021 859-862*

Polymer films

Low-Voltage Operated Organic Thin-Film Transistors With Mobility Exceeding 10 cm²/vs. *Li, S.*, +, *LED March 2021 398-401*

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Egg-White-Based Polymer Memristors With Competing Electronic-Ionic Effect and Timescale-Dependent Current Modulation. *Tan, M.*, +, *LED Feb. 2021 228-231*

In-Place Printing of Flexible Electrolyte-Gated Carbon Nanotube Transistors With Enhanced Stability. *Cardenas, J.A.*, +, *LED March 2021 367-370*

Pentacene and CuO Nanocomposite Based Self-Powered Broadband Photodetector. *Srivastava, A.*, +, *LED June 2021 875-878*

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Polynomials

Prediction of FinFET Current-Voltage and Capacitance-Voltage Curves Using Machine Learning With Autoencoder. *Mehta, K.*, +, *LED Feb. 2021 136-139*

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Porous materials

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Power amplifiers

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High-Power 300 GHz Solid-State Source Chain Based on GaN Doublers. *Zhang, L.*, +, *LED Nov. 2021 1588-1591*

Power bipolar transistors

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Power consumption

A Sub-1-V, Microwatt Power-Consumption Iontronic Pressure Sensor Based on Organic Electrochemical Transistors. *Wang, X.*, +, *LED Jan. 2021 46-49*

Power demand

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Theory and Hot Test of High-Power Broadband Helix Traveling-Wave Tube Based on a Double-Graded Radius and Pitch Circuit. *Wu, G.*, +, *LED Dec. 2021 1868-1870*

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Characterization of Dynamic Threshold Voltage in Schottky-Type *p*-GaN Gate HEMT Under High-Frequency Switching. *Zhong, K.*, +, *LED April 2021 501-504*

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Demonstration of the *p*-NiO_x/*n*-Ga₂O₃ Heterojunction Gate FETs and Diodes With BV²/R_{on,sp} Figures of Merit of 0.39 GW/cm² and 1.38 GW/cm². *Wang, C.*, +, *LED April 2021 485-488*

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True Breakdown Voltage and Overvoltage Margin of GaN Power HEMTs in Hard Switching. *Kozak, J.P.*, +, *LED April 2021 505-508*

Power lasers

GaAs Vertical-Tunnel-Junction Converter for Ultra-High Laser Power Transfer. *Outes, C.*, +, *LED Dec. 2021 1882-1885*

Power measurement

Theory and Hot Test of High-Power Broadband Helix Traveling-Wave Tube Based on a Double-Graded Radius and Pitch Circuit. *Wu, G.*, +, *LED Dec. 2021 1868-1870*

Power MOSFET

3.3 kV Class 4 H-SiC Double-Implanted MOSFET With Excellent Radiation Hardness Against Gamma Rays Using Counter-Doped Junction Termination Extension. *Jiang, J.*, +, *LED May 2021 727-730*

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Study of the Thermomechanical Strain Induced by Current Pulses in SiC-Based Power MOSFET. *Anoldo, L.*, +, *LED July 2021 1089-1092*

The Tri-Gate MOSFET: A New Vertical Power Transistor in 4H-SiC. *Ramamurthy, R.P.*, +, *LED Jan. 2021 90-93*

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Influence of Misalignment on the Behavior of Electron Beam of an 800 GHz Gyrotron. *Xiao, H.*, +, *LED Nov. 2021 1662-1665*

Power system measurements

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Highly Sensitive and Flexible Piezoresistive Pressure Sensors Based on 3D Reduced Graphene Oxide Aerogel. *Li, Q.*, +, *LED April 2021 589-592*

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A Chip-Scale GaN-Based Optical Pressure Sensor With Microdome-Patterned Polydimethylsiloxane (PDMS). *An, X.*, +, *LED Oct. 2021 1532-1535*

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Printing

Demonstration of *n*-Ga₂O₃/*p*-GaN Diodes by Wet-Etching Lift-Off and Transfer-Print Technique. *Liu, Y.*, +, *LED April 2021 509-512*

Probes

VHF and UHF Lithium Niobate MEMS Resonators Exceeding 30 dB of Passive Gain. *Colombo, L.*, +, *LED Dec. 2021 1853-1856*

Programming

Triple-Level-Cell/Single-Level-Cell Mix-Mode Operation Induced Data Retention Degradation in 3-D NAND Flash Memories. *Liu, Y.*, +, *LED Dec. 2021 1762-1765*

Prototypes

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Pulse amplitude modulation

A Novel Dynamic Time Method for Organic Light-Emitting Diode Degradation Estimation in Display Application. *Chen, Q.*, +, *LED June 2021 887-890*

Pulse measurement

Highly Sensitive and Flexible Piezoresistive Pressure Sensors Based on 3D Reduced Graphene Oxide Aerogel. *Li, Q.*, +, *LED April 2021 589-592*

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Pulsed power technology

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Q**Q factor**

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A Switched Tunable Inductor Based on Magnetic Flux Linkage Modification. *Chen, Y.*, +, *LED Jan. 2021 6-9*

A Temperature-Stable and Low Impedance Piezoelectric MEMS Resonator for Drop-in Replacement of Quartz Crystals. *Chen, W.*, +, *LED Sept. 2021 1382-1385*

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Millimeter-Wave Dual-Band Bandpass Filter With Large Bandwidth Ratio Using GaAs-Based Integrated Passive Device Technology. *Shen, G.*, +, *LED April 2021 493-496*

Quality of service

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Quantum cascade lasers

A 250-Watts, 0.5-THz Continuous-Wave Second-Harmonic Gyrotron. *Glyavin, M.Y.*, +, *LED Nov. 2021 1666-1669*

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Highly Efficient Liquid-Quantum Dot/Melamine-Modified Urea-Formaldehyde Microcapsules for White Light-Emitting Diodes. *Wang, H.*, +, *LED April 2021 533-536*

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A Comprehensive Benchmarking Method for the Net Combination of Mobility Enhancement and Density-of-States Bottleneck. *Yun, S.*, +, *LED June 2021 804-807*

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Quenching (thermal)

Sub-Nanosecond Pulses Enable Partial Reset for Analog Phase Change Memory. *Stern, K.*, +, *LED Sept. 2021 1291-1294*

R**Radar imaging**

High-Power 300 GHz Solid-State Source Chain Based on GaN Doublers. *Zhang, L.*, +, *LED Nov. 2021 1588-1591*

Radiation hardening (electronics)

3.3 kV Class 4 H-SiC Double-Implanted MOSFET With Excellent Radiation Hardness Against Gamma Rays Using Counter-Doped Junction Termination Extension. *Jiang, J.*, +, *LED May 2021 727-730*

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A Switched Tunable Inductor Based on Magnetic Flux Linkage Modification. *Chen, Y.*, +, *LED Jan. 2021 6-9*

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Radiofrequency measurement

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Radiometry

Two-Dimensional Pixel-Level Photometric and Colorimetric Mass-Distribution Measurement of Micro-Displays. *Zheng, L.*, +, *LED May 2021 720-722*

Raman spectra

High Current Nb-Doped P-Channel MoS₂ Field-Effect Transistor Using Pt Contact. *Ma, Z.*, +, *LED March 2021 343-346*

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Reduced HfO₂ Resistive Memory Variability by Inserting a Thin SnO₂ as Oxygen Stopping Layer. *Chen, W.*, +, *LED Dec. 2021 1778-1781*

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- Rapid thermal annealing**
- Ferroelectricity Enhancement in Hf_{0.5}Zr_{0.5}O₂ Based Tri-Layer Capacitors at Low-Temperature (350 °C) Annealing Process. *Gaddam, V.*, +, *LED June 2021 812-815*
- Performance Optimization of Atomic Layer Deposited ZnO Thin-Film Transistors by Vacuum Annealing. *Wang, M.*, +, *LED May 2021 716-719*
- Read only memory**
- Solid Diffusion Based Micromachining-Free Transresistive Nanoelectromechanical ROM for High-Speed and Rugged Embedded Applications. *Arya, D.S.*, +, *LED Oct. 2021 1456-1459*
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- SnO_x-Based μ W-Power Dual-Gate Ion-Sensitive Thin-Film Transistors With Linear Dependence of pH Values on Drain Current. *Yuan, Y.*, +, *LED Jan. 2021 54-57*
- Thin-Film Photodetector Optimization for High-Performance Short-Wavelength Infrared Imaging. *Pejovic, V.*, +, *LED Aug. 2021 1196-1199*
- Rectangular waveguides**
- A Novel Slow-Wave Structure—Coupled Double Folded Waveguide Operating at High-Order TM₂₀ Mode for Terahertz TWT. *Tian, Y.*, +, *LED Dec. 2021 1871-1874*
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- Rectifiers**
- Compact and Low Leakage Devices for Bidirectional Low-Voltage ESD Protection Applications. *Du, F.*, +, *LED March 2021 391-394*
- Low Thermal Resistance (0.5 K/W) Ga₂O₃ Schottky Rectifiers With Double-Side Packaging. *Wang, B.*, +, *LED Aug. 2021 1132-1135*
- Rectifying circuits**
- Low Thermal Resistance (0.5 K/W) Ga₂O₃ Schottky Rectifiers With Double-Side Packaging. *Wang, B.*, +, *LED Aug. 2021 1132-1135*
- Reduction (chemical)**
- Enhanced Electrical Characteristics of Ge nMOSFET by Supercritical Fluid CO₂ Treatment With H₂O₂ Cosolvent. *Ruan, D.*, +, *LED May 2021 645-648*
- Reflectivity**
- InGaN Resonant Microcavity With n⁺-Porous-GaN/p⁺-GaN Tunneling Junction. *Lin, C.*, +, *LED Nov. 2021 1631-1633*
- Regression analysis**
- Prediction of FinFET Current-Voltage and Capacitance-Voltage Curves Using Machine Learning With Autoencoder. *Mehta, K.*, +, *LED Feb. 2021 136-139*
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X

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