Benjamin T Diroll

List of Publications by Year
in descending order

124 papers	5,961 citations	61857 43 h-index	82410 72 g-index
124 all docs	124 docs citations	124 times ranked	8699 citing authors

#	Article	IF	Citations
1	Bandlike Transport in Strongly Coupled and Doped Quantum Dot Solids: A Route to High-Performance Thin-Film Electronics. Nano Letters, 2012, 12, 2631-2638.	4.5	340
2	Thiocyanate-Capped Nanocrystal Colloids: Vibrational Reporter of Surface Chemistry and Solution-Based Route to Enhanced Coupling in Nanocrystal Solids. Journal of the American Chemical Society, 2011, 133, 15753-15761.	6.6	309
3	Highâ€Temperature Photoluminescence of CsPbX₃ (X = Cl, Br, I) Nanocrystals. Advanced Functional Materials, 2017, 27, 1606750.	7.8	242
4	Exploiting the colloidal nanocrystal library to construct electronic devices. Science, 2016, 352, 205-208.	6.0	234
5	Efficient Removal of Organic Ligands from Supported Nanocrystals by Fast Thermal Annealing Enables Catalytic Studies on Well-Defined Active Phases. Journal of the American Chemical Society, 2015, 137, 6906-6911.	6.6	208
6	Colloidal quantum dot lasers. Nature Reviews Materials, 2021, 6, 382-401.	23.3	196
7	Lowâ€Temperature Absorption, Photoluminescence, and Lifetime of CsPbX₃ (X = Cl, Br, I) Nanocrystals. Advanced Functional Materials, 2018, 28, 1800945.	7.8	186
8	Designing High-Performance PbS and PbSe Nanocrystal Electronic Devices through Stepwise, Post-Synthesis, Colloidal Atomic Layer Deposition. Nano Letters, 2014, 14, 1559-1566.	4.5	176
9	Substitutional doping in nanocrystal superlattices. Nature, 2015, 524, 450-453.	13.7	174
10	Tunable Plasmonic Coupling in Self-Assembled Binary Nanocrystal Superlattices Studied by Correlated Optical Microspectrophotometry and Electron Microscopy. Nano Letters, 2013, 13, 1291-1297.	4.5	125
11	Photoinduced, reversible phase transitions in all-inorganic perovskite nanocrystals. Nature Communications, 2019, 10, 504.	5.8	121
12	Expanding the Spectral Tunability of Plasmonic Resonances in Doped Metal-Oxide Nanocrystals through Cooperative Cationâ€“Anion Codoping. Journal of the American Chemical Society, 2014, 136, 11680-11686.	6.6	119
13	Binary and Ternary Superlattices Self-Assembled from Colloidal Nanodisks and Nanorods. Journal of the American Chemical Society, 2015, 137, 6662-6669.	6.6	110
14	Shape Alloys of Nanorods and Nanospheres from Self-Assembly. Nano Letters, 2013, 13, 4980-4988.	4.5	104
15	High-temperature crystallization of nanocrystals into three-dimensional superlattices. Nature, 2017, 548, 197-201.	13.7	101
16	Large optical nonlinearity of ITO nanorods for sub-picosecond all-optical modulation of the full-visible spectrum. Nature Communications, 2016, 7, 12892.	5.8	88
17	Chemically Tailored Dielectric-to-Metal Transition for the Design of Metamaterials from Nanoimprinted Colloidal Nanocrystals. Nano Letters, 2013, 13, 350-357.	4.5	87
18	Direct Synthesis of Six-Monolayer (1.9 nm) Thick Zinc-Blende CdSe Nanoplatelets Emitting at 585 nm. Chemistry of Materials, 2018, 30, 6957-6960.	3.2	77

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19	Violet-to-Blue Gain and Lasing from Colloidal CdS Nanoplatelets: Low-Threshold Stimulated Emission Despite Low Photoluminescence Quantum Yield. ACS Photonics, 2017, 4, 576-583.	3.2	74
20	High-Temperature Photoluminescence of CdSe/CdS Core/Shell Nanoheterostructures. ACS Nano, 2014, 8, 6466-6474.	7.3	71
21	Smectic Nanorod Superlattices Assembled on Liquid Subphases: Structure, Orientation, Defects, and Optical Polarization. Chemistry of Materials, 2015, 27, 2998-3008.	3.2	69
22	Advanced Architecture for Colloidal PbS Quantum Dot Solar Cells Exploiting a CdSe Quantum Dot Buffer Layer. ACS Nano, 2016, 10, 9267-9273.	7.3	69
23	Nanocrystal Size-Dependent Efficiency of Quantum Dot Sensitized Solar Cells in the Strongly Coupled CdSe Nanocrystals/TiO₂ System. ACS Applied Materials & Interfaces, 2016, 8, 14692-14700.	4.0	66
24	Size-Dependent Biexciton Quantum Yields and Carrier Dynamics of Quasi-Two-Dimensional Core/Shell Nanoplatelets. ACS Nano, 2017, 11, 9119-9127.	7.3	66
25	Seeded Growth of Metal-Doped Plasmonic Oxide Heterodimer Nanocrystals and Their Chemical Transformation. Journal of the American Chemical Society, 2014, 136, 5106-5115.	6.6	65
26	Lifetime, Mobility, and Diffusion of Photoexcited Carriers in Ligand-Exchanged Lead Selenide Nanocrystal Films Measured by Time-Resolved Terahertz Spectroscopy. ACS Nano, 2015, 9, 1820-1828.	7.3	61
27	Synergistic Oxygen Evolving Activity of a TiO₂-Rich Reconstructed SrTiO₃(001) Surface. Journal of the American Chemical Society, 2015, 137, 2939-2947.	6.6	58
28	Colloidal Atomic Layer Deposition with Stationary Reactant Phases Enables Precise Synthesis of â€œDigitalâ€•Ilâ€“VI Nano-heterostructures with Exquisite Control of Confinement and Strain. Journal of the American Chemical Society, 2019, 141, 13487-13496.	6.6	58
29	Low-Frequency (1/f) Noise in Nanocrystal Field-Effect Transistors. ACS Nano, 2014, 8, 9664-9672.	7.3	55
30	Conformal Coating of a Phase Change Material on Ordered Plasmonic Nanorod Arrays for Broadband All-Optical Switching. ACS Nano, 2017, 11, 693-701.	7.3	55
31	Deposition of Waferâ€Scale Singleâ€Component and Binary Nanocrystal Superlattice Thin Films Via Dipâ€Coating. Advanced Materials, 2015, 27, 2846-2851.	11.1	52
32	Flexible, High-Speed CdSe Nanocrystal Integrated Circuits. Nano Letters, 2015, 15, 7155-7160.	4.5	52
33	Coherent Acoustic Phonons in Colloidal Semiconductor Nanocrystal Superlattices. ACS Nano, 2016, 10, 1163-1169.	7.3	52
34	Dendron-Mediated Engineering of Interparticle Separation and Self-Assembly in Dendronized Gold Nanoparticles Superlattices. Journal of the American Chemical Society, 2015, 137, 10728-10734.	6.6	51
35	Hyperbolic Dispersion Arising from Anisotropic Excitons in Two-Dimensional Perovskites. Physical Review Letters, 2018, 121, 127401.	2.9	51
36	Tunable Optical Anisotropy of Seeded CdSe/CdS Nanorods. Journal of Physical Chemistry Letters, 2014, 5, 85-91.	2.1	49

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37	Material Dimensionality Effects on Electron Transfer Rates Between CsPbBr₃ and CdSe Nanoparticles. Nano Letters, 2018, 18, 4771-4776.	4.5	49
38	Quantifying â€œSoftnessâ€•of Organic Coatings on Gold Nanoparticles Using Correlated Small-Angle X-ray and Neutron Scattering. Nano Letters, 2015, 15, 8008-8012.	4.5	47
39	Synthesis of N-Type Plasmonic Oxide Nanocrystals and the Optical and Electrical Characterization of their Transparent Conducting Films. Chemistry of Materials, 2014, 26, 4579-4588.	3.2	46
40	Semiconductor Nanoplatelet Excimers. Nano Letters, 2018, 18, 6948-6953.	4.5	46
41	Broadband Ultrafast Dynamics of Refractory Metals: TiN and ZrN. Advanced Optical Materials, 2020, 8, 2000652.	3.6	45
42	Large Transient Optical Modulation of Epsilon-Near-Zero Colloidal Nanocrystals. ACS Nano, 2016, 10, 10099-10105.	7.3	44
43	Solution-Based Stoichiometric Control over Charge Transport in Nanocrystalline CdSe Devices. ACS Nano, 2013, 7, 8760-8770.	7.3	43
44	Synthesis and Size-Selective Precipitation of Monodisperse Nonstoichiometric M_xFe_{3â€“x}O₄ (M = Mn, Co) Nanocrystals and Their DC and AC Magnetic Properties. Chemistry of Materials, 2016, 28, 480-489.	3.2	42
45	Intraband Cooling in Allâ€Inorganic and Hybrid Organicâ€“Inorganic Perovskite Nanocrystals. Advanced Functional Materials, 2019, 29, 1901725.	7.8	42
46	Air-Stable, Nanostructured Electronic and Plasmonic Materials from Solution-Processable, Silver Nanocrystal Building Blocks. ACS Nano, 2014, 8, 2746-2754.	7.3	40
47	Facile, Economic and Size-Tunable Synthesis of Metal Arsenide Nanocrystals. Chemistry of Materials, 2016, 28, 6797-6802.	3.2	40
48	Unique Optical Properties of Methylammonium Lead Iodide Nanocrystals Below the Bulk Tetragonal-Orthorhombic Phase Transition. Nano Letters, 2018, 18, 846-852.	4.5	38
49	Anisotropic Photoluminescence from Isotropic Optical Transition Dipoles in Semiconductor Nanoplatelets. Nano Letters, 2018, 18, 4647-4652.	4.5	38
50	Broadband, Highâ€Speed, and Largeâ€Amplitude Dynamic Optical Switching with Yttriumâ€Doped Cadmium Oxide. Advanced Functional Materials, 2020, 30, 1908377.	7.8	38
51	Surface-Area-Dependent Electron Transfer Between Isoenergetic 2D Quantum Wells and a Molecular Acceptor. Journal of the American Chemical Society, 2016, 138, 11109-11112.	6.6	35
52	Angular measurements of the dynein ring reveal a stepping mechanism dependent on a flexible stalk. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, E4564-E4573.	3.3	35
53	Determination of the In-Plane Exciton Radius in 2D CdSe Nanoplatelets via Magneto-optical Spectroscopy. ACS Nano, 2019, 13, 8589-8596.	7.3	35
54	Polarized near-infrared intersubband absorptions in CdSe colloidal quantum wells. Nature Communications, 2019, 10, 4511.	5.8	34

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55	Effects of Post-Synthesis Processing on CdSe Nanocrystals and Their Solids: Correlation between Surface Chemistry and Optoelectronic Properties. Journal of Physical Chemistry C, 2014, 118, 27097-27105.	1.5	33
56	Selective p- and n-Doping of Colloidal PbSe Nanowires To Construct Electronic and Optoelectronic Devices. ACS Nano, 2015, 9, 7536-7544.	7.3	32
57	Slow Organicâ€toâ€Inorganic Subâ€Lattice Thermalization in Methylammonium Lead Halide Perovskites Observed by Ultrafast Photoluminescence. Advanced Energy Materials, 2016, 6, 1600422.	10.2	32
58	Spectrally-Resolved Dielectric Functions of Solution-Cast Quantum Dot Thin Films. Chemistry of Materials, 2015, 27, 6463-6469.	3.2	31
59	Shape-Selective Optical Transformations of CdSe Nanoplatelets Driven by Halide Ion Ligand Exchange. Chemistry of Materials, 2019, 31, 3556-3563.	3.2	31
60	Tailoring photocatalytic nanostructures for sustainable hydrogen production. Nanoscale, 2014, 6, 97-105.	2.8	30
61	Colloidal quantum wells for optoelectronic devices. Journal of Materials Chemistry C, 2020, 8, 10628-10640.	2.7	30
62	Interpreting the Energy-Dependent Anisotropy of Colloidal Nanorods Using Ensemble and Single-Particle Spectroscopy. Journal of Physical Chemistry C, 2013, 117, 23928-23937.	1.5	28
63	Uniform Bimetallic Nanocrystals by High-Temperature Seed-Mediated Colloidal Synthesis and Their Catalytic Properties for Semiconducting Nanowire Growth. Chemistry of Materials, 2015, 27, 5833-5838.	3.2	27
64	Elevated Temperature Photophysical Properties and Morphological Stability of CdSe and CdSe/CdS Nanoplatelets. Journal of Physical Chemistry Letters, 2018, 9, 286-293.	2.1	27
65	Enhanced Energy Transfer in Quasiâ€Quaternary Nanocrystal Superlattices. Advanced Materials, 2014, 26, 2419-2423.	11.1	26
66	Bulk Metallic Glass-like Scattering Signal in Small Metallic Nanoparticles. ACS Nano, 2014, 8, 6163-6170.	7.3	26
67	Characterization of Shape and Monodispersity of Anisotropic Nanocrystals through Atomistic X-ray Scattering Simulation. Chemistry of Materials, 2015, 27, 2502-2506.	3.2	26
68	Gate-Induced Carrier Delocalization in Quantum Dot Field Effect Transistors. Nano Letters, 2014, 14, 5948-5952.	4.5	25
69	Slow thermal equilibration in methylammonium lead iodide revealed by transient mid-infrared spectroscopy. Nature Communications, 2018, 9, 2792.	5.8	25
70	Infrared-pump electronic-probe of methylammonium lead iodide reveals electronically decoupled organic and inorganic sublattices. Nature Communications, 2019, 10, 482.	5.8	25
71	Synthesis of Type I PbSe/CdSe Dot-on-Plate Heterostructures with Near-Infrared Emission. Journal of the American Chemical Society, 2019, 141, 5092-5096.	6.6	25
72	Area and thickness dependence of Auger recombination in nanoplatelets. Journal of Chemical Physics, 2020, 153, 054104.	1.2	25

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73	Nanoscale Spatial Distribution of Supported Nanoparticles Controls Activity and Stability in Powder Catalysts for CO Oxidation and Photocatalytic H₂ Evolution. Journal of the American Chemical Society, 2020, 142, 14481-14494.	6.6	25
74	Shape-dependence of the thermal and photochemical reactions of methanol on nanocrystalline anatase TiO2. Surface Science, 2016, 654, 1-7.	0.8	24
75	Ligand-Dependent Tuning of Interband and Intersubband Transitions of Colloidal CdSe Nanoplatelets. Chemistry of Materials, 2020, 32, 5916-5923.	3.2	24
76	Transient Melting and Recrystallization of Semiconductor Nanocrystals Under Multiple Electronâ€“Hole Pair Excitation. Nano Letters, 2017, 17, 5314-5320.	4.5	23
77	Rapid Synthesis of Nanoporous Conformal Coatings via Plasma-Enhanced Sequential Infiltration of a Polymer Template. ACS Omega, 2017, 2, 7812-7819.	1.6	23
78	Artificial inflation of apparent photocatalytic activity induced by catalyst-mass-normalization and a method to fairly compare heterojunction systems. Energy and Environmental Science, 2019, 12, 1657-1667.	15.6	23
79	Polycatenar Ligand Control of the Synthesis and Self-Assembly of Colloidal Nanocrystals. Journal of the American Chemical Society, 2016, 138, 10508-10515.	6.6	22
80	Ultrafast Photoluminescence from the Core and the Shell in CdSe/CdS Dotâ€inâ€Rod Heterostructures. ChemPhysChem, 2016, 17, 759-765.	1.0	22
81	Block-Co-polymer-Assisted Synthesis of All Inorganic Highly Porous Heterostructures with Highly Accessible Thermally Stable Functional Centers. ACS Applied Materials & Interfaces, 2019, 11, 30154-30162.	4.0	22
82	Extraordinarily large permittivity modulation in zinc oxide for dynamic nanophotonics. Materials Today, 2021, 43, 27-36.	8.3	20
83	X-ray Mapping of Nanoparticle Superlattice Thin Films. ACS Nano, 2014, 8, 12843-12850.	7.3	19
84	Accessibility of the pores in highly porous alumina films synthesized via sequential infiltration synthesis. Nanotechnology, 2018, 29, 495703.	1.3	19
85	Temperature-Dependent Intraband Relaxation of Hybrid Perovskites. Journal of Physical Chemistry Letters, 2019, 10, 5623-5628.	2.1	19
86	Anisotropic Cracking of Nanocrystal Superlattices. Nano Letters, 2017, 17, 6501-6506.	4.5	18
87	Heat Transfer at Hybrid Interfaces: Interfacial Ligand-to-Nanocrystal Heating Monitored with Infrared Pump, Electronic Probe Spectroscopy. Nano Letters, 2018, 18, 7863-7869.	4.5	18
88	Quantum Shells Boost the Optical Gain of Lasing Media. ACS Nano, 2022, 16, 3017-3026.	7.3	18
89	Statistical Description of CdSe/CdS Dot-in-Rod Heterostructures Using Scanning Transmission Electron Microscopy. Chemistry of Materials, 2016, 28, 3345-3351.	3.2	17
90	Thermal and Photochemical Reactions of Methanol, Acetaldehyde, and Acetic Acid on Brookite TiO₂ Nanorods. Journal of Physical Chemistry C, 2017, 121, 11488-11498.	1.5	17

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91	Effect of the Micelle Opening in Self-assembled Amphiphilic Block Co-polymer Films on the Infiltration of Inorganic Precursors. Langmuir, 2019, 35, 796-803.	1.6	16
92	Ultrafast Electron Trapping in Ligand-Exchanged Quantum Dot Assemblies. ACS Nano, 2015, 9, 1440-1447.	7.3	15
93	NeutrAvidin Functionalization of CdSe/CdS Quantum Nanorods and Quantification of Biotin Binding Sites using Biotin-4-Fluorescein Fluorescence Quenching. Bioconjugate Chemistry, 2016, 27, 562-568.	1.8	15
94	Photothermal behaviour of titanium nitride nanoparticles evaluated by transient X-ray diffraction. Nanoscale, 2021, 13, 2658-2664.	2.8	15
95	Low-Loss Near-Infrared Hyperbolic Metamaterials with Epitaxial ITO-In₂O₃ Multilayers. ACS Photonics, 2018, 5, 2000-2007.	3.2	14
96	Morphological Control of Chromophore Spin State in Zinc Porphyrinâ€“Peptide Assemblies. Journal of the American Chemical Society, 2020, 142, 233-241.	6.6	14
97	Optical and Physical Probing of Thermal Processes in Semiconductor and Plasmonic Nanocrystals. Annual Review of Physical Chemistry, 2019, 70, 353-377.	4.8	13
98	Surface Normal Lasing from CdSe Nanoplatelets Coupled to Aluminum Plasmonic Nanoparticle Lattices. Journal of Physical Chemistry C, 2021, 125, 19874-19879.	1.5	12
99	Circularly Polarized Optical Stark Effect in CdSe Colloidal Quantum Wells. Nano Letters, 2020, 20, 7889-7895.	4.5	11
100	Interplay between Energy and Charge Transfers in a Polyaromatic Triplet Donorâ€“Acceptor Dyad. Journal of Physical Chemistry C, 2020, 124, 12205-12212.	1.5	11
101	A Nobleâ€Transition Alloy Excels at Hotâ€Carrier Generation in the Near Infrared. Advanced Materials, 2020, 32, e1906478.	11.1	11
102	Ultrafast Silicon Photonics with Visible to Mid-Infrared Pumping of Silicon Nanocrystals. Nano Letters, 2017, 17, 6409-6414.	4.5	10
103	Distinguishing Electron and Hole Dynamics in Functionalized CdSe/CdS Core/Shell Quantum Dots Using Complementary Ultrafast Spectroscopies and Kinetic Modeling. Journal of Physical Chemistry C, 2021, 125, 31-41.	1.5	10
104	Optical Signatures of Transiently Disordered Semiconductor Nanocrystals. ACS Nano, 2018, 12, 10008-10015.	7.3	9
105	Low-threshold laser medium utilizing semiconductor nanoshell quantum dots. Nanoscale, 2020, 12, 17426-17436.	2.8	9
106	Energy Transfer Induced by Dye Encapsulation in a Hybrid Nanoparticleâ€Purple Membrane Reversible Assembly. Advanced Functional Materials, 2019, 29, 1904899.	7.8	8
107	Anisotropic Transient Disordering of Colloidal, Two-Dimensional CdSe Nanoplatelets upon Optical Excitation. Nano Letters, 2021, 21, 1288-1294.	4.5	8
108	Insights into the extraction of photogenerated holes from CdSe/CdS nanorods for oxidative organic catalysis. Journal of Materials Chemistry A, 2021, 9, 12690-12699.	5.2	8

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109	Single-Atom Metal Oxide Sites as Traps for Charge Separation in the Zirconium-Based Metalâ€“Organic Framework NDCâ€“NU-1000. Energy & Fuels, 0, , .	2.5	8
110	Time-resolved photoluminescence studies of perovskite chalcogenides. Faraday Discussions, 0, 239, 146-159.	1.6	8
111	Intersubband Relaxation in CdSe Colloidal Quantum Wells. ACS Nano, 2020, 14, 12082-12090.	7.3	7
112	Gain roll-off in cadmium selenide colloidal quantum wells under intense optical excitation. Scientific Reports, 2022, 12, 8016.	1.6	7
113	Microenvironment control of porphyrin binding, organization, and function in peptide nanofiber assemblies. Nanoscale, 2019, 11, 5412-5421.	2.8	6
114	Heating and cooling of ligand-coated colloidal nanocrystals in solid films and solvent matrices. Nanoscale, 2019, 11, 8204-8209.	2.8	6
115	Morphological Dependence of the Thermal and Photochemical Reactions of Acetaldehyde on Anatase TiO2 Nanocrystals. Topics in Catalysis, 2018, 61, 365-378.	1.3	5
116	Heat-driven acoustic phonons in lamellar nanoplatelet assemblies. Nanoscale, 2020, 12, 9661-9668.	2.8	5
117	Ultrafast Dynamics of Colloidal Copper Nanorods: Intraband versus Interband Excitation. Small Science, 2022, 2, 2100103.	5.8	5
118	Spectroscopic Comparison of Thermal Transport at Organicâ€“Inorganic and Organic-Hybrid Interfaces Using CsPbBr₃ and FAPbBr₃ (FA = Formamidinium) Perovskite Nanocrystals. Nano Letters, 2019, 19, 8155-8160.	4.5	4
119	Thermal Excitation Control over Photon Emission Rate of CdSe Nanocrystals. Nano Letters, 2019, 19, 2322-2328.	4.5	2
120	Transient reshaping of intraband transitions by hot electrons. Nanoscale, 2022, 14, 1340-1346.	2.8	2
121	Triplet photodynamic and up-conversion luminescence in donorâ€“acceptor dyads with slip-stacked vs. co-facial arrangement. Journal of Materials Chemistry C, 2022, 10, 7093-7102.	2.7	2
122	Controlling All-optical Switching Speeds in an Epsilon-Near-Zero Enhanced Metasurface. , 2021, , .		0
123	Emission Statistics and Optical Transition Dipoles of Semiconductor Nanoplatelets. , 2019, , .		0
124	Extraordinary Permittivity Modulation in Zinc Oxide for Ultrafast Dynamic Nanophotonics. , 2020, , .		0