

# Hiroyuki Fujiwara

## List of Publications by Citations

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|--------------------|-------------------------|----------------|-----------------|
| 114<br>papers      | 4,985<br>citations      | 31<br>h-index  | 69<br>g-index   |
| 126<br>ext. papers | 5,617<br>ext. citations | 3.1<br>avg, IF | 6.11<br>L-index |

| #   | Paper   | IF  | Citations |
|-----|---|-----|-----------|
| 114 | 2007,   |     | 1172      |
| 113 | Effects of carrier concentration on the dielectric function of ZnO:Ga and In <sub>2</sub> O <sub>3</sub> :Sn studied by spectroscopic ellipsometry: Analysis of free-carrier and band-edge absorption. <i>Physical Review B</i> , <b>2005</b> , 71, | 3.3 | 362       |
| 112 | Optical Transitions in Hybrid Perovskite Solar Cells: Ellipsometry, Density Functional Theory, and Quantum Efficiency Analyses for CH <sub>3</sub> NH <sub>3</sub> PbI <sub>3</sub> . <i>Physical Review Applied</i> , <b>2016</b> , 5,             | 4.3 | 229       |
| 111 | Assessment of effective-medium theories in the analysis of nucleation and microscopic surface roughness evolution for semiconductor thin films. <i>Physical Review B</i> , <b>2000</b> , 61, 10832-10844  | 3.3 | 213       |
| 110 | Optimization of hydrogenated amorphous silicon p-i-n solar cells with two-step i layers guided by real-time spectroscopic ellipsometry. <i>Applied Physics Letters</i> , <b>1998</b> , 73, 1526-1528  | 3.4 | 197       |
| 109 | Hydrogen-doped In <sub>2</sub> O <sub>3</sub> as High-mobility Transparent Conductive Oxide. <i>Japanese Journal of Applied Physics</i> , <b>2007</b> , 46, L685-L687   | 1.4 | 180       |
| 108 | Effects of a-Si:H layer thicknesses on the performance of a-Si:H $\mu$ -Si heterojunction solar cells. <i>Journal of Applied Physics</i> , <b>2007</b> , 101, 054516  | 2.5 | 169       |
| 107 | Impact of epitaxial growth at the heterointerface of a-Si:H $\mu$ -Si solar cells. <i>Applied Physics Letters</i> , <b>2007</b> , 90, 013503  | 3.4 | 156       |
| 106 | Degradation mechanism of CH <sub>3</sub> NH <sub>3</sub> PbI <sub>3</sub> perovskite materials upon exposure to humid air. <i>Journal of Applied Physics</i> , <b>2016</b> , 119, 115501  | 2.5 | 140       |
| 105 | Real-time spectroscopic ellipsometry studies of the nucleation and grain growth processes in microcrystalline silicon thin films. <i>Physical Review B</i> , <b>2001</b> , 63,  | 3.3 | 114       |
| 104 | Enhancement of light trapping in thin-film hydrogenated microcrystalline Si solar cells using back reflectors with self-ordered dimple pattern. <i>Applied Physics Letters</i> , <b>2008</b> , 93, 143501   | 3.4 | 108       |
| 103 | Hydrogen-doped In <sub>2</sub> O <sub>3</sub> transparent conducting oxide films prepared by solid-phase crystallization method. <i>Journal of Applied Physics</i> , <b>2010</b> , 107, 033514  | 2.5 | 104       |
| 102 | Application of hydrogenated amorphous silicon oxide layers to c-Si heterojunction solar cells. <i>Applied Physics Letters</i> , <b>2007</b> , 91, 133508  | 3.4 | 93        |
| 101 | Dielectric function of Cu(In, Ga)Se <sub>2</sub> -based polycrystalline materials. <i>Journal of Applied Physics</i> , <b>2013</b> , 113, 063505  | 2.5 | 83        |
| 100 | Quantitative determination of optical and recombination losses in thin-film photovoltaic devices based on external quantum efficiency analysis. <i>Journal of Applied Physics</i> , <b>2016</b> , 120, 064505                                       | 2.5 | 81        |
| 99  | Dielectric function of a-Si:H based on local network structures. <i>Physical Review B</i> , <b>2011</b> , 83,   | 3.3 | 76        |
| 98  | Real-time monitoring and process control in amorphous $\mu$ -crystalline silicon heterojunction solar cells by spectroscopic ellipsometry and infrared spectroscopy. <i>Applied Physics Letters</i> , <b>2005</b> , 86, 032112                      | 3.4 | 75        |

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| 97 | Reduction of Optical Loss in Hydrogenated Amorphous Silicon/Crystalline Silicon Heterojunction Solar Cells by High-Mobility Hydrogen-Doped In <sub>2</sub> O <sub>3</sub> Transparent Conductive Oxide. <i>Applied Physics Express</i> , <b>2008</b> , 1, 041501  | 2.4 | 69 |
| 96 | Interface-layer formation mechanism in a-Si:H thin-film growth studied by real-time spectroscopic ellipsometry and infrared spectroscopy. <i>Physical Review B</i> , <b>1999</b> , 60, 13598-13604  | 3.3 | 67 |
| 95 | Universal rules for visible-light absorption in hybrid perovskite materials. <i>Journal of Applied Physics</i> , <b>2017</b> , 121, 115501  | 2.5 | 61 |
| 94 | Back surface reflectors with periodic textures fabricated by self-ordering process for light trapping in thin-film microcrystalline silicon solar cells. <i>Solar Energy Materials and Solar Cells</i> , <b>2009</b> , 93, 1087-1090  | 6.4 | 60 |
| 93 | Depth profiling of silicon-hydrogen bonding modes in amorphous and microcrystalline Si:H thin films by real-time infrared spectroscopy and spectroscopic ellipsometry. <i>Journal of Applied Physics</i> , <b>2002</b> , 91, 4181-4190  | 2.5 | 51 |
| 92 | Quantitative Assessment of Optical Gain and Loss in Submicron-Textured CuIn <sub>1-x</sub> Ga <sub>x</sub> Se <sub>2</sub> Solar Cells Fabricated by Three-Stage Coevaporation. <i>Physical Review Applied</i> , <b>2014</b> , 2,   | 4.3 | 50 |
| 91 | Stress-Induced Nucleation of Microcrystalline Silicon from Amorphous Phase. <i>Japanese Journal of Applied Physics</i> , <b>2002</b> , 41, 2821-2828  | 1.4 | 50 |
| 90 | Interface-layer formation in microcrystalline Si:H growth on ZnO substrates studied by real-time spectroscopic ellipsometry and infrared spectroscopy. <i>Journal of Applied Physics</i> , <b>2003</b> , 93, 2400-2409  | 2.5 | 45 |
| 89 | Microcrystalline silicon nucleation sites in the sub-surface of hydrogenated amorphous silicon. <i>Surface Science</i> , <b>2002</b> , 497, 333-340   | 1.8 | 45 |
| 88 | Optoelectronic properties of Mg <sub>2</sub> Si semiconducting layers with high absorption coefficients. <i>Journal of Applied Physics</i> , <b>2011</b> , 110, 063723  | 2.5 | 44 |
| 87 | Optical constants of Cu(In, Ga)Se <sub>2</sub> for arbitrary Cu and Ga compositions. <i>Journal of Applied Physics</i> , <b>2015</b> , 117, 195703  | 2.5 | 39 |
| 86 | Dielectric functions of Cu <sub>2</sub> ZnSnSe <sub>4</sub> and Cu <sub>2</sub> SnSe <sub>3</sub> semiconductors. <i>Journal of Applied Physics</i> , <b>2015</b> , 117, 015702   | 2.5 | 38 |
| 85 | Structural and electrical properties of hydrogen-doped . <i>Journal of Non-Crystalline Solids</i> , <b>2008</b> , 354, 2805-2808  | 3.4 | 37 |
| 84 | Real time spectroscopic ellipsometry studies of the nucleation and growth of p-type microcrystalline silicon films on amorphous silicon using B <sub>2</sub> H <sub>6</sub> , B(CH <sub>3</sub> ) <sub>3</sub> and BF <sub>3</sub> dopant source gases. <i>Journal of Applied Physics</i> , <b>1999</b> , 85, 4141-4153 | 2.5 | 34 |
| 83 | Extraordinary Strong Band-Edge Absorption in Distorted Chalcogenide Perovskites. <i>Solar Rrl</i> , <b>2020</b> , 4, 1900555  | 7.1 | 31 |
| 82 | Optical Characteristics and Operational Principles of Hybrid Perovskite Solar Cells. <i>Physica Status Solidi (A) Applications and Materials Science</i> , <b>2018</b> , 215, 1700730   | 1.6 | 31 |
| 81 | Tail state formation in solar cell materials: First principles analyses of zincblende, chalcopyrite, kesterite, and hybrid perovskite crystals. <i>Physical Review Materials</i> , <b>2018</b> , 2,   | 3.2 | 30 |
| 80 | Correlation between oxygen stoichiometry, structure, and opto-electrical properties in amorphous In <sub>2</sub> O <sub>3</sub> :H films. <i>Journal of Applied Physics</i> , <b>2012</b> , 111, 063721   | 2.5 | 29 |

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| 79 | Fundamental aspects of low-temperature growth of microcrystalline silicon. <i>Thin Solid Films</i> , <b>2003</b> , 430, 130-134  | 2.2 | 29 |
| 78 | Microcrystalline Si <sub>1-x</sub> Ge <sub>x</sub> Solar Cells Exhibiting Enhanced Infrared Response with Reduced Absorber Thickness. <i>Applied Physics Express</i> , <b>2008</b> , 1, 031501   | 2.4 | 27 |
| 77 | High-precision characterization of textured a-Si:H/SnO <sub>2</sub> :F structures by spectroscopic ellipsometry. <i>Journal of Applied Physics</i> , <b>2011</b> , 110, 073518   | 2.5 | 25 |
| 76 | Optical depth profiling of band gap engineered interfaces in amorphous silicon solar cells at monolayer resolution. <i>Applied Physics Letters</i> , <b>1998</b> , 72, 2993-2995   | 3.4 | 22 |
| 75 | Top-down prepared silicon nanocrystals and a conjugated polymer-based bulk heterojunction: Optoelectronic and photovoltaic applications. <i>Acta Materialia</i> , <b>2009</b> , 57, 5986-5995  | 8.4 | 21 |
| 74 | Complete parameterization of the dielectric function of microcrystalline silicon fabricated by plasma-enhanced chemical vapor deposition. <i>Journal of Applied Physics</i> , <b>2012</b> , 111, 083509                                  | 2.5 | 21 |
| 73 | Nucleation mechanism of microcrystalline silicon from the amorphous phase. <i>Journal of Non-Crystalline Solids</i> , <b>2004</b> , 338-340, 97-101  | 3.9 | 20 |
| 72 | Optimization of interface structures in crystalline silicon heterojunction solar cells. <i>Solar Energy Materials and Solar Cells</i> , <b>2009</b> , 93, 725-728  | 6.4 | 19 |
| 71 | Highly accurate prediction of material optical properties based on density functional theory. <i>Computational Materials Science</i> , <b>2020</b> , 172, 109315   | 3.2 | 19 |
| 70 | Very small tail state formation in Cu <sub>2</sub> ZnGeSe <sub>4</sub> . <i>Applied Physics Letters</i> , <b>2018</b> , 113, 093901  | 3.4 | 19 |
| 69 | Perovskite Color Detectors: Approaching the Efficiency Limit. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2020</b> , 12, 47831-47839  | 9.5 | 18 |
| 68 | Determination and interpretation of the optical constants for solar cell materials. <i>Applied Surface Science</i> , <b>2017</b> , 421, 276-282  | 6.7 | 17 |
| 67 | Application of real time spectroscopic ellipsometry for high resolution depth profiling of compositionally graded amorphous silicon alloy thin films. <i>Applied Physics Letters</i> , <b>1997</b> , 70, 2150-2152                       | 3.4 | 17 |
| 66 | Ellipsometry characterization of polycrystalline ZnO layers with the modeling of carrier concentration gradient: Effects of grain boundary, humidity, and surface texture. <i>Journal of Applied Physics</i> , <b>2014</b> , 115, 133505 | 2.5 | 16 |
| 65 | Vertically Stacked Perovskite Detectors for Color Sensing and Color Vision. <i>Advanced Materials Interfaces</i> , <b>2020</b> , 7, 2000459  | 4.6 | 15 |
| 64 | Optical emission spectroscopy of atmospheric pressure microwave plasmas. <i>Journal of Applied Physics</i> , <b>2008</b> , 104, 054908   | 2.5 | 14 |
| 63 | Improved transport and photostability of poly(methoxy-ethylexyloxy-phenylenevinylene) polymer thin films by boron doped freestanding silicon nanocrystals. <i>Applied Physics Letters</i> , <b>2008</b> , 92, 143301                     | 3.4 | 14 |
| 62 | Ellipsometry characterization of a-Si:H layers for thin-film solar cells. <i>Journal of Non-Crystalline Solids</i> , <b>2012</b> , 358, 2257-2259  | 3.9 | 13 |

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| 61 | Crystalline Si Heterojunction Solar Cells with the Double Heterostructure of Hydrogenated Amorphous Silicon Oxide. <i>Japanese Journal of Applied Physics</i> , <b>2009</b> , 48, 064506  | 1.4 | 13 |
| 60 | Principles of Spectroscopic Ellipsometry81-146  |     | 13 |
| 59 | Real-time characterization of free-carrier absorption during epitaxial Si p-layer growth. <i>Applied Physics Letters</i> , <b>2003</b> , 82, 1227-1229  | 3.4 | 12 |
| 58 | Real time spectroscopic ellipsometry characterization of structural and thermal equilibration of amorphous silicon-carbon alloy p layers in p-i-n solar cell fabrication. <i>Journal of Applied Physics</i> , <b>1998</b> , 84, 2278-2286                           | 2.5 | 12 |
| 57 | Maximum Efficiencies and Performance-Limiting Factors of Inorganic and Hybrid Perovskite Solar Cells. <i>Physical Review Applied</i> , <b>2019</b> , 12,  | 4.3 | 11 |
| 56 | Network structure of a-SiO:H layers fabricated by plasma-enhanced chemical vapor deposition: Comparison with a-SiC:H layers. <i>Journal of Non-Crystalline Solids</i> , <b>2016</b> , 440, 49-58  | 3.9 | 11 |
| 55 | Characterization of $\mu$ -Si:H/a-Si:H tandem solar cell structures by spectroscopic ellipsometry. <i>Thin Solid Films</i> , <b>2014</b> , 571, 756-761   | 2.2 | 11 |
| 54 | Optical characterization of textured SnO <sub>2</sub> :F layers using spectroscopic ellipsometry. <i>Journal of Applied Physics</i> , <b>2012</b> , 112, 083507   | 2.5 | 11 |
| 53 | Ellipsometry Characterization of Hydrogenated Amorphous Silicon Layers Formed on Textured Crystalline Silicon Substrates. <i>Applied Physics Express</i> , <b>2010</b> , 3, 116604  | 2.4 | 11 |
| 52 | Characterization of textured SnO <sub>2</sub> :F layers by ellipsometry using glass-side illumination. <i>Thin Solid Films</i> , <b>2013</b> , 534, 149-154   | 2.2 | 10 |
| 51 | Breaking network connectivity leads to ultralow thermal conductivities in fully dense amorphous solids. <i>Applied Physics Letters</i> , <b>2016</b> , 109, 191905  | 3.4 | 10 |
| 50 | Optimization of amorphous semiconductors and low-/high-k dielectrics through percolation and topological constraint theory. <i>MRS Bulletin</i> , <b>2017</b> , 42, 39-44   | 3.2 | 9  |
| 49 | Nondestructive characterization of textured a-Si:H/c-Si heterojunction solar cell structures with nanometer-scale a-Si:H and In <sub>2</sub> O <sub>3</sub> :Sn layers by spectroscopic ellipsometry. <i>Journal of Applied Physics</i> , <b>2013</b> , 114, 043101 | 2.5 | 9  |
| 48 | Luminescent properties of doped freestanding silicon nanocrystals embedded in MEH-PPV. <i>Solar Energy Materials and Solar Cells</i> , <b>2009</b> , 93, 774-778  | 6.4 | 9  |
| 47 | Fast determination of the current loss mechanisms in textured crystalline Si-based solar cells. <i>Journal of Applied Physics</i> , <b>2017</b> , 122, 203101   | 2.5 | 8  |
| 46 | Real-time studies of amorphous and microcrystalline Si:H growth by spectroscopic ellipsometry and infrared spectroscopy. <i>Thin Solid Films</i> , <b>2004</b> , 455-456, 670-674   | 2.2 | 8  |
| 45 | Analysis of contamination, hydrogen emission, and surface temperature variations using real time spectroscopic ellipsometry during p/i interface formation in amorphous silicon p-i-n solar cells. <i>Applied Physics Letters</i> , <b>1999</b> , 74, 3687-3689     | 3.4 | 8  |
| 44 | Characterization of a-Si:H thin layers incorporated into textured a-Si:H/c-Si solar cell structures by spectroscopic ellipsometry using a tilt-angle optical configuration. <i>Thin Solid Films</i> , <b>2014</b> , 569, 64-69                                      | 2.2 | 7  |

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| 43 | Local network structure of a-SiC:H and its correlation with dielectric function. <i>Journal of Applied Physics</i> , <b>2013</b> , 114, 233513  | 2.5 | 7 |
| 42 | Understanding of Passivation Mechanism in Heterojunction c-Si Solar Cells. <i>Materials Research Society Symposia Proceedings</i> , <b>2008</b> , 1066, 1   |     | 7 |
| 41 | Ellipsometry analysis of a-Si:H solar cell structures with submicron-size textures using glass-side illumination. <i>Thin Solid Films</i> , <b>2014</b> , 565, 222-227  | 2.2 | 6 |
| 40 | Growth of hydrogenated amorphous silicon and its alloys. <i>Current Opinion in Solid State and Materials Science</i> , <b>1997</b> , 2, 417-424   | 12  | 6 |
| 39 | Impact of annealing on passivation of a-Si:H / c-Si heterostructures. <i>Conference Record of the IEEE Photovoltaic Specialists Conference</i> , <b>2008</b> ,  |     | 6 |
| 38 | Mapping Characterization of SnO <sub>2</sub> :F Transparent Conductive Oxide Layers by Ellipsometry Technique. <i>Japanese Journal of Applied Physics</i> , <b>2012</b> , 51, 10NB01  | 1.4 | 6 |
| 37 | Mapping Characterization of SnO <sub>2</sub> :F Transparent Conductive Oxide Layers by Ellipsometry Technique. <i>Japanese Journal of Applied Physics</i> , <b>2012</b> , 51, 10NB01  | 1.4 | 5 |
| 36 | Effect of Strained Si-Si Bonds in Amorphous Silicon Incubation Layer on Microcrystalline Silicon Nucleation. <i>Materials Research Society Symposia Proceedings</i> , <b>2001</b> , 664, 121  |     | 5 |
| 35 | Interface Structure in a-Si:H/c-Si Heterojunction Solar Cells Characterized by Optical Diagnosis Technique <b>2006</b> ,  |     | 4 |
| 34 | Light-Induced Conductivity Enhancement in Boron-Doped Zinc Oxide Thin Films Deposited by Low-Pressure Chemical Vapor Deposition. <i>Applied Physics Express</i> , <b>2012</b> , 5, 085802   | 2.4 | 3 |
| 33 | Real-time observation of the energy band diagram during microcrystalline silicon p-n interface formation. <i>Applied Physics Letters</i> , <b>2003</b> , 83, 4348-4350  | 3-4 | 3 |
| 32 | Data Analysis Examples 249-310  |     | 2 |
| 31 | Application of Spectroscopic Ellipsometry and Infrared Spectroscopy for the Real-Time Control and Characterization of a-Si:H Growth in a-Si:H/c-Si Heterojunction Solar Cells. <i>Materials Research Society Symposia Proceedings</i> , <b>2005</b> , 862, 1411 |     | 2 |
| 30 | Ellipsometry <b>2009</b> ,  |     | 2 |
| 29 | Effect of Roughness on Ellipsometry Analysis. <i>Springer Series in Optical Sciences</i> , <b>2018</b> , 155-172  | 0.5 | 2 |
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| 27 | Ultrafast deposition of microcrystalline silicon films using high-density microwave plasma. <i>Solar Energy Materials and Solar Cells</i> , <b>2009</b> , 93, 812-815   | 6.4 | 1 |
| 26 | Evolution of Film Crystalline Structure During the Ultrafast Deposition of Crystalline Si Films. <i>Materials Research Society Symposia Proceedings</i> , <b>2008</b> , 1066, 1   |     | 1 |

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| 25 | Very high oscillator strength in the band-edge light absorption of zincblende, chalcopyrite, kesterite, and hybrid perovskite solar cell materials. <i>Physical Review Materials</i> , <b>2020</b> , 4, | 3.2 | 1 |
| 24 | Operational Principles of Hybrid Perovskite Solar Cells <b>2021</b> , 275-308   |     | 1 |
| 23 | Organic-Inorganic Hybrid Perovskite Solar Cells. <i>Springer Series in Optical Sciences</i> , <b>2018</b> , 463-507   | 0.5 | 1 |
| 22 | Transparent Conductive Oxide Materials. <i>Springer Series in Optical Sciences</i> , <b>2018</b> , 523-563  | 0.5 | 1 |
| 21 | Organic-Inorganic Hybrid Perovskites. <i>Springer Series in Optical Sciences</i> , <b>2018</b> , 471-493  | 0.5 | 1 |
| 20 | Substrates and Coating Layers. <i>Springer Series in Optical Sciences</i> , <b>2018</b> , 575-608   | 0.5 | 1 |
| 19 | Inorganic Semiconductors and Passivation Layers. <i>Springer Series in Optical Sciences</i> , <b>2018</b> , 319-426   | 0.5 | 1 |
| 18 | Band-Gap-Engineered Transparent Perovskite Solar Modules to Combine Photovoltaics with Photosynthesis. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2021</b> , 13, 39230-39238                    | 9.5 | 1 |
| 17 | Appendix B: Numerical Values of Shockley-Queisser Limit <b>2021</b> , 563-565   |     | 0 |
| 16 | Fully automated spectroscopic ellipsometry analyses: Application to MoOx thin films. <i>Journal of Applied Physics</i> , <b>2021</b> , 129, 243102  | 2.5 | 0 |
| 15 | Optical Properties <b>2021</b> , 91-121   |     |   |
| 14 | Roles of Center Cations <b>2021</b> , 253-273   |     |   |
| 13 | Carrier Transport Properties <b>2021</b> , 151-171  |     |   |
| 12 | Appendix A: Optical Constants of Hybrid Perovskite Materials <b>2021</b> , 541-562  |     |   |
| 11 | Crystal Structures <b>2021</b> , 65-90  |     |   |
| 10 | Physical Properties Determined by Density Functional Theory <b>2021</b> , 123-149   |     |   |
| 9  | Photoluminescence Properties <b>2021</b> , 207-228  |     |   |
| 8  | Efficiency Limits of Single and Tandem Solar Cells <b>2021</b> , 309-337  |     |   |

7 Ellipsometry **2017**, 705-724

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