# Hideki Hirayama

List of Publications by Year
in descending order



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|---|---|---|---|
| 83 papers | 3,277 citations | 236925<br>25 h-index | 155660<br>55 g-index |
| 84 all docs | 84 docs citations | 84 times ranked | 2215 citing authors |

| # | Article | IF | Citations |
| --- | --- | --- | --- |
| 1 | Recent progress and future prospects of AlGaN-based high-efficiency deep-ultraviolet light-emitting diodes. Japanese Journal of Applied Physics, 2014, 53, 100209. | 1.5 | 464 |
| 2 | The 2020 UV emitter roadmap. Journal Physics D: Applied Physics, 2020, 53, 503001. | 2.8 | 289 |
| 3 | Microassembly of semiconductor three-dimensional photonic crystals. Nature Materials, 2003, 2, 117-121. | 27.5 | 273 |
| 4 | Marked enhancement of 320â€“360 nm ultraviolet emission in quaternary InxAlyGa1â^'xâ^'yN with In-segregation effect. Applied Physics Letters, 2002, 80, 207-209. | 3.3 | 141 |
| 5 | Room-temperature operation at 333 nm of Al0.03Ga0.97N/Al0.25Ga0.75N quantum-well light-emitting diodes with Mg-doped superlattice layers. Applied Physics Letters, 2000, 77, 175-177. | 3.3 | 136 |
| 6 | Intense photoluminescence from self-assembling InGaN quantum dots artificially fabricated on AlGaN surfaces. Applied Physics Letters, 1998, 72, 1736-1738. | 3.3 | 128 |
| 7 | Determination of photoluminescence mechanism in InGaN quantum wells. Applied Physics Letters, 1999, 75, 2241-2243. | 3.3 | 104 |
| 8 | Stimulated emission from optically pumped GaN quantum dots. Applied Physics Letters, 1997, 71, 1299-1301. | 3.3 | 84 |
| 9 | 13 mW operation of a 295â€“310 nm AlGaN UV-B LED with a p-AlGaN transparent contact layer for real world applications. Journal of Materials Chemistry C, 2019, 7, 143-152. | 5.5 | 84 |
| 10 | Realization of highâ€efficiency deepâ€UV LEDs using transparent pâ€AlGaN contact layer. Physica Status Solidi C: Current Topics in Solid State Physics, 2013, 10, 1521-1524. | 0.8 | 78 |
| 11 | Room-temperature intense 320 nm band ultraviolet emission from quaternary InAlGaN-based multiple-quantum wells. Applied Physics Letters, 2002, 80, 1589-1591. | 3.3 | 76 |
| 12 | Novel surface emitting laser diode using photonic bandâ€gap crystal cavity. Applied Physics Letters, 1996, 69, 791-793. | 3.3 | 73 |
| 13 | Calculating the linear response functions of noninteracting electrons with a time-dependent SchrÃ¶dinger equation. Physical Review E, 1997, 56, 1222-1229. | 2.1 | 68 |
| 14 | Lasing action of Ga0.67In0.33As/GaInAsP/InP tensile-strained quantum-box laser. Electronics Letters, 1994, 30, 142-143. | 1.0 | 67 |
| 15 | Efficient 230â€“280 nm emission from high-Al-content AlGaN-based multiquantum wells. Applied Physics Letters, 2002, 80, 37-39. | 3.3 | 67 |
| 16 | Analysis of current injection efficiency of separate-confinement-heterostructure quantum-film lasers. IEEE Journal of Quantum Electronics, 1992, 28, 68-74. | 1.9 | 64 |
| 17 | GaN quantum-dot formation by self-assembling droplet epitaxy and application to single-electron transistors. Applied Physics Letters, 2001, 79, 2243-2245. | 3.3 | 61 |
| 18 | Three-dimensional photonic crystals for optical wavelengths assembled by micromanipulation. Applied Physics Letters, 2002, 81, 3122-3124. | 3.3 | 57 |

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| 19 | Carrier capture time and its effect on the efficiency of quantum-well lasers. IEEE Journal of Quantum Electronics, 1994, 30, 54-62. | 1.9 | 51 |
| 20 | High-Efficiency 352 nm Quaternary InAlGaN-Based Ultraviolet Light-Emitting Diodes Grown on GaN Substrates. Japanese Journal of Applied Physics, 2004, 43, L1241-L1243. | 1.5 | 51 |
| 21 | New Technique for Fabrication of Two-Dimensional Photonic Bandgap Crystals by Selective Epitaxy. Japanese Journal of Applied Physics, 1997, 36, L286-L288. | 1.5 | 48 |
| 22 | External Quantum Efficiency of 6.5% at 300 nm Emission and 4.7% at 310 nm Emission on Bare Wafer of AlGaN-Based UVB LEDs. ACS Applied Electronic Materials, 2020, 2, 1892-1907. | 4.3 | 45 |
| 23 | Estimation of carrier capture time of quantumâ€well lasers by spontaneous emission spectra. Applied Physics Letters, 1992, 61, 2398-2400. | 3.3 | 43 |
| 24 | High hole carrier concentration realized by alternative co-doping technique in metal organic chemical vapor deposition. Applied Physics Letters, 2011, 99, . | 3.3 | 33 |
| 25 | Room-temperature operation of GaInAs/GaInAsP/InP SCH lasers with quantum-wire size active region. IEEE Journal of Quantum Electronics, 1993, 29, 2123-2133. | 1.9 | 30 |
| 26 | High internal quantum efficiency and optically pumped stimulated emission in AlGaN-based UV-C multiple quantum wells. Applied Physics Letters, 2020, 117, . | 3.3 | 28 |
| 27 | Growth and Optical Properties of Quaternary InAlGaN for 300 nm Band UV-Emitting Devices. Physica Status Solidi A, 2001, 188, 83-89. | 1.7 | 27 |
| 28 | Beyond 53% internal quantum efficiency in a AlGaN quantum well at 326â€‰â€‰nm UVA emission and single-peak operation of UVA LED. Optics Letters, 2020, 45, 495. | 3.3 | 26 |
| 29 | Realization of 340-nm-Band High-Output-Power (>7 mW) InAlGaN Quantum Well Ultraviolet Light-Emitting Diode with p-Type InAlGaN. Japanese Journal of Applied Physics, 2008, 47, 2941-2944. | 1.5 | 24 |
| 30 | Effects of In composition on ultraviolet emission efficiency in quaternary InAlGaN light-emitting diodes on freestanding GaN substrates and sapphire substrates. Journal of Applied Physics, 2005, 98, 113514. | 2.5 | 23 |
| 31 | Correlation between excitons recombination dynamics and internal quantum efficiency of AlGaN-based UV-A multiple quantum wells. Journal of Applied Physics, 2020, 128, . | 2.5 | 23 |
| 32 | Determination of built-in electric fields in quaternary InAlGaN heterostructures. Applied Physics Letters, 2003, 82, 1541-1543. | 3.3 | 22 |
| 33 | Improved crystal quality of semipolar AlN by employing a thermal annealing technique with MOVPE. Journal of Crystal Growth, 2019, 507, 307-309. | 1.5 | 22 |
| 34 | Milliwatt power UV-A LEDs developed by using n-AlGaN superlattice buffer layers grown on AlN templates. Journal Physics D: Applied Physics, 2019, 52, 115102. | 2.8 | 21 |
| 35 | Formation of GaN nanopillars by selective area growth using ammonia gas source molecular beam epitaxy. Journal of Crystal Growth, 2002, 243, 129-133. | 1.5 | 19 |
| 36 | Fabrication ofa-Plane GaN Substrate Using the Srâ€"Na Flux Liquid Phase Epitaxy Technique. Japanese Journal of Applied Physics, 2007, 46, L103-L106. | 1.5 | 18 |

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| 37 | Smart Wideâ€Bandgap Omnidirectional Reflector as an Effective Holeâ€Injection Electrode for Deepâ€UV Lightâ€Emitting Diodes. Advanced Optical Materials, 2020, 8, 1901430. | 7.3 | 18 |
| 38 | Influence of residual oxygen impurity in quaternary InAlGaN multiple-quantum-well active layers on emission efficiency of ultraviolet light-emitting diodes on GaN substrates. Journal of Applied Physics, 2006, 99, 114509. | 2.5 | 17 |
| 39 | Liquid Phase Epitaxy Growth ofm-Plane GaN Substrate Using the Na Flux Method. Japanese Journal of Applied Physics, 2007, 46, L227-L229. | 1.5 | 17 |
| 40 | Fabrication of a low-threading-dislocation-density AlxGa1âˆ’xN buffer on SiC using highly Si-doped AlxGa1âˆ’xN superlattices. Applied Physics Letters, 2002, 80, 2057-2059. | 3.3 | 16 |
| 41 | Effect of Thermal Annealing on the Pd/Au Contact toP-Type Al0.15Ga0.85N. Japanese Journal of Applied Physics, 2002, 41, 581-582. | 1.5 | 16 |
| 42 | Improvement of operation temperature in GaAs/AlGaAs THz-QCLs by utilizing high Al composition barrier. Physica Status Solidi C: Current Topics in Solid State Physics, 2013, 10, 1430-1433. | 0.8 | 15 |
| 43 | Influence of the nucleation conditions on the quality of AlN layers with high-temperature annealing and regrowth processes. Japanese Journal of Applied Physics, 2019, 58, SC1056. | 1.5 | 15 |
| 44 | Controlled crystal orientations of semipolar AlN grown on an <i>m</i>-plane sapphire by MOCVD. Japanese Journal of Applied Physics, 2019, 58, SC1031. | 1.5 | 15 |
| 45 | Advantages of GaN Substrates in InAlGaN Quaternary Ultraviolet-Light-Emitting Diodes. Japanese Journal of Applied Physics, 2004, 43, 8030-8031. | 1.5 | 14 |
| 46 | Improvement of Regrown Interface in InP Organo-Metallic Vapor Phase Epitaxy. Japanese Journal of Applied Physics, 1991, 30, L672-L674. | 1.5 | 13 |
| 47 | 230 to 250 nm Intense Emission from AlN/AlGaN Quantum Wells. Physica Status Solidi A, 2000, 180, 157-161. | 1.7 | 13 |
| 48 | High-quality AlN template grown on a patterned Si(111) substrate. Journal of Crystal Growth, 2017, 468, 225-229. | 1.5 | 13 |
| 49 | Room temperature operation of GaInAs-GaInAsP-InP SCH multiquantum-film laser with narrow wire-like active region. IEEE Photonics Technology Letters, 1991, 3, 191-192. | 2.5 | 12 |
| 50 | Novel spontaneous emission control using 3-dimensional photonic bandgap crystal cavity. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 1998, 51, 99-102. | 3.5 | 12 |
| 51 | The Utility of Droplet Elimination by Thermal Annealing Technique for Fabrication of GaN/AlGaN Terahertz Quantum Cascade Structure by Radio Frequency Molecular Beam Epitaxy. Applied Physics Express, 2010, 3, 125501. | 2.4 | 12 |
| 52 | Impact of thermal treatment on the growth of semipolar AlN on <i>m</i>-plane sapphire. AIP Advances, 2018, 8, . | 1.3 | 12 |
| 53 | High-efficiency 350 nm-band quaternary InAlGaN-based UV-LED on GaN/sapphire template. Physica Status Solidi C: Current Topics in Solid State Physics, 2005, 2, 2899-2902. | 0.8 | 11 |
| 54 | Optimization of terahertz quantum cascade lasers by suppressing carrier leakage channel via high-energy state. Applied Physics Express, 2018, 11, 112702. | 2.4 | 11 |

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| 55 | Research status and prospects of deep ultraviolet devices. Journal of Semiconductors, 2019, 40, 120301. | 3.7 | 11 |
| 56 | Nonradiative centers in deepâ€UV AlGaNâ€based quantum wells revealed by twoâ€wavelength excited photoluminescence. Physica Status Solidi (B): Basic Research, 2015, 252, 936-939. | 1.5 | 10 |
| 57 | Growth of AlNâ€“SiC solid solutions by sequential supply epitaxy. Journal of Crystal Growth, 2002, 234, 435-439. | 1.5 | 9 |
| 58 | 1.9 THz selective injection design quantum cascade laser operating at extreme higher temperature above the kB T line. Physica Status Solidi C: Current Topics in Solid State Physics, 2013, 10, 1448-1451. | 0.8 | 9 |
| 59 | Effects of Ga Supply on the Growth of (11â€22) AlN on <i>m</i>â€Plane (10â€10) Sapphire Substrates. Physica Status Solidi (B): Basic Research, 2018, 255, 1700418. | 1.5 | 9 |
| 60 | Reflectance of a reflective photonic crystal p-contact layer for improving the light-extraction efficiency of AlGaN-based deep-ultraviolet light-emitting diodes. AIP Advances, 2018, 8, 125126. | 1.3 | 8 |
| 61 | Evolution of morphology and crystalline quality of DC-sputtered AlN films with high-temperature annealing. Japanese Journal of Applied Physics, 2019, 58, SC1029. | 1.5 | 8 |
| 62 | Effects of GaN substrates on InAlGaN quaternary UV LEDs. Physica Status Solidi A, 2004, 201, 2624-2627. | 1.7 | 7 |
| 63 | Milliwatt Power 350 nm-band Quaternary InAlGaN UV-LEDs on GaN Substrates. Physica Status Solidi A, 2004, 201, 2639-2643. | 1.7 | 7 |
| 64 | Growth of High-Quality AlN on Sapphire and Development of AlGaN-Based Deep-Ultraviolet Light-Emitting Diodes. Semiconductors and Semimetals, 2017, 96, 85-120. | 0.7 | 7 |
| 65 | Beyond 53% internal quantum efficiency in a AlGaN quantum well at 326â€‰â€‰nm UVA emission and single-peak operation of UVA LED: publisherâ€™s note. Optics Letters, 2020, 45, 2563. | 3.3 | 7 |
| 66 | Threshold current reduction of GaInAs/GaInAsP/InP SCH quantum-well lasers with wire-like active region by using p-type substrates. IEEE Photonics Technology Letters, 1992, 4, 964-966. | 2.5 | 6 |
| 67 | Growth and annealing conditions of high Al-content p-type AlGaN for deep-UV LEDs. Physica Status Solidi A, 2004, 201, 2803-2807. | 1.7 | 6 |
| 68 | Influence of the Strain Relaxation on the Optical Property of AlGaN Quantum Wells. Physica Status Solidi (B): Basic Research, 2020, 257, 1900582. | 1.5 | 5 |
| 69 | High-efficiency UV LEDs using quaternary InAlGaN. Electrical Engineering in Japan (English Translation) Tj ETQq1 1 0.784314 rgBT /Overl | 0.4 | 4 |
| 70 | Agâ€“Metal Bonding Conditions for Low-Loss Double-Metal Waveguide for Terahertz Quantum Cascade Laser. Japanese Journal of Applied Physics, 2008, 47, 7926. | 1.5 | 4 |
| 71 | Nonradiative recombination centers in deep UV-wavelength AlGaN quantum wells detected by below-gap excitation light. Japanese Journal of Applied Physics, 2019, 58, SCCB37. | 1.5 | 4 |
| 72 | Evaluation of GaN/AlGaN THz quantum-cascade laser epi-layers grown on AlGaN/Si templates by MOCVD. Journal of Crystal Growth, 2019, 510, 47-49. | 1.5 | 4 |

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| 73 | Enhanced Strain Relaxation in AlGaN Layers Grown on Sputterâ€Based AlN Templates. Physica Status Solidi (B): Basic Research, 2020, 257, 1900590. | 1.5 | 4 |
| 74 | Hole capture rate of GaInAs/InP strained quantum-well lasers. Optical and Quantum Electronics, 1994, 26, S719-S729. | 3.3 | 3 |
| 75 | Growth mechanisms of GaN quantum dots and their optical properties. Electronics and Communications in Japan, 1998, 81, 20-26. | 0.2 | 3 |
| 76 | Quantum dot formation and crystal growth using an atomic nano-mask. Physica E: Low-Dimensional Systems and Nanostructures, 2001, 11, 89-93. | 2.7 | 3 |
| 77 | Surprisingly low built-in electric fields in quaternary AlInGaN heterostructures. Physica Status Solidi A, 2004, 201, 190-194. | 1.7 | 3 |
| 78 | Comparison of Optical Properties between GaN and InGaN Quantum Wells. Physica Status Solidi (B): Basic Research, 1999, 216, 287-290. | 1.5 | 2 |
| 79 | Significant improvements of quantum efficiency of quaternary InAlGaN UV-LEDs on GaN substrates. Physica Status Solidi C: Current Topics in Solid State Physics, 2005, 2, 2912-2915. | 0.8 | 2 |
| 80 | Temperature dependence of nonradiative recombination processes in UV-B AlGaN quantum well revealed by below-gap excitation light. Optical Materials, 2020, 105, 109878. | 3.6 | 2 |
| 81 | Emission Energy Shift in GaInAs/GaInAsP Strained Quantum-Box Structures Due to 0-Dimensional Quantum-Box Effect. Japanese Journal of Applied Physics, 1994, 33, 3571-3577. | 1.5 | 1 |
| 82 | Small Built-in Electric Fields in Quaternary InAlGaN Heterostructures. Physica Status Solidi (B): Basic Research, 2002, 234, 764-768. | 1.5 | 1 |
| 83 | Random electric field induced by interface roughness in GaN/Al<sub>x</sub>Ga<sub>1â^'x</sub>N multiple quantum wells. Applied Physics Express, 2019, 12, 124005. | 2.4 | 1 |