



Yoshio Nishi

Professor (Research) of Electrical Engineering, Emeritus

Bio

BIO

Nishi's research interest has been in silicon and germanium-based CMOS devices, processes and materials. He is currently interested in research for new device structures with new materials in the nanoelectronics era, resistive switching memory, metal gate work function engineering, flexible electronics, graphene band engineering.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Electrical Engineering

HONORS AND AWARDS

- Fellow, IEEE (1987)
- Life Fellow, IEEE (2014)
- Jack A. Morton Award, IEEE (1995)
- Robert N. Noyce Medal, IEEE (2002)
- Lifetime Achievement Award, SEMI (2008)
- Fellow International, Japan Society of Applied Physics (2012)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Evaluation Committee, MANA project in NIMS (2010 - 2017)
- Technical Advisory Board, Ultratech Stepper Inc (1994 - present)
- Board of Directors, Zepton Inc (2012 - present)

PROFESSIONAL EDUCATION

- PhD, University of Tokyo (1973)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

resistive switching nonvolatile memory mechanism, and 2D materials and devices

Publications

PUBLICATIONS

- **Carbon nanotube thermoelectric devices by direct printing: Toward wearable energy converters** *APPLIED PHYSICS LETTERS*
Lee, H., Furukawa, N., Ricco, A. J., Pop, E., Cui, Y., Nishi, Y.
2021; 118 (17)
- **Three-Dimensional Analysis of Particle Distribution on Filter Layers inside N95 Respirators by Deep Learning.** *Nano letters*
Lee, H. R., Liao, L., Xiao, W., Vailionis, A., Ricco, A. J., White, R., Nishi, Y., Chiu, W., Chu, S., Cui, Y.
2020
- **Bidirectional Analog Conductance Modulation for RRAM-Based Neural Networks** *IEEE TRANSACTIONS ON ELECTRON DEVICES*
Jiang, Z., Wang, Z., Zheng, X., Fong, S. W., Qin, S., Chen, H., Ahn, E. C., Cao, J., Nishi, Y., Wong, S., Wong, H.
2020; 67 (11): 4904–10
- **Effect of IrO₂ Spatial Distribution on the Stability and Charge Distribution of Ti_{1-x}Ir_xO₂ Alloys** *CHEMISTRY OF MATERIALS*
Villena, M. A., Magyari-Kope, B., Nishi, Y., McIntyre, P. C., Lanza, M.
2019; 31 (21): 8742–51
- **Intrinsic limits of leakage current in self-heating-triggered threshold switches** *APPLIED PHYSICS LETTERS*
Wang, Z., Kumar, S., Williams, R., Nishi, Y., Wong, H.
2019; 114 (18)
- **Contact Engineering of Trilayer Black Phosphorus With Scandium and Gold** *IEEE JOURNAL OF THE ELECTRON DEVICES SOCIETY*
Tsai, Y., Magyari-Kope, B., Li, Y., Samukawa, S., Nishi, Y., Sze, S. M.
2019; 7 (1): 322–28
- **Contact Engineering High-Performance n-Type MoTe₂ Transistors.** *Nano letters*
Mleccko, M. J., Yu, A. C., Smyth, C. M., Chen, V. n., Shin, Y. C., Chatterjee, S. n., Tsai, Y. C., Nishi, Y. n., Wallace, R. M., Pop, E. n.
2019
- **Formation of epitaxial Hf digermanide/Ge(001) contact and its crystalline properties** *JAPANESE JOURNAL OF APPLIED PHYSICS*
Nakatsuka, O., Suzuki, A., McVittie, J., Nishi, Y., Zaima, S.
2018; 57 (7)
- **Copper interstitial recombination centers in Cu₃N** *PHYSICAL REVIEW B*
Yee, Y., Inoue, H., Hultqvist, A., Hanifi, D., Salleo, A., Magyari-Kope, B., Nishi, Y., Bent, S. F., Clemens, B. M.
2018; 97 (24)
- **Transient dynamics of NbO_x threshold switches explained by Poole-Frenkel based thermal feedback mechanism** *APPLIED PHYSICS LETTERS*
Wang, Z., Kumar, S., Nishi, Y., Wong, H.
2018; 112 (19)
- **Research Update: Ab initio study on resistive memory device optimization trends: Dopant segregation effects and data retention in HfO_{2-x}** *APL MATERIALS*
Magyari-Koepe, B., Song, Y., Duncan, D., Zhao, L., Nishi, Y.
2018; 6 (5)
- **Effect of thermal insulation on the electrical characteristics of NbO_x threshold switches** *APPLIED PHYSICS LETTERS*
Wang, Z., Kumar, S., Wong, H., Nishi, Y.
2018; 112 (7)
- **HfO₂/Ti Interface Mediated Conductive Filament Formation in RRAM: An Ab Initio Study** *IEEE TRANSACTIONS ON ELECTRON DEVICES*
Traore, B., Blaise, P., Sklenard, B., Vianello, E., Magyari-Kope, B., Nishi, Y.
2018; 65 (2): 507–13
- **A Bi-stable 1-/2-Transistor SRAM in 14 nm FinFET Technology for High Density / High Performance Embedded Applications**
Widjaja, Y., Wilson, J., Tu Nguyen, Han, J., Norwood, C., Maheshwari, D., Lai, S., Vorenkamp, P., Or-Bach, Z., Nishi, Y., IEEE

IEEE.2018

- **Physical origins of current and temperature controlled negative differential resistances in NbO₂** *NATURE COMMUNICATIONS*
Kumar, S., Wang, Z., Davila, N., Kumari, N., Norris, K. J., Huang, X., Strachan, J., Vine, D., Kilcoyne, A., Nishi, Y., Williams, R.
2017; 8: 658
- **HfSe₂ and ZrSe₂: Two-dimensional semiconductors with native high-k oxides.** *Science advances*
Mleczo, M. J., Zhang, C., Lee, H. R., Kuo, H. H., Magyari-Köpe, B., Moore, R. G., Shen, Z. X., Fisher, I. R., Nishi, Y., Pop, E.
2017; 3 (8): e1700481
- **Ultra-thin and high-response transparent and flexible heater based on carbon nanotube film** *APPLIED PHYSICS LETTERS*
Kim, Y., Lee, H. R., Saito, T., Nishi, Y.
2017; 110 (15)
- **Properties of Dopants in HfO_x for Improving the Performance of Nonvolatile Memory** *PHYSICAL REVIEW APPLIED*
Duncan, D., Magyari-Köpe, B., Nishi, Y.
2017; 7 (3)
- **Chemical Vapor-Deposited Hexagonal Boron Nitride as a Scalable Template for High-Performance Organic Field-Effect Transistors** *CHEMISTRY OF MATERIALS*
Lee, T. H., Kim, K., Kim, G., Park, H. J., Scullion, D., Shaw, L., Kim, M., Gu, X., Bae, W., Santos, E. J., Lee, Z., Shin, H. S., Nishi, et al
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- **Oxygen migration during resistance switching and failure of hafnium oxide memristors** *APPLIED PHYSICS LETTERS*
Kumar, S., Wang, Z., Huang, X., Kumari, N., Davila, N., Strachan, J. P., Vine, D., Kilcoyne, A. L., Nishi, Y., Williams, R. S.
2017; 110 (10)
- **Extrinsic time-dependent dielectric breakdown of low-k organosilicate thin films from vacuum-ultraviolet irradiation** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
Guo, X., Pei, D., Zheng, H., Li, W., Shohet, J. L., King, S. W., Lin, Y., Fung, H., Chen, C., Nishi, Y.
2017; 35 (2)
- **Polaronic interactions between oxygen vacancies in rutile TiO₂** *PHYSICAL REVIEW B*
Zhao, L., Magyari-Köpe, B., Nishi, Y.
2017; 95 (5)
- **Spatially uniform resistance switching of low current, high endurance titanium-niobium-oxide memristors.** *Nanoscale*
Kumar, S., Davila, N., Wang, Z., Huang, X., Strachan, J. P., Vine, D., David Kilcoyne, A. L., Nishi, Y., Stanley Williams, R.
2017; 9 (5): 1793-1798
- **Ferroelectric Switching Pathways and Energetics in (Hf,Zr)O₂**
Barabash, S. V., Pramanik, D., Zhai, Y., Magyari-Köpe, B., Nishi, Y.
edited by Shingubara, S., Karim, Z., Magyari-Köpe, B., Shima, H., Kubota, H., Park, J. G., Kobayashi, K., Goux, L., Bersuker, G., Saito, Y.
ELECTROCHEMICAL SOC INC.2017: 107-21
- **Formation of Epitaxial Hf Germanide/Ge Contacts for Schottky Barrier Height Engineering**
Nakatsuka, O., Suzuki, A., McVittie, J., Nishi, Y., Zaima, S., IEEE
IEEE.2017: 47-48
- **Conduction Channel Formation and Dissolution Due to Oxygen Thermophoresis/Diffusion in Hafnium Oxide Memristors** *ACS NANO*
Kumar, S., Wang, Z., Huang, X., Kumari, N., Davila, N., Strachan, J. P., Vine, D., Kilcoyne, A. L., Nishi, Y., Williams, R. S.
2016; 10 (12): 11205-11210
- **The effect of vacuum ultraviolet irradiation on the time-dependent dielectric breakdown of organosilicate dielectrics** *APPLIED PHYSICS LETTERS*
Pei, D., Xue, P., Li, W., Guo, X., Lin, Y. H., Fung, H. S., Chen, C. C., Nishi, Y., Shohet, J. L.
2016; 109 (12)
- **Influence of porosity on electrical properties of low-k dielectrics irradiated with vacuum-ultraviolet radiation** *APPLIED PHYSICS LETTERS*
CHOU DHURY, F. A., Nguyen, H. M., Baklanov, M. R., de Marneffe, J. F., Li, W., Pei, D., Benjamin, D. I., Zheng, H., King, S. W., Lin, Y., Fung, H., Chen, C., Nishi, et al

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- **High Current Density and Low Thermal Conductivity of Atomically Thin Semimetallic WTe₂.** *ACS nano*
Mleczo, M. J., Xu, R. L., Okabe, K., Kuo, H., Fisher, I. R., Wong, H. P., Nishi, Y., Pop, E.
2016; 10 (8): 7507-7514
- **Effects of ultraviolet (UV) irradiation in air and under vacuum on low-k dielectrics** *AIP ADVANCES*
CHOUDHURY, F. A., Ryan, E. T., Nguyen, H. M., Nishi, Y., Shoheit, J. L.
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- **Nonthermal combined ultraviolet and vacuum-ultraviolet curing process for organosilicate dielectrics** *APPLIED PHYSICS LETTERS*
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2016; 108 (24)
- **First-principles study of carbon impurity effects in the pseudo-hexagonal Ta₂O₅** *CURRENT APPLIED PHYSICS*
Kim, J., Magyari-Kope, B., Nishi, Y., Ahn, J.
2016; 16 (6): 638-643
- **Kinetic Study of Hydrogen Evolution Reaction over Strained MoS₂ with Sulfur Vacancies Using Scanning Electrochemical Microscopy** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
Li, H., Du, M., Mleczo, M. J., Koh, A. L., Nishi, Y., Pop, E., Bard, A. J., Zheng, X.
2016; 138 (15): 5123-5129
- **Direct Observation of Localized Radial Oxygen Migration in Functioning Tantalum Oxide Memristors** *ADVANCED MATERIALS*
Kumar, S., Graves, C. E., Strachan, J. P., Grafals, E. M., Kilcoyne, A. L., Tyliczszak, T., Weker, J. N., Nishi, Y., Williams, R. S.
2016; 28 (14): 2772-2776
- **Filament-Induced Anisotropic Oxygen Vacancy Diffusion and Charge Trapping Effects in Hafnium Oxide RRAM** *IEEE ELECTRON DEVICE LETTERS*
Duncan, D., Magyari-Koepe, B., Nishi, Y.
2016; 37 (4): 400-403
- **Memristors: Direct Observation of Localized Radial Oxygen Migration in Functioning Tantalum Oxide Memristors (Adv. Mater. 14/2016).** *Advanced materials*
Kumar, S., Graves, C. E., Strachan, J. P., Grafals, E. M., Kilcoyne, A. L., Tyliczszak, T., Weker, J. N., Nishi, Y., Williams, R. S.
2016; 28 (14): 2771-?
- **Increased photoluminescence from single-mode microwave annealing of N-type Ge-on-Si** *APPLIED PHYSICS LETTERS*
Lee, L. Y., Watanabe, Y., Nishi, Y.
2016; 108 (11)
- **The effects of uniaxial and biaxial strain on the electronic structure of germanium** *COMPUTATIONAL MATERIALS SCIENCE*
Sakata, K., Magyari-Kope, B., Gupta, S., Nishi, Y., Blom, A., Deak, P.
2016; 112: 263-268
- **Hydrogen doping in HfO₂ resistance change random access memory** *APPLIED PHYSICS LETTERS*
Duncan, D., Magyari-Koepe, B., Nishi, Y.
2016; 108 (4)
- **HfO₂-Based RRAM: Electrode Effects, Ti/HfO₂ Interface, Charge Injection, and Oxygen (O) Defects Diffusion Through Experiment and Ab Initio Calculations** *IEEE TRANSACTIONS ON ELECTRON DEVICES*
Traore, B., Blaise, P., Vianello, E., Perniola, L., de Salvo, B., Nishi, Y.
2016; 63 (1): 360-368
- **Significance of the double-layer capacitor effect in polar rubbery dielectrics and exceptionally stable low-voltage high transconductance organic transistors** *SCIENTIFIC REPORTS*
Wang, C., Lee, W., Kong, D., Pfattner, R., Schweicher, G., Nakajima, R., Lu, C., Mei, J., Lee, T. H., Wu, H., Lopez, J., Diao, Y., Gu, et al
2015; 5
- **Measurements of Schottky barrier at the low-k SiOC:H/Cu interface using vacuum ultraviolet photoemission spectroscopy** *APPLIED PHYSICS LETTERS*

- Guo, X., Pei, D., Zheng, H., King, S. W., Lin, Y., Fung, H., Chen, C., Nishi, Y., Shohet, J. L.
2015; 107 (23)
- **On the Origin of Low-Resistance State Retention Failure in HfO₂-Based RRAM and Impact of Doping/Alloying** *IEEE TRANSACTIONS ON ELECTRON DEVICES*
Traore, B., Blaise, P., Vianello, E., Grampeix, H., Jeannot, S., Perniola, L., de Salvo, B., Nishi, Y.
2015; 62 (12): 4029-4036
 - **Deep recombination centers in Cu₂ZnSnSe₄ revealed by screened-exchange hybrid density functional theory** *PHYSICAL REVIEW B*
Yee, Y. S., Magyari-Koepe, B., Nishi, Y., Bent, S. F., Clemens, B. M.
2015; 92 (19)
 - **Characterization of electronic structure of periodically strained graphene** *APPLIED PHYSICS LETTERS*
Aslani, M., Garner, C. M., Kumar, S., Nordlund, D., Pianetta, P., Nishi, Y.
2015; 107 (18)
 - **Fluorophore-based sensor for oxygen radicals in processing plasmas** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
Choudhury, F. A., Sabat, G., Sussman, M. R., Nishi, Y., Shohet, J. L.
2015; 33 (6)
 - **3-D Resistive Memory Arrays: From Intrinsic Switching Behaviors to Optimization Guidelines** *IEEE TRANSACTIONS ON ELECTRON DEVICES*
Li, H., Gao, B., Chen, H. (., Chen, Z., Huang, P., Liu, R., Zhao, L., Jiang, Z. (., Liu, L., Liu, X., Yu, S., Kang, J., Nishi, et al
2015; 62 (10): 3160-3167
 - **Defect-induced bandgap narrowing in low-k dielectrics** *APPLIED PHYSICS LETTERS*
Guo, X., Zheng, H., King, S. W., Afanas'ev, V. V., Baklanov, M. R., deMarneffe, J., Nishi, Y., Shohet, J. L.
2015; 107 (8)
 - **In-operando synchronous time-multiplexed O K-edge x-ray absorption spectromicroscopy of functioning tantalum oxide memristors** *JOURNAL OF APPLIED PHYSICS*
Kumar, S., Graves, C. E., Strachan, J. P., Kilcoyne, A. L., Tyliszczak, T., Nishi, Y., Williams, R. S.
2015; 118 (3)
 - **Ab initio modeling of oxygen-vacancy formation in doped-HfO_x RRAM: Effects of oxide phases, stoichiometry, and dopant concentrations** *APPLIED PHYSICS LETTERS*
Zhao, L., Clima, S., Magyari-Koepe, B., Jurczak, M., Nishi, Y.
2015; 107 (1)
 - **Amorphized tantalum-nickel binary films for metal gate applications** *APPLIED PHYSICS LETTERS*
Ouyang, J., Wongpiya, R., Deal, M. D., Clemens, B. M., Nishi, Y.
2015; 106 (15)
 - **H-treatment impact on conductive-filament formation and stability in Ta₂O₅-based resistive-switching memory cells** *JOURNAL OF APPLIED PHYSICS*
Goux, L., Kim, J. Y., Magyari-Koepe, B., Nishi, Y., REDOLFI, A., Jurczak, M.
2015; 117 (12)
 - **Structural and electrical characterization of CoTiN metal gates** *JOURNAL OF APPLIED PHYSICS*
Wongpiya, R., Ouyang, J., Chung, C., Duong, D. T., Deal, M., Nishi, Y., Clemens, B.
2015; 117 (7)
 - **Effects of vacuum-ultraviolet irradiation on copper penetration into low-k dielectrics under bias-temperature stress** *APPLIED PHYSICS LETTERS*
Guo, X., King, S. W., Zheng, H., Xue, P., Nishi, Y., Shohet, J. L.
2015; 106 (1)
 - **Sequential Electronic and Structural Transitions in VO₂ Observed Using X-ray Absorption Spectromicroscopy** *ADVANCED MATERIALS*
Kumar, S., Strachan, J. P., Pickett, M. D., Bratkovsky, A., Nishi, Y., Williams, R. S.
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- **Sequential electronic and structural transitions in VO₂ observed using X-ray absorption spectromicroscopy.** *Advanced materials*
Kumar, S., Strachan, J. P., Pickett, M. D., Bratkovsky, A., Nishi, Y., Williams, R. S.
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- **Effect of vacuum-ultraviolet irradiation on the dielectric constant of low-k organosilicate dielectrics** *APPLIED PHYSICS LETTERS*
Zheng, H., Ryan, E. T., Nishi, Y., Shohet, J. L.
2014; 105 (20)
- **First-principles study of A-site substitution in ferroelectric bismuth titanate** *JOURNAL OF MATERIALS SCIENCE*
Xue, K., Fonseca, L. R., Nishi, Y.
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- **Time-dependent dielectric breakdown measurements of porous organosilicate glass using mercury and solid metal probes** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
Pei, D., Nichols, M. T., King, S. W., Clarke, J. S., Nishi, Y., Shohet, J. L.
2014; 32 (5)
- **Surface charge sensing by altering the phase transition in VO₂** *JOURNAL OF APPLIED PHYSICS*
Kumar, S., Esfandyarpour, R., Davis, R., Nishi, Y.
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- **Effects of ZrO₂ doping on HfO₂ resistive switching memory characteristics** *APPLIED PHYSICS LETTERS*
Ryu, S. W., Cho, S., Park, J., Kwac, J., Kim, H. J., Nishi, Y.
2014; 105 (7)
- **Effects of plasma and vacuum-ultraviolet exposure on the mechanical properties of low-k porous organosilicate glass** *JOURNAL OF APPLIED PHYSICS*
Guo, X., Jakes, J. E., Banna, S., Nishi, Y., Shohet, J. L.
2014; 116 (4)
- **Role of nitrogen incorporation into Al₂O₃-based resistive random-access memory** *APPLIED PHYSICS EXPRESS*
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- **Multi-level control of conductive nano-filament evolution in HfO₂ ReRAM by pulse-train operations** *NANOSCALE*
Zhao, L., Chen, H., Wu, S., Jiang, Z., Yu, S., Hou, T., Wong, H. P., Nishi, Y.
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- **Electronic structure and stability of low symmetry Ta₂O₅ polymorphs** *PHYSICA STATUS SOLIDI-RAPID RESEARCH LETTERS*
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- **Effect of water uptake on the fracture behavior of low-k organosilicate glass** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
Guo, X., Jakes, J. E., Banna, S., Nishi, Y., Shohet, J. L.
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- **A Combined Ab Initio and Experimental Study on the Nature of Conductive Filaments in Pt/HfO₂/Pt Resistive Random Access Memory** *IEEE TRANSACTIONS ON ELECTRON DEVICES*
Xue, K., Traore, B., Blaise, P., Fonseca, L. R., Vianello, E., Molas, G., de Salvo, B., Ghibaudo, G., Magyari-Koepe, B., Nishi, Y.
2014; 61 (5): 1394-1402
- **Ab initio modeling of resistive switching mechanism in binary metal oxides** *IEEE International Symposium on Circuits and Systems (ISCAS)*
Magyari-Koepe, B., Zhao, L., Nishi, Y., Kamiya, K., Yang, M. Y., Shiraishi, K.
IEEE.2014: 2021–2024
- **Impact of electrode nature on the filament formation and variability in HfO₂ RRAM** *International Reliability Physics Symposium (IRPS)*
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- **Local temperature redistribution and structural transition during joule-heating-driven conductance switching in VO₂.** *Advanced materials*

- Kumar, S., Pickett, M. D., Strachan, J. P., Gibson, G., Nishi, Y., Williams, R. S.
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- **Interface trap evaluation of Pd/Al₂O₃/GaN metal oxide semiconductor capacitors and the influence of near-interface hydrogen** *APPLIED PHYSICS LETTERS*
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 - **Local Temperature Redistribution and Structural Transition During Joule-Heating-Driven Conductance Switching in VO₂** *ADVANCED MATERIALS*
Kumar, S., Pickett, M. D., Strachan, J. P., Gibson, G., Nishi, Y., Williams, R. S.
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 - **Vacancy Cohesion-Isolation Phase Transition Upon Charge Injection and Removal in Binary Oxide-Based RRAM Filamentary-Type Switching** *IEEE TRANSACTIONS ON ELECTRON DEVICES*
Kamiya, K., Yang, M. Y., Magyari-Koepe, B., Niwa, M., Nishi, Y., Shiraishi, K.
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 - **Charge-dependent oxygen vacancy diffusion in Al₂O₃-based resistive-random-access-memories** *APPLIED PHYSICS LETTERS*
Yang, M. Y., Kamiya, K., Magyari-Koepe, B., Niwa, M., Nishi, Y., Shiraishi, K.
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 - **Essential role for ligand-dependent feedback antagonism of vertebrate hedgehog signaling by PTCH1, PTCH2 and HHIP1 during neural patterning** *DEVELOPMENT*
Holtz, A. M., Peterson, K. A., Nishi, Y., Morin, S., Song, J. Y., Charron, F., McMahon, A. P., Allen, B. L.
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 - **Surface photoconductivity of organosilicate glass dielectrics induced by vacuum-ultraviolet radiation** *JOURNAL OF APPLIED PHYSICS*
Zheng, H., Nichols, M. T., Pei, D., Nishi, Y., Shohet, J. L.
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Wongpiya, R., Ouyang, J., Kim, T. R., Deal, M., Sinclair, R., Nishi, Y., Clemens, B.
2013; 103 (2)
 - **First principles modeling of charged oxygen vacancy filaments in reduced TiO₂-implications to the operation of non-volatile memory devices** *MATHEMATICAL AND COMPUTER MODELLING*
Zhao, L., Park, S., Magyari-Koepe, B., Nishi, Y.
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 - **Grain boundary composition and conduction in HfO₂: An ab initio study** *APPLIED PHYSICS LETTERS*
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Lee, T. H., Luessem, B., Kim, K., Giri, G., Nishi, Y., Bao, Z.
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 - **Generalized mechanism of the resistance switching in binary-oxide-based resistive random-access memories** *PHYSICAL REVIEW B*
Kamiya, K., Yang, M. Y., Nagata, T., Park, S., Magyari-Koepe, B., Chikyow, T., Yamada, K., Niwa, M., Nishi, Y., Shiraishi, K.
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 - **Physical Guiding Principles for High Quality Resistive Random Access Memory Stack with Al₂O₃ Insertion Layer** *JAPANESE JOURNAL OF APPLIED PHYSICS*
Yang, M. Y., Kamiya, K., Magyari-Koepe, B., Momida, H., Ohno, T., Niwa, M., Nishi, Y., Shiraishi, K.
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Zhao, L., Park, S., Magyari-Koepe, B., Nishi, Y.
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- **Achieving direct band gap in germanium through integration of Sn alloying and external strain** *JOURNAL OF APPLIED PHYSICS*
Gupta, S., Magyari-Koepe, B., Nishi, Y., Saraswat, K. C.
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- **Prediction of Semimetallic Tetragonal Hf2O3 and Zr2O3 from First Principles** *PHYSICAL REVIEW LETTERS*
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- **Theoretical Design of Desirable Stack Structure for Resistive Random Access Memories** *Symposium on Semiconductors, Dielectrics, and Metals for Nanoelectronics 11 held during the 224th Meeting of the Electrochemical-Society*
Kamiya, K., YANG, M. Y., Magyari-Koepe, B., Niwa, M., Nishi, Y., Shiraishi, K.
ELECTROCHEMICAL SOC INC.2013: 181–88
- **Nanoscale (similar to 10nm) 3D vertical ReRAM and NbO2 threshold selector with TiN electrode** *IEEE International Electron Devices Meeting (IEDM)*
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IEEE.2013
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