Juan-Pablo Correa-Baena

List of Publications by Year
in descending order

107 papers	28,721 citations	22153 59 h-index	33894 99 g-index
111 all docs	111 docs citations	111 times ranked	18522 citing authors

#	Article	IF	Citations
1	The Role of Dimensionality on the Optoelectronic Properties of Oxide and Halide Perovskites, and their Halide Derivatives. Advanced Energy Materials, 2022, 12, 2100499.	19.5	66
2	Understanding the impact of SrI2 additive on the properties of Sn-based halide perovskites. Optical Materials, 2022, 123, 111806.	3.6	3
3	PbI₂ Nanocrystal Growth by Atomic Layer Deposition from Pb(tmhd)₂ and HI. Chemistry of Materials, 2022, 34, 2553-2561.	6.7	2
4	An open-access database and analysis tool for perovskite solar cells based on the FAIR data principles. Nature Energy, 2022, 7, 107-115.	39.5	136
5	Formation of a Secondary Phase in Thermally Evaporated MAPbI₃ and Its Effects on Solar Cell Performance. ACS Applied Materials & Interfaces, 2022, 14, 34269-34280.	8.0	5
6	Effects of Alkaline Earth Metal Additives on Methylammoniumâ€Free Lead Halide Perovskite Thin Films and Solar Cells. Solar Rrl, 2022, 6, .	5.8	2
7	Polymers and interfacial modifiers for durable perovskite solar cells: a review. Journal of Materials Chemistry C, 2021, 9, 12509-12522.	5.5	18
8	Enhanced charge carrier lifetime and mobility as a result of Rb and Cs incorporation in hybrid perovskite. Applied Physics Letters, 2021, 118, .	3.3	12
9	Efficient perovskite solar cells via improved carrier management. Nature, 2021, 590, 587-593.	27.8	1,972
10	Recycling and recovery of perovskite solar cells. Materials Today, 2021, 43, 185-197.	14.2	58
11	Bulky Cations Improve Band Alignment and Efficiency in Snâ€"Pb Halide Perovskite Solar Cells. ACS Applied Energy Materials, 2021, 4, 2616-2628.	5.1	11
12	In data science we trust: Machine learning for stable halide perovskites. Matter, 2021, 4, 1092-1094.	10.0	5
13	Structural Stability of Formamidinium- and Cesium-Based Halide Perovskites. ACS Energy Letters, 2021, 6, 1942-1969.	17.4	76
14	Pressing challenges in halide perovskite photovoltaicsâ€"from the atomic to module level. Joule, 2021, 5, 1024-1030.	24.0	23
15	Identifying high-performance and durable methylammonium-free lead halide perovskites <i>via</i> high-throughput synthesis and characterization. Energy and Environmental Science, 2021, 14, 6638-6654.	30.8	20
16	Perovskite PV-Powered RFID: Enabling Low-Cost Self-Powered IoT Sensors. IEEE Sensors Journal, 2020, 20, 471-478.	4.7	46
17	The Doping Mechanism of Halide Perovskite Unveiled by Alkaline Earth Metals. Journal of the American Chemical Society, 2020, 142, 2364-2374.	13.7	132
18	Moisture-Induced Crystallographic Reorientations and Effects on Charge Carrier Extraction in Metal Halide Perovskite Solar Cells. ACS Energy Letters, 2020, 5, 3526-3534.	17.4	30

#	Article	IF	Citations
19	Protecting hot carriers by tuning hybrid perovskite structures with alkali cations. Science Advances, 2020, 6, .	10.3	54
20	Quantitative Specifications to Avoid Degradation during E-Beam and Induced Current Microscopy of Halide Perovskite Devices. Journal of Physical Chemistry C, 2020, 124, 18961-18967.	3.1	4
21	The role of carbon-based materials in enhancing the stability of perovskite solar cells. Energy and Environmental Science, 2020, 13, 1377-1407.	30.8	149
22	Impacts of the Hole Transport Layer Deposition Process on Buried Interfaces in Perovskite Solar Cells. Cell Reports Physical Science, 2020, 1, 100103.	5.6	17
23	Snapshots of Lifeâ€”Early Career Materials Scientists Managing in the Midst of a Pandemic. Chemistry of Materials, 2020, 32, 3673-3677.	6.7	5
24	Selfâ€Powered Sensors Enabled by Wideâ€Bandgap Perovskite Indoor Photovoltaic Cells. Advanced Functional Materials, 2019, 29, 1904072.	14.9	83
25	The effect of structural dimensionality on carrier mobility in lead-halide perovskites. Journal of Materials Chemistry A, 2019, 7, 23949-23957.	10.3	38
26	Imaging and Mapping Characterization Tools for Perovskite Solar Cells. Advanced Energy Materials, 2019, 9, 1900444.	19.5	44
27	The Role of Grain Boundaries in Perovskite Solar Cells. Advanced Energy Materials, 2019, 9, 1901489.	19.5	202
28	Correction to â€œHow to Make over 20% Efficient Perovskite Solar Cells in Regular (<i>n</i>â€“<i>i</i>â€“<i>p</i>) and Inverted (<i>p</i>â€“<i>i</i>â€“<i>n</i>) Architecturesâ€ Chemistry of Materials, 2019, 31, 8576-8576.	6.7	3
29	Accelerated Development of Perovskite-Inspired Materials via High-Throughput Synthesis and Machine-Learning Diagnosis. Joule, 2019, 3, 1437-1451.	24.0	187
30	Triplet Sensitization by Lead Halide Perovskite Thin Films for Efficient Solid-State Photon Upconversion at Subsolar Fluxes. Matter, 2019, 1, 705-719.	10.0	84
31	An interface stabilized perovskite solar cell with high stabilized efficiency and low voltage loss. Energy and Environmental Science, 2019, 12, 2192-2199.	30.8	542
32	Halide Heterogeneity Affects Local Charge Carrier Dynamics in Mixed-Ion Lead Perovskite Thin Films. Chemistry of Materials, 2019, 31, 3712-3721.	6.7	27
33	Triplet-Sensitization by Lead Halide Perovskite Thin Films for Near-Infrared-to-Visible Upconversion. ACS Energy Letters, 2019, 4, 888-895.	17.4	117
34	How far does the defect tolerance of lead-halide perovskites range? The example of Bi impurities introducing efficient recombination centers. Journal of Materials Chemistry A, 2019, 7, 23838-23853.	10.3	57
35	The Bloom of Perovskite Optoelectronics: Fundamental Science Matters. ACS Energy Letters, 2019, 4, 861-865.	17.4	24
36	Phosphonic Acid Modification of the Electron Selective Contact: Interfacial Effects in Perovskite Solar Cells. ACS Applied Energy Materials, 2019, 2, 2402-2408.	5.1	23

#	Article	IF	Citations
37	Homogenized halides and alkali cation segregation in alloyed organic-inorganic perovskites. Science, 2019, 363, 627-631.	12.6	258
38	Halide Homogenization and Cation Segregation in High Performance Perovskite Solar Cells. , 2019, , .		0
39	Low-Temperature Nb-Doped SnO₂ Electron-Selective Contact Yields over 20% Efficiency in Planar Perovskite Solar Cells. ACS Energy Letters, 2018, 3, 773-778.	17.4	157
40	Planar Perovskite Solar Cells with High Openâ€Circuit Voltage Containing a Supramolecular Iron Complex as Hole Transport Material Dopant. ChemPhysChem, 2018, 19, 1363-1370.	2.1	17
41	Solubility and Diffusivity: Important Metrics in the Search for the Root Cause of Light- and Elevated Temperature-Induced Degradation. IEEE Journal of Photovoltaics, 2018, 8, 448-455.	2.5	23
42	Solvent-Engineering Method to Deposit Compact Bismuth-Based Thin Films: Mechanism and Application to Photovoltaics. Chemistry of Materials, 2018, 30, 336-343.	6.7	87
43	Distribution and Charge State of Iron Impurities in Intentionally Contaminated Lead Halide Perovskites. IEEE Journal of Photovoltaics, 2018, 8, 156-161.	2.5	8
44	Perowskitâ€Solarzellen: atomare Ebene, SchichtqualitÃt und LeistungsfÃhigkeit der Zellen. Angewandte Chemie, 2018, 130, 2582-2598.	2.0	37
45	Perovskite Solar Cells: From the Atomic Level to Film Quality and Device Performance. Angewandte Chemie - International Edition, 2018, 57, 2554-2569.	13.8	413
46	Interpretation and evolution of open-circuit voltage, recombination, ideality factor and subgap defect states during reversible light-soaking and irreversible degradation of perovskite solar cells. Energy and Environmental Science, 2018, 11, 151-165.	30.8	586
47	Perovskite Solar Cells: From the Laboratory to the Assembly Line. Chemistry - A European Journal, 2018, 24, 3083-3100.	3.3	118
48	Enhanced charge carrier mobility and lifetime suppress hysteresis and improve efficiency in planar perovskite solar cells. Energy and Environmental Science, 2018, 11, 78-86.	30.8	246
49	Precursor Concentration Affects Grain Size, Crystal Orientation, and Local Performance in Mixed-Ion Lead Perovskite Solar Cells. ACS Applied Energy Materials, 2018, 1, 6801-6808.	5.1	65
50	Solid-state infrared-to-visible upconversion for sub-bandgap sensitization of photovoltaics. , 2018, , .		5
51	Interplay of Grain Size, Crystal Orientation, and Performance in Mixedion Lead Halide Perovskite Films. , 2018, , .		4
52	<i>A</i>-Site Cation in Inorganic <i>A</i>₃Sb₂I₉ Perovskite Influences Structural Dimensionality, Exciton Binding Energy, and Solar Cell Performance. Chemistry of Materials, 2018, 30, 3734-3742.	6.7	134
53	Stateâ€ofâ€theâ€Art Electronâ€Selective Contacts in Perovskite Solar Cells. Advanced Materials Interfaces, 2018, 5, 1800408.	3.7	38
54	How to Make over 20% Efficient Perovskite Solar Cells in Regular (<i>nâ€“iâ€“p</i>) and Inverted (<i>pâ€“iâ€“n</i>) Architectures. Chemistry of Materials, 2018, 30, 4193-4201.	6.7	473

#	ARTICLE	IF	CITATIONS
55	Accelerating Materials Development via Automation, Machine Learning, and High-Performance Computing. Joule, 2018, 2, 1410-1420.	24.0	210
56	Migration of cations induces reversible performance losses over day/night cycling in perovskite solar cells. Energy and Environmental Science, 2017, 10, 604-613.	30.8	525
57	High Temperatureâ€Stable Perovskite Solar Cell Based on Lowâ€Cost Carbon Nanotube Hole Contact. Advanced Materials, 2017, 29, 1606398.	21.0	209
58	Changes from Bulk to Surface Recombination Mechanisms between Pristine and Cycled Perovskite Solar Cells. ACS Energy Letters, 2017, 2, 681-688.	17.4	122
59	The rapid evolution of highly efficient perovskite solar cells. Energy and Environmental Science, 2017, 10, 710-727.	30.8	942
60	Spontaneous crystal coalescence enables highly efficient perovskite solar cells. Nano Energy, 2017, 39, 24-29.	16.0	62
61	Monolithic CIGSâ€“Perovskite Tandem Cell for Optimal Light Harvesting without Current Matching. ACS Photonics, 2017, 4, 861-867.	6.6	27
62	Identifying and suppressing interfacial recombination to achieve high open-circuit voltage in perovskite solar cells. Energy and Environmental Science, 2017, 10, 1207-1212.	30.8	288
63	Chemical Distribution of Multiple Cation (Rb⁺, Cs⁺, MA⁺, and) Tj ETQq1 1 0.784314 rgBT /Ove 29, 3589-3596.	6.7	175
64	Improving the Carrier Lifetime of Tin Sulfide via Prediction and Mitigation of Harmful Point Defects. Journal of Physical Chemistry Letters, 2017, 8, 3661-3667.	4.6	22
65	Globularityâ€Selected Large Molecules for a New Generation of Multication Perovskites. Advanced Materials, 2017, 29, 1702005.	21.0	81
66	Valence Level Character in a Mixed Perovskite Material and Determination of the Valence Band Maximum from Photoelectron Spectroscopy: Variation with Photon Energy. Journal of Physical Chemistry C, 2017, 121, 26655-26666.	3.1	98
67	Promises and challenges of perovskite solar cells. Science, 2017, 358, 739-744.	12.6	1,510
68	High Tolerance to Iron Contamination in Lead Halide Perovskite Solar Cells. ACS Nano, 2017, 11, 7101-7109.	14.6	90
69	Constructive Effects of Alkyl Chains: A Strategy to Design Simple and Nonâ€Spiro Hole Transporting Materials for Highâ€Efficiency Mixedâ€Ion Perovskite Solar Cells. Advanced Energy Materials, 2016, 6, 1502536.	19.5	72
70	Unbroken Perovskite: Interplay of Morphology, Electroâ€optical Properties, and Ionic Movement. Advanced Materials, 2016, 28, 5031-5037.	21.0	242
71	Optical analysis of CH₃NH₃Sn_xPb_{1âˆ’x}I₃ absorbers: a roadmap for perovskite-on-perovskite tandem solar cells. Journal of Materials Chemistry A, 2016, 4, 11214-11221.	10.3	101
72	A New 1,3,4â€Oxadiazoleâ€Based Holeâ€Transport Material for Efficient CH₃NH₃PbBr₃ Perovskite Solar Cells. ChemSusChem, 2016, 9, 657-661.	6.8	31

#	Article	IF	Citations
73	Morphological Characterization of ALD and Doping Effects on Mesoporous SnO₂ Aerogels by XPS and Quantitative SEM Image Analysis. ACS Applied Materials & Interfaces, 2016, 8, 9849-9854.	8.0	6
74	Not All That Glitters Is Gold: Metal-Migration-Induced Degradation in Perovskite Solar Cells. ACS Nano, 2016, 10, 6306-6314.	14.6	966
75	Towards optical optimization of planar monolithic perovskite/silicon-heterojunction tandem solar cells. Journal of Optics (United Kingdom), 2016, 18, 064012.	2.2	82
76	Properties of Contact and Bulk Impedances in Hybrid Lead Halide Perovskite Solar Cells Including Inductive Loop Elements. Journal of Physical Chemistry C, 2016, 120, 8023-8032.	3.1	407
77	Room Temperature as a Goldilocks Environment for CH₃NH₃PbI₃ Perovskite Solar Cells: The Importance of Temperature on Device Performance. Journal of Physical Chemistry C, 2016, 120, 11382-11393.	3.1	58
78	Improving efficiency and stability of perovskite solar cells with photocurable fluoropolymers. Science, 2016, 354, 203-206.	12.6	748
79	Incorporation of rubidium cations into perovskite solar cells improves photovoltaic performance. Science, 2016, 354, 206-209.	12.6	3,137
80	Ambient air-processed mixed-ion perovskites for high-efficiency solar cells. Journal of Materials Chemistry A, 2016, 4, 16536-16545.	10.3	55
81	Enhancing Efficiency of Perovskite Solar Cells via Nâ€doped Graphene: Crystal Modification and Surface Passivation. Advanced Materials, 2016, 28, 8681-8686.	21.0	281
82	Ionic Liquid Control Crystal Growth to Enhance Planar Perovskite Solar Cells Efficiency. Advanced Energy Materials, 2016, 6, 1600767.	19.5	224
83	Additiveâ€Free Transparent Triarylamineâ€Based Polymeric Holeâ€Transport Materials for Stable Perovskite Solar Cells. ChemSusChem, 2016, 9, 2567-2571.	6.8	65
84	Highly efficient and stable planar perovskite solar cells by solution-processed tin oxide. Energy and Environmental Science, 2016, 9, 3128-3134.	30.8	720
85	Highly Efficient and Stable Perovskite Solar Cells based on a Lowâ€Cost Carbon Cloth. Advanced Energy Materials, 2016, 6, 1601116.	19.5	107
86	Unreacted PbI₂ as a Double-Edged Sword for Enhancing the Performance of Perovskite Solar Cells. Journal of the American Chemical Society, 2016, 138, 10331-10343.	13.7	696
87	Inverted Currentâ€“Voltage Hysteresis in Mixed Perovskite Solar Cells: Polarization, Energy Barriers, and Defect Recombination. Advanced Energy Materials, 2016, 6, 1600396.	19.5	213
88	A molecularly engineered hole-transporting material for efficient perovskite solar cells. Nature Energy, 2016, 1, .	39.5	816
89	Solar Cells: Ionic Liquid Control Crystal Growth to Enhance Planar Perovskite Solar Cells Efficiency (Adv. Energy Mater. 20/2016). Advanced Energy Materials, 2016, 6, .	19.5	2
90	Enhanced Efficiency and Stability of Perovskite Solar Cells Through Ndâ€Doping of Mesostructured TiO₂. Advanced Energy Materials, 2016, 6, 1501868.	19.5	157

#	Article	IF	Citations
91	Enhanced electronic properties in mesoporous TiO2 via lithium doping for high-efficiency perovskite solar cells. Nature Communications, 2016, 7, 10379.	12.8	744
92	Carbon nanotube-based hybrid hole-transporting material and selective contact for high efficiency perovskite solar cells. Energy and Environmental Science, 2016, 9, 461-466.	30.8	185
93	Cesium-containing triple cation perovskite solar cells: improved stability, reproducibility and high efficiency. Energy and Environmental Science, 2016, 9, 1989-1997.	30.8	4,560
94	Fluoride additive in epoxide-initiated solâ€“gel synthesis enables thin-film applications of SnO₂ aerogels. RSC Advances, 2016, 6, 21326-21331.	3.6	5
95	Exploration of the compositional space for mixed lead halogen perovskites for high efficiency solar cells. Energy and Environmental Science, 2016, 9, 1706-1724.	30.8	622
96	Monolithic perovskite/silicon-heterojunction tandem solar cells processed at low temperature. Energy and Environmental Science, 2016, 9, 81-88.	30.8	536
97	Silolothiophene-linked triphenylamines as stable hole transporting materials for high efficiency perovskite solar cells. Energy and Environmental Science, 2015, 8, 2946-2953.	30.8	163
98	Highly efficient planar perovskite solar cells through band alignment engineering. Energy and Environmental Science, 2015, 8, 2928-2934.	30.8	1,097
99	The effects of carbon electrode surface properties on bacteria attachment and start up time of microbial fuel cells. Carbon, 2014, 67, 128-139.	10.3	122
100	Transparent Conducting Aerogels of Antimony-Doped Tin Oxide. ACS Applied Materials & Interfaces, 2014, 6, 19127-19134.	8.0	42
101	Antimony-Doped Tin Oxide Aerogels as Porous Electron Collectors for Dye-Sensitized Solar Cells. Journal of Physical Chemistry C, 2014, 118, 17028-17035.	3.1	25
102	ZnOâ€“TiO₂ Nanocomposite Films for High Light Harvesting Efficiency and Fast Electron Transport in Dye-Sensitized Solar Cells. Journal of Physical Chemistry C, 2012, 116, 23864-23870.	3.1	125
103	Trap States Impact Photon Upconversion in Rubrene Sensitized by Lead Halide Perovskite Thin Films. SSRN Electronic Journal, 0, , .	0.4	1
104	Water and oxygen induce undesired phase transitions in cesium-formamidinium lead halide perovskites. , 0, , .		0
105	PbI2 and Lead Halide Perovskites by Atomic Layer Deposition for Perovskite Solar Cells. , 0, , .		0
106	Understanding the formation and transformation of low dimensional capping layers in lead halide perovskites by thermal evaporation. , 0, , .		0
107	Formation of a secondary phase in thermally evaporated MAPbI3 and its effects on solar cell performance. , 0, , .		0