# Hairen Tan

List of Publications by Year
in descending order

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|---|---|---|---|
| 103 papers | 15,118 citations | 41258 49 h-index | 37111 96 g-index |
| 104 all docs | 104 docs citations | 104 times ranked | 14579 citing authors |

| # | Article | IF | Citations |
|---|---|---|---|
| 1 | Efficient and stable solution-processed planar perovskite solar cells via contact passivation. Science, 2017, 355, 722-726. | 6.0 | 2,019 |
| 2 | Challenges for commercializing perovskite solar cells. Science, 2018, 361, . | 6.0 | 1,327 |
| 3 | Monolithic all-perovskite tandem solar cells with 24.8% efficiency exploiting comproportionation to suppress Sn(ii) oxidation in precursor ink. Nature Energy, 2019, 4, 864-873. | 19.8 | 736 |
| 4 | Ultra-bright and highly efficient inorganic based perovskite light-emitting diodes. Nature Communications, 2017, 8, 15640. | 5.8 | 669 |
| 5 | Suppression of atomic vacancies via incorporation of isovalent small ions to increase the stability of halide perovskite solar cells in ambient air. Nature Energy, 2018, 3, 648-654. | 19.8 | 552 |
| 6 | All-perovskite tandem solar cells with improved grain surface passivation. Nature, 2022, 603, 73-78. | 13.7 | 544 |
| 7 | Color-stable highly luminescent sky-blue perovskite light-emitting diodes. Nature Communications, 2018, 9, 3541. | 5.8 | 536 |
| 8 | All-perovskite tandem solar cells with 24.2% certified efficiency and area over 1â€‰cm2 using surface-anchoring zwitterionic antioxidant. Nature Energy, 2020, 5, 870-880. | 19.8 | 497 |
| 9 | Thermal unequilibrium of strained black CsPbI <sub>3</sub> thin films. Science, 2019, 365, 679-684. | 6.0 | 444 |
| 10 | Tailoring the Energy Landscape in Quasi-2D Halide Perovskites Enables Efficient Green-Light Emission. Nano Letters, 2017, 17, 3701-3709. | 4.5 | 409 |
| 11 | Plasmonic Light Trapping in Thin-film Silicon Solar Cells with Improved Self-Assembled Silver Nanoparticles. Nano Letters, 2012, 12, 4070-4076. | 4.5 | 395 |
| 12 | Copper nanocavities confine intermediates for efficient electrosynthesis of C3 alcohol fuels from carbon monoxide. Nature Catalysis, 2018, 1, 946-951. | 16.1 | 354 |
| 13 | Plasmonic Polymer Tandem Solar Cell. ACS Nano, 2011, 5, 6210-6217. | 7.3 | 326 |
| 14 | Simultaneous Contact and Grainâ€Boundary Passivation in Planar Perovskite Solar Cells Using SnO<sub>2</sub>â€KCl Composite Electron Transport Layer. Advanced Energy Materials, 2020, 10, 1903083. | 10.2 | 323 |
| 15 | 10.6% Certified Colloidal Quantum Dot Solar Cells via Solvent-Polarity-Engineered Halide Passivation. Nano Letters, 2016, 16, 4630-4634. | 4.5 | 312 |
| 16 | Perovskite seeding growth of formamidinium-lead-iodide-based perovskites for efficient and stable solar cells. Nature Communications, 2018, 9, 1607. | 5.8 | 309 |
| 17 | Synthetic Control over Quantum Well Width Distribution and Carrier Migration in Low-Dimensional Perovskite Photovoltaics. Journal of the American Chemical Society, 2018, 140, 2890-2896. | 6.6 | 288 |
| 18 | Copper-on-nitride enhances the stable electrosynthesis of multi-carbon products from CO2. Nature Communications, 2018, 9, 3828. | 5.8 | 279 |

| # | Article | IF | Citations |
|---|---|---|---|
| 19 | 2D matrix engineering for homogeneous quantum dot coupling in photovoltaic solids. Nature Nanotechnology, 2018, 13, 456-462. | 15.6 | 252 |
| 20 | The Main Progress of Perovskite Solar Cells in 2020â€“2021. Nano-Micro Letters, 2021, 13, 152. | 14.4 | 250 |
| 21 | Dipolar cations confer defect tolerance in wide-bandgap metal halide perovskites. Nature Communications, 2018, 9, 3100. | 5.8 | 237 |
| 22 | Lattice anchoring stabilizes solution-processed semiconductors. Nature, 2019, 570, 96-101. | 13.7 | 208 |
| 23 | Tin and Mixed Leadâ€“Tin Halide Perovskite Solar Cells: Progress and their Application in Tandem Solar Cells. Advanced Materials, 2020, 32, e1907392. | 11.1 | 203 |
| 24 | Flexible all-perovskite tandem solar cells approaching 25% efficiency with molecule-bridged hole-selective contact. Nature Energy, 2022, 7, 708-717. | 19.8 | 171 |
| 25 | Ultrasensitive and stable X-ray detection using zero-dimensional lead-free perovskites. Journal of Energy Chemistry, 2020, 49, 299-306. | 7.1 | 148 |
| 26 | Combining Efficiency and Stability in Mixed Tinâ€“Lead Perovskite Solar Cells by Capping Grains with an Ultrathin 2D Layer. Advanced Materials, 2020, 32, e1907058. | 11.1 | 148 |
| 27 | Edge stabilization in reduced-dimensional perovskites. Nature Communications, 2020, 11, 170. | 5.8 | 147 |
| 28 | In Situ Backâ€Contact Passivation Improves Photovoltage and Fill Factor in Perovskite Solar Cells. Advanced Materials, 2019, 31, e1807435. | 11.1 | 143 |
| 29 | Chemically Addressable Perovskite Nanocrystals for Lightâ€Emitting Applications. Advanced Materials, 2017, 29, 1701153. | 11.1 | 139 |
| 30 | Suppressed Ion Migration in Reduced-Dimensional Perovskites Improves Operating Stability. ACS Energy Letters, 2019, 4, 1521-1527. | 8.8 | 130 |
| 31 | Scalable processing for realizing 21.7%-efficient all-perovskite tandem solar modules. Science, 2022, 376, 762-767. | 6.0 | 127 |
| 32 | Mobile-Ion-Induced Degradation of Organic Hole-Selective Layers in Perovskite Solar Cells. Journal of Physical Chemistry C, 2017, 121, 14517-14523. | 1.5 | 117 |
| 33 | CsPb(I Br1â^')3 solar cells. Science Bulletin, 2019, 64, 1532-1539. | 4.3 | 114 |
| 34 | Photo-oxidative degradation of methylammonium lead iodide perovskite: mechanism and protection. Journal of Materials Chemistry A, 2019, 7, 2275-2282. | 5.2 | 105 |
| 35 | Synergistic Tandem Solar Electricity-Water Generators. Joule, 2020, 4, 347-358. | 11.7 | 91 |
| 36 | Perovskite-based tandem solar cells. Science Bulletin, 2021, 66, 621-636. | 4.3 | 91 |

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| 37 | Amideâ€Catalyzed Phaseâ€Selective Crystallization Reduces Defect Density in Wideâ€Bandgap Perovskites. Advanced Materials, 2018, 30, e1706275. | 11.1 | 80 |
| 38 | Pseudohalideâ€Exchanged Quantum Dot Solids Achieve Record Quantum Efficiency in Infrared Photovoltaics. Advanced Materials, 2017, 29, 1700749. | 11.1 | 79 |
| 39 | Improved electroluminescence from n-ZnO/AlN/p-GaN heterojunction light-emitting diodes. Applied Physics Letters, 2010, 96, 201102. | 1.5 | 77 |
| 40 | A 2.16ÂeV bandgap polymer donor gives 16% power conversion efficiency. Science Bulletin, 2020, 65, 179-181. | 4.3 | 75 |
| 41 | Electroluminescence behavior of ZnO/Si heterojunctions: Energy band alignment and interfacial microstructure. Journal of Applied Physics, 2010, 107, . | 1.1 | 73 |
| 42 | Wide bandgap p-type nanocrystalline silicon oxide as window layer for high performance thin-film silicon multi-junction solar cells. Solar Energy Materials and Solar Cells, 2015, 132, 597-605. | 3.0 | 71 |
| 43 | Solution-Processed Monolithic All-Perovskite Triple-Junction Solar Cells with Efficiency Exceeding 20%. ACS Energy Letters, 2020, 5, 2819-2826. | 8.8 | 69 |
| 44 | Low-temperature processed inorganic hole transport layer for efficient and stable mixed Pb-Sn low-bandgap perovskite solar cells. Science Bulletin, 2019, 64, 1399-1401. | 4.3 | 66 |
| 45 | Efficient and Stable Thinâ€Film Luminescent Solar Concentrators Enabled by Nearâ€Infrared Emission Perovskite Nanocrystals. Angewandte Chemie - International Edition, 2020, 59, 7738-7742. | 7.2 | 64 |
| 46 | Micro-textures for efficient light trapping and improved electrical performance in thin-film nanocrystalline silicon solar cells. Applied Physics Letters, 2013, 103, . | 1.5 | 63 |
| 47 | Improved light trapping in microcrystalline silicon solar cells by plasmonic back reflector with broad angular scattering and low parasitic absorption. Applied Physics Letters, 2013, 102, . | 1.5 | 58 |
| 48 | Multibandgap quantum dot ensembles for solar-matched infrared energy harvesting. Nature Communications, 2018, 9, 4003. | 5.8 | 56 |
| 49 | Anchored Ligands Facilitate Efficient B-Site Doping in Metal Halide Perovskites. Journal of the American Chemical Society, 2019, 141, 8296-8305. | 6.6 | 53 |
| 50 | Modeling and analyses of energy performances of photovoltaic greenhouses with sun-tracking functionality. Applied Energy, 2019, 233-234, 424-442. | 5.1 | 53 |
| 51 | Steric Engineering Enables Efficient and Photostable Wideâ€Bandgap Perovskites for Allâ€Perovskite Tandem Solar Cells. Advanced Materials, 2022, 34, e2110356. | 11.1 | 48 |
| 52 | Highly transparent modulated surface textured front electrodes for highâ€efficiency multijunction thinâ€film silicon solar cells. Progress in Photovoltaics: Research and Applications, 2015, 23, 949-963. | 4.4 | 46 |
| 53 | Nanoimprint-Transfer-Patterned Solids Enhance Light Absorption in Colloidal Quantum Dot Solar Cells. Nano Letters, 2017, 17, 2349-2353. | 4.5 | 46 |
| 54 | Quadruple-junction thin-film silicon-based solar cells with high open-circuit voltage. Applied Physics Letters, 2014, 105, 063902. | 1.5 | 44 |

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| 55 | Controllable Growth of Highly Ordered ZnO Nanorod Arrays via Inverted Self-Assembled Monolayer Template. ACS Applied Materials & Interfaces, 2011, 3, 4388-4395. | 4.0 | 43 |
| 56 | Electrical transport properties of the Si-doped cubic boron nitride thin films prepared by in situ cosputtering. Journal of Applied Physics, 2011, 109, 023716. | 1.1 | 43 |
| 57 | Precise Control of Thermal and Redox Properties of Organic Holeâ€Transport Materials. Angewandte Chemie - International Edition, 2018, 57, 15529-15533. | 7.2 | 41 |
| 58 | A thin-film silicon based photocathode with a hydrogen doped TiO<sub>2</sub> protection layer for solar hydrogen evolution. Journal of Materials Chemistry A, 2016, 4, 16841-16848. | 5.2 | 38 |
| 59 | An Ultraâ€low Concentration of Gold Nanoparticles Embedded in the NiO Hole Transport Layer Boosts the Performance of pâ€iâ€n Perovskite Solar Cells. Solar Rrl, 2019, 3, 1800278. | 3.1 | 38 |
| 60 | Highly Efficient Hybrid Polymer and Amorphous Silicon Multijunction Solar Cells with Effective Optical Management. Advanced Materials, 2016, 28, 2170-2177. | 11.1 | 36 |
| 61 | A photovoltaic window with sun-tracking shading elements towards maximum power generation and non-glare daylighting. Applied Energy, 2018, 228, 1454-1472. | 5.1 | 34 |
| 62 | Dual Coordination of Ti and Pb Using Bilinkable Ligands Improves Perovskite Solar Cell Performance and Stability. Advanced Functional Materials, 2020, 30, 2005155. | 7.8 | 33 |
| 63 | Decarboxylative tandem C-N coupling with nitroarenes via SH2 mechanism. Nature Communications, 2022, 13, 2432. | 5.8 | 32 |
| 64 | Simultaneously enhanced moisture tolerance and defect passivation of perovskite solar cells with cross-linked grain encapsulation. Journal of Energy Chemistry, 2021, 56, 455-462. | 7.1 | 31 |
| 65 | Plasmonic Nanoparticle Films for Solar Cell Applications Fabricated by Size-selective Aerosol Deposition. Energy Procedia, 2014, 60, 3-12. | 1.8 | 29 |
| 66 | Compound Homojunction:Heterojunction Reduces Bulk and Interface Recombination in ZnO Photoanodes for Water Splitting. Small, 2017, 13, 1603527. | 5.2 | 29 |
| 67 | Plasmon enhanced polymer solar cells by spin-coating Au nanoparticles on indium-tin-oxide substrate. Applied Physics Letters, 2012, 101, 133903. | 1.5 | 27 |
| 68 | Optical Resonance Engineering for Infrared Colloidal Quantum Dot Photovoltaics. ACS Energy Letters, 2016, 1, 852-857. | 8.8 | 27 |
| 69 | Combined Optical and Electrical Design of Plasmonic Back Reflector for High-Efficiency Thin-Film Silicon Solar Cells. IEEE Journal of Photovoltaics, 2013, 3, 53-58. | 1.5 | 25 |
| 70 | Enhancing the driving field for plasmonic nanoparticles in thin-film solar cells. Optics Express, 2014, 22, A1023. | 1.7 | 24 |
| 71 | Thermally Stable Allâ€Perovskite Tandem Solar Cells Fully Using Metal Oxide Charge Transport Layers and Tunnel Junction. Solar Rrl, 2021, 5, 2100814. | 3.1 | 24 |
| 72 | Modulated surface textured glass as substrate for high efficiency microcrystalline silicon solar cells. Solar Energy Materials and Solar Cells, 2015, 133, 156-162. | 3.0 | 23 |

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| 73 | Cross-linked hole transport layers for high-efficiency perovskite tandem solar cells. Science China Chemistry, 2021, 64, 2025-2034. | 4.2 | 23 |
| 74 | High pressure processing of hydrogenated amorphous silicon solar cells: Relation between nanostructure and high open-circuit voltage. Applied Physics Letters, 2015, 106, . | 1.5 | 21 |
| 75 | Toward stable and efficient Sn-containing perovskite solar cells. Science Bulletin, 2020, 65, 786-790. | 4.3 | 21 |
| 76 | Recent progress in developing efficient monolithic all-perovskite tandem solar cells. Journal of Semiconductors, 2020, 41, 051201. | 2.0 | 19 |
| 77 | A thin-film silicon/silicon hetero-junction hybrid solar cell for photoelectrochemical water-reduction applications. Solar Energy Materials and Solar Cells, 2016, 150, 82-87. | 3.0 | 17 |
| 78 | Record Photocurrent Density over 26â€‰mAâ€‰cm â^'2 in Planar Perovskite Solar Cells Enabled by Antireflective Cascaded Electron Transport Layer. Solar Rrl, 2020, 4, 2000169. | 3.1 | 17 |
| 79 | Highly conductive Al-doped tetra-needle-like ZnO whiskers prepared by a solid state method. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 2008, 150, 203-207. | 1.7 | 15 |
| 80 | Precise Control of Thermal and Redox Properties of Organic Holeâ€Transport Materials. Angewandte Chemie, 2018, 130, 15755-15759. | 1.6 | 15 |
| 81 | Electrical bistability and negative differential resistance in diodes based on silver nanoparticle-poly(N-vinylcarbazole) composites. Journal of Applied Physics, 2010, 108, 094320. | 1.1 | 13 |
| 82 | Comparison and combination of several stress relief methods for cubic boron nitride films deposited by ion beam assisted deposition. Surface and Coatings Technology, 2009, 203, 1452-1456. | 2.2 | 12 |
| 83 | Effects of silicon incorporation on composition, structure and electric conductivity of cubic boron nitride thin films. Diamond and Related Materials, 2010, 19, 1371-1376. | 1.8 | 12 |
| 84 | Efficient and Stable Wideâ€Bandgap Perovskite Solar Cells Derived from a Thermodynamic Phaseâ€Pure Intermediate. Solar Rrl, 2022, 6, . | 3.1 | 11 |
| 85 | Identification of the physical origin behind disorder, heterogeneity, and reconstruction and their correlation with the photoluminescence lifetime in hybrid perovskite thin films. Journal of Materials Chemistry A, 2017, 5, 21002-21015. | 5.2 | 10 |
| 86 | Performance improvement of conjugated polymer and ZnO hybrid solar cells using nickel oxide as anode buffer layer. Physica Status Solidi (A) Applications and Materials Science, 2011, 208, 2865-2870. | 0.8 | 9 |
| 87 | Polymerâ€Supported Liquid Layer Electrolyzer Enabled Electrochemical CO<sub>2</sub> Reduction to CO with High Energy Efficiency. ChemistryOpen, 2021, 10, 639-644. | 0.9 | 9 |
| 88 | Chemical Stability and Performance of Doped Silicon Oxide Layers for Use in Thin-Film Silicon Solar Cells. IEEE Journal of Photovoltaics, 2019, 9, 3-11. | 1.5 | 8 |
| 89 | Conductive layer protected and oxide catalyst-coated thin-film silicon solar cell as an efficient photoanode. Catalysis Science and Technology, 2017, 7, 5608-5613. | 2.1 | 7 |
| 90 | Cesium acetate-assisted crystallization for high-performance inverted CsPbI<sub>3</sub> perovskite solar cells. Nanotechnology, 2022, 33, 375205. | 1.3 | 7 |

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| 91 | Quadrupleâ€Junction Thinâ€Film Silicon Solar Cells Using Four Different Absorber Materials. Solar Rrl, 2017, 1, 1700036. | 3.1 | 6 |
| 92 | Efficient and Stable Thinâ€Film Luminescent Solar Concentrators Enabled by Nearâ€Infrared Emission Perovskite Nanocrystals. Angewandte Chemie, 2020, 132, 7812-7816. | 1.6 | 6 |
| 93 | Plasmonic Solar Cells with Embedded Silver Nanoparticles from Vapor Condensation. Materials Research Society Symposia Proceedings, 2012, 1391, 52. | 0.1 | 4 |
| 94 | Polystyrene-Microsphere-Assisted Patterning of ZnO Nanostructures: Growth and Characterization. Journal of Nanoscience and Nanotechnology, 2013, 13, 1101-1105. | 0.9 | 4 |
| 95 | Combining Efficiency and Stability in Mixed Tin-Lead Perovskite Solar Cells by Capping Grains with an Ultra-thin 2D layer. , 2020, , . | | 4 |
| 96 | Towards Lambertian internal light scattering in solar cells using coupled plasmonic and dielectric nanoparticles as back reflector. , 2013, , . | | 3 |
| 97 | Vapor treatment enables efficient and stable FAPbI3 perovskite solar cells. Science China Chemistry, 2021, 64, 5-6. | 4.2 | 3 |
| 98 | Photonics for enhanced perovskite optoelectronics. Nanophotonics, 2021, 10, 1941-1942. | 2.9 | 3 |
| 99 | Enhancement of ZnO ultraviolet emission by surface plasmon coupling using a rough NiSi2layer synthesized by ion implantation. Journal of Semiconductors, 2011, 32, 102002. | 2.0 | 0 |
| 100 | Combined optical and electrical design of plasmonic back reflector for high-efficiency thin-film silicon solar cells. , 2012, , . | | 0 |
| 101 | Combined optical and electrical design of plasmonic back reflector for high-efficiency thin-film silicon solar cells. , 2013, , . | | 0 |
| 102 | Chemical stability and performance of doped silicon oxide layers for use in thin film silicon solar cells. , 2018, , . | | 0 |
| 103 | Efficient, stable and scalable all-perovskite tandem solar cells. , 0, , . | | 0 |