

Takanobu Watanabe

List of Publications by Year in descending order

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108
papers

1,252
citations

394421

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414414

32
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108
all docs

108
docs citations

108
times ranked

1092
citing authors

| # | ARTICLE | IF | CITATIONS |
|----|---|-----|-----------|
| 1 | Novel Interatomic Potential Energy Function for Si, O Mixed Systems. Japanese Journal of Applied Physics, 1999, 38, L366-L369. | 1.5 | 137 |
| 2 | New Linear-Parabolic Rate Equation for Thermal Oxidation of Silicon. Physical Review Letters, 2006, 96, 196102. | 7.8 | 85 |
| 3 | Modeling, Simulation, Fabrication, and Characterization of a 10- μm Class Si-Nanowire Thermoelectric Generator for IoT Applications. IEEE Transactions on Electron Devices, 2018, 65, 5180-5188. | 3.0 | 54 |
| 4 | Improved interatomic potential for stressed Si, O mixed systems. Applied Surface Science, 2004, 234, 207-213. | 6.1 | 51 |
| 5 | Strain Distribution around SiO ₂ /Si Interface in Si Nanowires: A Molecular Dynamics Study. Japanese Journal of Applied Physics, 2007, 46, 3277-3282. | 1.5 | 47 |
| 6 | SiO ₂ /Si interface structure and its formation studied by large-scale molecular dynamics simulation. Applied Surface Science, 2004, 237, 125-133. | 6.1 | 45 |
| 7 | Miniaturized planar Si-nanowire micro-thermoelectric generator using exuded thermal field for power generation. Science and Technology of Advanced Materials, 2018, 19, 443-453. | 6.1 | 43 |
| 8 | Adsorption Mechanism of Ribosomal Protein L2 onto a Silica Surface: A Molecular Dynamics Simulation Study. Langmuir, 2010, 26, 9950-9955. | 3.5 | 40 |
| 9 | Residual order within thermally grown amorphous SiO ₂ on crystalline silicon. Physical Review B, 2004, 69, . | 3.2 | 38 |
| 10 | Modeling of SiO ₂ /Si(100) interface structure by using extended -Stillinger-Weber potential. Thin Solid Films, 1999, 343-344, 370-373. | 1.8 | 37 |
| 11 | SiO ₂ /Si interface structure and its formation studied by large-scale molecular dynamics simulation. Applied Surface Science, 2004, 237, 125-133. | 6.1 | 33 |
| 12 | Diffusion of Molecular and Atomic Oxygen in Silicon Oxide. Japanese Journal of Applied Physics, 2003, 42, 3560-3565. | 1.5 | 31 |
| 13 | Strain-induced transconductance enhancement by pattern dependent oxidation in silicon nanowire field-effect transistors. Applied Physics Letters, 2007, 91, 202117. | 3.3 | 29 |
| 14 | Effect of a SiO ₂ layer on the thermal transport properties of Si nanowires: A molecular dynamics study. Physical Review B, 2015, 91, . | 3.2 | 29 |
| 15 | The Possibility of mW/cm ² -Class On-Chip Power Generation Using Ultrasmall Si Nanowire-Based Thermoelectric Generators. IEEE Transactions on Electron Devices, 2018, 65, 2016-2023. | 3.0 | 26 |
| 16 | Positive and negative dipole layer formation at high-k/SiO ₂ interfaces simulated by classical molecular dynamics. Japanese Journal of Applied Physics, 2016, 55, 04EB03. | 1.5 | 25 |
| 17 | A novel hetero-junction Tunnel-FET using Semiconducting silicide—Silicon contact and its scalability. Microelectronics Reliability, 2014, 54, 899-904. | 1.7 | 24 |
| 18 | Impact of Structural Strained Layer near SiO ₂ /Si Interface on Activation Energy of Time-Dependent Dielectric Breakdown. Japanese Journal of Applied Physics, 2000, 39, 4687-4691. | 1.5 | 23 |

| # | ARTICLE | IF | CITATIONS |
|----|---|-----|-----------|
| 19 | Reactions and diffusion of atomic and molecular oxygen in the SiO ₂ network. Physical Review B, 2005, 72, . | 3.2 | 23 |
| 20 | Large-Scale Atomistic Modeling of Thermally Grown SiO ₂ on Si(111) Substrate. Japanese Journal of Applied Physics, 2004, 43, 492-497. | 1.5 | 19 |
| 21 | Anomalous Seebeck coefficient observed in silicon nanowire micro thermoelectric generator. Applied Physics Letters, 2017, 111, . | 3.3 | 19 |
| 22 | Effects of Thermal History on Residual Order of Thermally Grown Silicon Dioxide. Japanese Journal of Applied Physics, 2003, 42, 7250-7255. | 1.5 | 17 |
| 23 | Development of interatomic potential of Ge _{(1-x)Si_x} alloy semiconductors for classical lattice dynamics simulation. Japanese Journal of Applied Physics, 2018, 57, 04FB04. | 1.5 | 17 |
| 24 | Modeling of a SiO ₂ /Si(001) structure including step and terrace configurations. Applied Surface Science, 2000, 162-163, 116-121. | 6.1 | 16 |
| 25 | A molecular simulation study of an organosilane self-assembled monolayer/SiO ₂ substrate interface. Journal of Chemical Physics, 2008, 128, 164710. | 3.0 | 16 |
| 26 | Analysis of Interactions between Green Fluorescent Protein and Silicon Substrates Using Molecular Dynamics Simulations. Japanese Journal of Applied Physics, 2005, 44, 8210-8215. | 1.5 | 15 |
| 27 | A scalable Si-based micro thermoelectric generator. , 2017, , . | | 15 |
| 28 | Nucleation site of Cu on the H-terminated Si(111) surface. Physical Review B, 2001, 64, . | 3.2 | 13 |
| 29 | A Kinetic Equation for Thermal Oxidation of Silicon Replacing the Dealâ€Grove Equation. Journal of the Electrochemical Society, 2007, 154, G270. | 2.9 | 12 |
| 30 | Nano-device simulation from an atomistic view. , 2013, , . | | 11 |
| 31 | Source-induced RDF overwhelms RTN in nanowire transistor: Statistical analysis with full device EMC/MD simulation accelerated by GPU computing. , 2014, , . | | 11 |
| 32 | Designing a bilayer silicon-nanowire thermoelectric generator with cavity-free structure. Japanese Journal of Applied Physics, 2021, 60, SBBF07. | 1.5 | 11 |
| 33 | O_2 in a SiO_2 | 3.2 | 10 |
| 34 | Anomalous low energy phonon dispersion in bulk silicon-germanium observed by inelastic x-ray scattering. Applied Physics Letters, 2020, 116, . | 3.3 | 10 |
| 35 | Effect of Thermal Boundary Resistance between the Interconnect Metal and Dielectric Interlayer on Temperature Increase of Interconnects in Deeply Scaled VLSI. ACS Applied Materials & Interfaces, 2020, 12, 22347-22356. | 8.0 | 10 |
| 36 | SURFACE STRUCTURES AND GROWTH MODES FOR Cu ON Si(100), (110) AND (111) SURFACES DEPENDING ON Cu SEGREGATION BY HEAT TREATMENT. Surface Review and Letters, 1996, 03, 1377-1385. | 1.1 | 9 |

| # | ARTICLE | IF | CITATIONS |
|----|--|-----|-----------|
| 37 | Effect of phonon-boundary scattering on phonon-drag factor in Seebeck coefficient of Si wire. AIP Advances, 2020, 10, 075015. | 1.3 | 9 |
| 38 | Effect of the Thermal Boundary Resistance in Metal/Dielectric Thermally Conductive Layers on Power Generation of Silicon Nanowire Microthermoelectric Generators. ACS Applied Materials & Interfaces, 2020, 12, 34441-34450. | 8.0 | 9 |
| 39 | Mechanism of H ₂ desorption from H-terminated Si(001) surfaces. Applied Surface Science, 1997, 117-118, 67-71. | 6.1 | 8 |
| 40 | Evaluation of Laterally Graded Silicon Germanium Wires for Thermoelectric Devices Fabricated by Rapid Melting Growth. ECS Transactions, 2018, 86, 87-93. | 0.5 | 8 |
| 41 | Atomic mass dependency of a localized phonon mode in SiGe alloys. AIP Advances, 2021, 11, . | 1.3 | 8 |
| 42 | Modification and Characterization of Interfacial Bonding for Thermal Management of Ruthenium Interconnects in Next-Generation Very-Large-Scale Integration Circuits. ACS Applied Materials & Interfaces, 2022, 14, 7392-7404. | 8.0 | 8 |
| 43 | Analysis of Interactions between Luciferase and Si Substrates Using Molecular Dynamics Simulations. Japanese Journal of Applied Physics, 2006, 45, 1021-1025. | 1.5 | 7 |
| 44 | Molecular Dynamics Simulation of Heat Transport in Silicon Nano-structures Covered with Oxide Films. Japanese Journal of Applied Physics, 2010, 49, 04DN08. | 1.5 | 7 |
| 45 | Misfit Stress Relaxation Mechanism in GeO ₂ /Ge Systems: A Classical Molecular Simulation Study. ECS Transactions, 2010, 33, 901-912. | 0.5 | 7 |
| 46 | Dynamic bond-order force field. Journal of Computational Electronics, 2011, 10, 2-20. | 2.5 | 7 |
| 47 | Molecular dynamics study on the formation of dipole layer at high-k/SiO ₂ interfaces. Japanese Journal of Applied Physics, 2014, 53, 08LB02. | 1.5 | 7 |
| 48 | Anomalous flatband voltage shift of Al _x O _y /Al ₂ O ₃ MOS capacitors: A consideration on dipole layer formation at dielectric interfaces with different anions. Applied Physics Letters, 2017, 110, 162907. | 3.3 | 7 |
| 49 | Si Island Formation on Domain Boundaries Induced by Ar Ion Irradiation on High-Temperature Si(111)-7 Å ⁻¹ Dimer-Adatom-Stacking Fault Surfaces. Japanese Journal of Applied Physics, 2005, 44, L313-L314. | 1.5 | 6 |
| 50 | Enhanced nickelidation rate in silicon nanowires with interfacial lattice disorder. Journal of Applied Physics, 2017, 122, . | 2.5 | 6 |
| 51 | The main factor of the decrease in activity of luciferase on the Si surface. Chemical Physics Letters, 2008, 453, 279-282. | 2.6 | 5 |
| 52 | Current fluctuation in sub-nano second regime in gate-all-around nanowire channels studied with ensemble Monte Carlo/molecular dynamics simulation. , 2012, , . | | 5 |
| 53 | Influence of Structural Parameters on Electrical Characteristics of Schottky Tunneling Field-Effect Transistor and Its Scalability. Japanese Journal of Applied Physics, 2013, 52, 04CC28. | 1.5 | 5 |
| 54 | Phonon Dispersion in ~100% Si Nanowire Covered with SiO ₂ Film Calculated by Molecular Dynamics Simulation. ECS Journal of Solid State Science and Technology, 2014, 3, P149-P154. | 1.8 | 5 |

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|----|---|-----|-----------|
| 55 | Driving force of oxygen-ion migration across high- k /SiO ₂ interface. Applied Physics Express, 2017, 10, 031501. | 2.4 | 5 |
| 56 | Observation of an Unidentified Phonon Peak in SiGe Alloys and Superlattices Using Molecular Dynamics Simulation. ECS Transactions, 2020, 98, 533-546. | 0.5 | 5 |
| 57 | An estimate of the Hausdorff dimension of a weak self-similar set. Chaos, Solitons and Fractals, 2002, 13, 363-366. | 5.1 | 4 |
| 58 | Coupled Monte Carlo simulation of transient electron-phonon transport in nanoscale devices. , 2010, , . | | 4 |
| 59 | Molecular Dynamics Simulation on Longitudinal Optical Phonon Mode Decay and Heat Transport in a Silicon Nano-Structure Covered with Oxide Films. Japanese Journal of Applied Physics, 2011, 50, 010102. | 1.5 | 4 |
| 60 | (Invited) Molecular Dynamics Simulation of Dipole Layer Formation at High- k /SiO ₂ Interfaces. ECS Transactions, 2014, 64, 3-15. | 0.5 | 4 |
| 61 | Full-scale whole device EMC/MD simulation of Si nanowire transistor including source and drain regions by utilizing graphic processing units. , 2014, , . | | 4 |
| 62 | Impact of thermal history of Si nanowire fabrication process on Ni silicidation rate. Japanese Journal of Applied Physics, 2014, 53, 085201. | 1.5 | 4 |
| 63 | Evaluation of controlled strain in silicon nanowire by UV Raman spectroscopy. Japanese Journal of Applied Physics, 2017, 56, 06GG10. | 1.5 | 4 |
| 64 | (Invited) Cavity-Free Micro Thermoelectric Energy Harvester with Si Nanowires. ECS Transactions, 2019, 89, 95-110. | 0.5 | 4 |
| 65 | ON current enhancement of nanowire Schottky barrier tunnel field effect transistors. Japanese Journal of Applied Physics, 2016, 55, 04ED07. | 1.5 | 3 |
| 66 | Dependency of a localized phonon mode intensity on compositional cluster size in SiGe alloys. AIP Advances, 2021, 11, 075017. | 1.3 | 3 |
| 67 | Molecular Dynamics Simulation on Longitudinal Optical Phonon Mode Decay and Heat Transport in a Silicon Nano-Structure Covered with Oxide Films. Japanese Journal of Applied Physics, 2011, 50, 010102. | 1.5 | 3 |
| 68 | Sn-incorporation effect on thermoelectric properties of Sb-doped Ge-rich Ge _{1-x} Sn _y epitaxial layers grown on GaAs(001). Japanese Journal of Applied Physics, 2022, 61, 085502. | 1.5 | 3 |
| 69 | Probability of Atomic or Molecular Oxygen Species in Silicon and Silicon Dioxide. Japanese Journal of Applied Physics, 2003, 42, 6535-6542. | 1.5 | 2 |
| 70 | Structural investigation of organosilane self-assembled monolayers by atomic scale simulation. European Physical Journal Special Topics, 2006, 132, 189-193. | 0.2 | 2 |
| 71 | Transconductance Enhancement by Utilizing Pattern Dependent Oxidation in Silicon Nanowire Field-Effect Transistors. ECS Transactions, 2008, 13, 351-358. | 0.5 | 2 |
| 72 | Real-Time Scanning Tunneling Microscopy Observation of Si(111) Surface Modified by Au+Ion Irradiation. Japanese Journal of Applied Physics, 2010, 49, 015702. | 1.5 | 2 |

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|----|---|-----|-----------|
| 73 | Phonon Dispersion in <100> Si Nanowire Covered with SiO ₂ Film Calculated by Molecular Dynamics Simulation. ECS Transactions, 2013, 50, 673-680. | 0.5 | 2 |
| 74 | Development of Interatomic Potential of Group IV Alloy Semiconductors for Lattice Dynamics Simulation. ECS Transactions, 2016, 75, 785-794. | 0.5 | 2 |
| 75 | Effect of Phonon-Drag Contributed Seebeck Coefficient on Si-Wire Thermopile Voltage Output. IEICE Transactions on Electronics, 2019, E102.C, 475-478. | 0.6 | 2 |
| 76 | Effect of metal heat guide structure on the performance of planar Si thermoelectric generator embedded in SiO ₂ inter-layer dielectric. Japanese Journal of Applied Physics, 2022, 61, SC1017. | 1.5 | 2 |
| 77 | Performance demonstration of cavity-free planar multi-stage bileg and unileg silicon-nanowire thermoelectric generators. Japanese Journal of Applied Physics, 2022, 61, SC1062. | 1.5 | 2 |
| 78 | A New Kinetic Equation for Thermal Oxidation of Silicon Replacing the Deal-Grove Equation. ECS Transactions, 2007, 6, 465-481. | 0.5 | 1 |
| 79 | Development of an ion beam alignment system for real-time scanning tunneling microscope observation of dopant-ion irradiation. Review of Scientific Instruments, 2008, 79, 073707. | 1.3 | 1 |
| 80 | In-plane X-ray Diffraction Profiles from Organosilane Monolayer/SiO ₂ Models. Applied Physics Express, 2008, 1, 105002. | 2.4 | 1 |
| 81 | Particle-based Semiconductor Device Simulation Accelerated by GPU computing. Journal of Advanced Simulation in Science and Engineering, 2015, 2, 211-224. | 0.2 | 1 |
| 82 | Evaluation of thermal conductivity characteristics in Si nanowire covered with oxide by UV Raman spectroscopy. Japanese Journal of Applied Physics, 2019, 58, SDDF04. | 1.5 | 1 |
| 83 | Analysis of binding energies between luciferin and luciferase adsorbed on Si surface by docking simulations. Chemical Physics Letters, 2007, 439, 148-150. | 2.6 | 0 |
| 84 | Transconductance enhancement of Si nanowire transistors by oxide-induced strain. , 2008, , . | | 0 |
| 85 | Ensemble Monte Carlo/molecular dynamics simulation of electron mobility in silicon with ordered dopant arrays. , 2008, , . | | 0 |
| 86 | Electron-phonon Scattering Effect on Strained Si Nanowire FETs at Low Temperature. ECS Transactions, 2009, 25, 439-443. | 0.5 | 0 |
| 87 | Demonstration of Transconductance Enhancement on (110) and (001) Strained-Nanowire FETs. ECS Transactions, 2009, 25, 427-430. | 0.5 | 0 |
| 88 | Numerical simulation of transient heat conduction in nanoscale Si devices. , 2010, , . | | 0 |
| 89 | Molecular dynamics simulation on LO phonon mode decay in Si nano-structure covered with oxide films. , 2010, , . | | 0 |
| 90 | Effects of atomic disorder on carrier transport in Si nanowire transistors. , 2011, , . | | 0 |

| # | ARTICLE | IF | CITATIONS |
|-----|---|-----|-----------|
| 91 | Impact of Self-Heating Effect on the Electrical Characteristics of Nanoscale Devices. Key Engineering Materials, 2011, 470, 14-19. | 0.4 | 0 |
| 92 | Impact of channel shape on carrier transport investigated by ensemble monte carlo/molecular dynamics simulation. , 2011, , . | | 0 |
| 93 | Challenge for STM observation of dopant activation process on Si(001): in-situ ion irradiation and hydrogenation. Physica Status Solidi C: Current Topics in Solid State Physics, 2012, 9, 1418-1422. | 0.8 | 0 |
| 94 | Effects of atomic disorder on impact ionization rate in silicon nanodots. , 2013, , . | | 0 |
| 95 | Disorder-Induced Enhancement of Avalanche Multiplication in a Silicon Nanodot Array. Japanese Journal of Applied Physics, 2013, 52, 04CJ04. | 1.5 | 0 |
| 96 | Impact of image force effect on gate-all-around Schottky barrier tunnel FET. , 2014, , . | | 0 |
| 97 | Silicon-based micro thermoelectric generator fabricated by CMOS compatible process. , 2017, , . | | 0 |
| 98 | Microthermoelectric devices using Si nanowires. , 2021, , 503-520. | | 0 |
| 99 | Recent Progress in Theoretical Study of Formation of Semiconductor Surfaces and Interfaces Based on Microscopic Processes. Large-scale Modeling of Silicon-dioxide Films by Means of Molecular Dynamics.. Hyomen Kagaku, 2002, 23, 74-80. | 0.0 | 0 |
| 100 | Real-Time Scanning Tunneling Microscopy of Au Ion Irradiation Effects on Si(111) Surface. Hyomen Kagaku, 2012, 33, 153-158. | 0.0 | 0 |
| 101 | Fundamental Study on Application of the Nanocomposite to an Electrical Rotating Machine. IEEJ Transactions on Fundamentals and Materials, 2017, 137, 645-651. | 0.2 | 0 |
| 102 | (Invited) Cavity-Free Micro Thermoelectric Energy Harvester with Si Nanowires. ECS Meeting Abstracts, 2019, , . | 0.0 | 0 |
| 103 | Temperature Measurement for Si Nanowire Thermoelectric Generators By Operand Raman Spectroscopy. ECS Meeting Abstracts, 2019, , . | 0.0 | 0 |
| 104 | Control of the Anisotropic Conductivity of Carbon Nanotube Sheet and Their Thermoelectric Properties. ECS Meeting Abstracts, 2019, , . | 0.0 | 0 |
| 105 | Estimation of Phonon Mean Free Path in Small-Scaled Si Wire by Monte Carlo Simulation. , 2020, , . | | 0 |
| 106 | Direct Bonding of GaAs and Diamond for High Power Device Applications. ECS Meeting Abstracts, 2020, MA2020-02, 1634-1634. | 0.0 | 0 |
| 107 | Observation of an Unidentified Phonon Peak in SiGe Alloys and Superlattices Using Molecular Dynamics Simulation. ECS Meeting Abstracts, 2020, MA2020-02, 3606-3606. | 0.0 | 0 |
| 108 | Substrate Bias Effect on SOI-based Thermoelectric Power Generator. , 2021, , . | | 0 |