Tobias Hanrath

List of Publications by Year
in descending order

108 papers	6,957 citations	70961 41 h-index	58464 82 g-index
109 all docs	109 docs citations	109 times ranked	8841 citing authors

#	Article	IF	Citations
1	Bright infrared quantum-dot light-emitting diodes through inter-dot spacing control. Nature Nanotechnology, 2012, 7, 369-373.	15.6	429
2	Solventless Synthesis of Monodisperse Cu2S Nanorods, Nanodisks, and Nanoplatelets. Journal of the American Chemical Society, 2003, 125, 16050-16057.	6.6	423
3	PbSe Nanocrystal Excitonic Solar Cells. Nano Letters, 2009, 9, 3749-3755.	4.5	360
4	In Spite of Recent Doubts Carrier Multiplication Does Occur in PbSe Nanocrystals. Nano Letters, 2008, 8, 1713-1718.	4.5	291
5	Nucleation and Growth of Germanium Nanowires Seeded by Organic Monolayer-Coated Gold Nanocrystals. Journal of the American Chemical Society, 2002, 124, 1424-1429.	6.6	284
6	SnSe Nanocrystals: Synthesis, Structure, Optical Properties, and Surface Chemistry. Journal of the American Chemical Society, 2010, 132, 9519-9521.	6.6	271
7	Thermally Induced Structural Evolution and Performance of Mesoporous Block Copolymer-Directed Alumina Perovskite Solar Cells. ACS Nano, 2014, 8, 4730-4739.	7.3	269
8	Charge transport and localization in atomically coherent quantum dot solids. Nature Materials, 2016, 15, 557-563.	13.3	244
9	Predicting Nanocrystal Shape through Consideration of Surface-Ligand Interactions. ACS Nano, 2012, 6, 2118-2127.	7.3	236
10	Chemical Surface Passivation of Ge Nanowires. Journal of the American Chemical Society, 2004, 126, 15466-15472.	6.6	206
11	Controlling Nanocrystal Superlattice Symmetry and Shape-Anisotropic Interactions through Variable Ligand Surface Coverage. Journal of the American Chemical Society, 2011, 133, 3131-3138.	6.6	198
12	Photogenerated Exciton Dissociation in Highly Coupled Lead Salt Nanocrystal Assemblies. Nano Letters, 2010, 10, 1805-1811.	4.5	194
13	Shape-Anisotropy Driven Symmetry Transformations in Nanocrystal Superlattice Polymorphs. ACS Nano, 2011, 5, 2815-2823.	7.3	188
14	Nanocrystal and Nanowire Synthesis and Dispersibility in Supercritical Fluids. Journal of Physical Chemistry B, 2004, 108, 9574-9587.	1.2	169
15	Confined-but-Connected Quantum Solids via Controlled Ligand Displacement. Nano Letters, 2013, 13, 3225-3231.	4.5	166
16	Influence of Surface States on Electron Transport through Intrinsic Ge Nanowires. Journal of Physical Chemistry B, 2005, 109, 5518-5524.	1.2	139
17	Growth of Single Crystal Silicon Nanowires in Supercritical Solution from Tethered Gold Particles on a Silicon Substrate. Nano Letters, 2003, 3, 93-99.	4.5	137
18	Solutionâ€Processed Nanocrystal Quantum Dot Tandem Solar Cells. Advanced Materials, 2011, 23, 3144-3148.	11.1	128

#	Article	IF	Citations
19	Colloidal nanocrystal quantum dot assemblies as artificial solids. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2012, 30, 030802.	0.9	111
20	Decoding the Superlattice and Interface Structure of Truncate PbS Nanocrystal-Assembled Supercrystal and Associated Interaction Forces. Journal of the American Chemical Society, 2014, 136, 12047-12055.	6.6	109
21	Correlating Superlattice Polymorphs to Internanoparticle Distance, Packing Density, and Surface Lattice in Assemblies of PbS Nanoparticles. Nano Letters, 2013, 13, 1303-1311.	4.5	107
22	Germanium Nanowire Synthesis:Â An Example of Solid-Phase Seeded Growth with Nickel Nanocrystals. Chemistry of Materials, 2005, 17, 5705-5711.	3.2	100
23	Catalytic Solid-Phase Seeding of Silicon Nanowires by Nickel Nanocrystals in Organic Solvents. Nano Letters, 2005, 5, 681-684.	4.5	93
24	Crystallography and Surface Faceting of Germanium Nanowires. Small, 2005, 1, 717-721.	5.2	88
25	Role of Solvent Dielectric Properties on Charge Transfer from PbS Nanocrystals to Molecules. Nano Letters, 2010, 10, 318-323.	4.5	79
26	Control of Electron Transfer from Lead-Salt Nanocrystals to TiO₂. Nano Letters, 2011, 11, 2126-2132.	4.5	77
27	Interface-Induced Nucleation, Orientational Alignment and Symmetry Transformations in Nanocube Superlattices. Nano Letters, 2012, 12, 4791-4798.	4.5	76
28	Structure/Processing Relationships of Highly Ordered Lead Salt Nanocrystal Superlattices. ACS Nano, 2009, 3, 2975-2988.	7.3	75
29	Chemically reversible isomerization of inorganic clusters. Science, 2019, 363, 731-735.	6.0	72
30	Mesophase Formation Stabilizes High-Purity Magic-Sized Clusters. Journal of the American Chemical Society, 2018, 140, 3652-3662.	6.6	71
31	Controlled Selectivity of CO₂ Reduction on Copper by Pulsing the Electrochemical Potential. ChemSusChem, 2018, 11, 1781-1786.	3.6	68
32	Comparing the Structural Stability of PbS Nanocrystals Assembled in fcc and bcc Superlattice Allotropes. Journal of the American Chemical Society, 2012, 134, 10787-10790.	6.6	66
33	An Obtuse Rhombohedral Superlattice Assembled by Pt Nanocubes. Nano Letters, 2015, 15, 6254-6260.	4.5	65
34	PbSe Nanocrystal Network Formation during Pyridine Ligand Displacement. ACS Applied Materials & Interfaces, 2009, 1, 244-250.	4.0	64
35	Pulse check: Potential opportunities in pulsed electrochemical CO2 reduction. Joule, 2021, 5, 1987-2026.	11.7	64
36	Selective Electrochemical CO₂ Reduction during Pulsed Potential Stems from Dynamic Interface. ACS Catalysis, 2020, 10, 8632-8639.	5.5	62

#	Article	IF	Citations
37	Inverse Opal Nanocrystal Superlattice Films. Nano Letters, 2004, 4, 1943-1948.	4.5	61
38	Facile Synthesis of Colloidal CuO Nanocrystals for Light-Harvesting Applications. Journal of Nanomaterials, 2012, 2012, 1-6.	1.5	61
39	Prodigious Effects of Concentration Intensification on Nanoparticle Synthesis: A High-Quality, Scalable Approach. Journal of the American Chemical Society, 2015, 137, 15843-15851.	6.6	53
40	Colloidal Synthesis of PbS and PbS/CdS Nanosheets Using Acetate-Free Precursors. Chemistry of Materials, 2016, 28, 127-134.	3.2	51
41	Propagation of Structural Disorder in Epitaxially Connected Quantum Dot Solids from Atomic to Micron Scale. Nano Letters, 2016, 16, 5714-5718.	4.5	43
42	Characterization of the passivation layer at the polymer electrolyte/lithium electrode interface. Solid State Ionics, 2000, 135, 283-290.	1.3	42
43	Surface chemistry of cadmium sulfide magic-sized clusters: a window into ligand-nanoparticle interactions. Chemical Communications, 2017, 53, 2866-2869.	2.2	42
44	Formation of Epitaxially Connected Quantum Dot Solids: Nucleation and Coherent Phase Transition. Journal of Physical Chemistry Letters, 2017, 8, 2623-2628.	2.1	41
45	Entropic, Enthalpic, and Kinetic Aspects of Interfacial Nanocrystal Superlattice Assembly and Attachment. Chemistry of Materials, 2018, 30, 54-63.	3.2	40
46	Cu(I) Reducibility Controls Ethylene vs Ethanol Selectivity on (100)-Textured Copper during Pulsed CO₂ Reduction. ACS Applied Materials & Interfaces, 2021, 13, 14050-14055.	4.0	36
47	Heterojunction PbS Nanocrystal Solar Cells with Oxide Charge-Transport Layers. ACS Nano, 2013, 7, 10938-10947.	7.3	34
48	Temperature Dependence of the Field Effect Mobility of Solution-Grown Germanium Nanowires. Journal of Physical Chemistry B, 2006, 110, 6816-6823.	1.2	33
49	<i>Operando</i> X-ray Scattering and Spectroscopic Analysis of Germanium Nanowire Anodes in Lithium Ion Batteries. Langmuir, 2015, 31, 2028-2035.	1.6	33
50	The Strongest Particle: Size-Dependent Elastic Strength and Debye Temperature of PbS Nanocrystals. Journal of Physical Chemistry Letters, 2014, 5, 3688-3693.	2.1	31
51	Chalcogenidometallate Clusters as Surface Ligands for PbSe Nanocrystal Field-Effect Transistors. Journal of Physical Chemistry C, 2014, 118, 3377-3385.	1.5	28
52	Multiscale hierarchical structures from a nanocluster mesophase. Nature Materials, 2022, 21, 518-525.	13.3	27
53	Pulsed Laser Annealing of Thin Films of Self-Assembled Nanocrystals. ACS Nano, 2011, 5, 7010-7019.	7.3	26
54	A Comprehensive Study of Electron Energy Losses in Ge Nanowires. Nano Letters, 2004, 4, 1455-1461.	4.5	25

#	Article	IF	Citations
55	Direct growth of germanium and silicon nanowires on metal films. Journal of Materials Chemistry C, 2014, 2, 1869.	2.7	25
56	Optical properties of PbS nanocrystal quantum dots at ambient and elevated pressure. Physical Chemistry Chemical Physics, 2014, 16, 8515-8520.	1.3	24
57	Fundamental aspects of nucleation and growth in the solution-phase synthesis of germanium nanocrystals. CrystEngComm, 2010, 12, 2903.	1.3	20
58	Mechanistic Insights into Superlattice Transformation at a Single Nanocrystal Level Using Nanobeam Electron Diffraction. Nano Letters, 2020, 20, 5267-5274.	4.5	20
59	Effect of Electrolyte Composition and Concentration on Pulsed Potential Electrochemical CO₂ Reduction. ChemElectroChem, 2021, 8, 681-688.	1.7	20
60	Coupled Dynamics of Colloidal Nanoparticle Spreading and Self-Assembly at a Fluidâ€"Fluid Interface. Langmuir, 2020, 36, 6106-6115.	1.6	19
61	Application of Aberration-Corrected TEM and Image Simulation to Nanoelectronics and Nanotechnology. IEEE Transactions on Semiconductor Manufacturing, 2006, 19, 391-396.	1.4	18
62	Successive Ionic Layer Absorption and Reaction for Postassembly Control over Inorganic Interdot Bonds in Long-Range Ordered Nanocrystal Films. ACS Applied Materials & Interfaces, 2017, 9, 13500-13507.	4.0	18
63	Three-Dimensional Printing of Hierarchical Porous Architectures. Chemistry of Materials, 2019, 31, 10017-10022.	3.2	18
64	Porous cage-derived nanomaterial inks for direct and internal three-dimensional printing. Nature Communications, 2020, 11, 4695.	5.8	18
65	HI-Light: A Glass-Waveguide-Based â€œShell-and-Tubeâ€• Photothermal Reactor Platform for Converting CO2 to Fuels. IScience, 2020, 23, 101856.	1.9	18
66	Pulse Symmetry Impacts the C₂ Product Selectivity in Pulsed Electrochemical CO₂ Reduction. ACS Energy Letters, 2022, 7, 292-299.	8.8	17
67	Tuning of Coupling and Surface Quality of PbS Nanocrystals via a Combined Ammonium Sulfide and Iodine Treatment. Journal of Physical Chemistry Letters, 2016, 7, 642-646.	2.1	15
68	Timing matters: the underappreciated role of temperature ramp rate for shape control and reproducibility of quantum dot synthesis. Nanoscale, 2012, 4, 3625.	2.8	14
69	Connecting the Particles in the Box - Controlled Fusion of Hexamer Nanocrystal Clusters within an AB6 Binary Nanocrystal Superlattice. Scientific Reports, 2014, 4, 6731.	1.6	13
70	Coupled Slow and Fast Charge Dynamics in Cesium Lead Bromide Perovskite. ACS Energy Letters, 2017, 2, 488-496.	8.8	13
71	Nanoparticle Metamorphosis: An <i>in Situ</i> High-Temperature Transmission Electron Microscopy Study of the Structural Evolution of Heterogeneous Au:Fe₂O₃ Nanoparticles. ACS Nano, 2014, 8, 5315-5322.	7.3	12
72	Reconfigurable Nanorod Films: An <i>in Situ</i> Study of the Relationship between the Tunable Nanorod Orientation and the Optical Properties of Their Self-Assembled Thin Films. Chemistry of Materials, 2015, 27, 2659-2665.	3.2	12

#	Article	IF	Citations
73	Formation of Cu layer on Al nanoparticles during thermite reaction in Al/CuO nanoparticle composites: Investigation of off-stoichiometry ratio of Al and CuO nanoparticles for maximum pressure change. Combustion and Flame, 2015, 162, 3823-3828.	2.8	12
74	Orientational Disorder in Epitaxially Connected Quantum Dot Solids. ACS Nano, 2019, 13, 11460-11468.	7.3	12
75	Mapping Defect Relaxation in Quantum Dot Solids upon <i>In Situ</i> Heating. ACS Nano, 2021, 15, 719-726.	7.3	12
76	Quantitative Framework for Evaluating Semitransparent Photovoltaic Windows. ACS Energy Letters, 2016, 1, 391-394.	8.8	11
77	Superlattice self-assembly: Watching nanocrystals in action. Europhysics Letters, 2017, 119, 28003.	0.7	11
78	A Simple Preparation Method for Full-Range Electron Tomography of Nanoparticles and Fine Powders. Microscopy and Microanalysis, 2017, 23, 1150-1158.	0.2	11
79	A detailed balance analysis of conversion efficiencies limits for nanocrystal solar cellsâ€"Relating the shape of the excitonic peak to conversion efficiencies. Journal of Applied Physics, 2014, 115, 054313.	1.1	10
80	Sub-10 nm monodisperse PbS cubes by post-synthesis shape engineering. Physical Chemistry Chemical Physics, 2014, 16, 14640-14643.	1.3	10
81	The Nanocrystal Superlattice Pressure Cell: A Novel Approach To Study Molecular Bundles under Uniaxial Compression. Nano Letters, 2014, 14, 4763-4766.	4.5	9
82	The Role of Dimer Formation in the Nucleation of Superlattice Transformations and Its Impact on Disorder. ACS Nano, 2020, 14, 11431-11441.	7.3	9
83	Processingâ€"Structureâ€"Property Relationships in Laser-Annealed PbSe Nanocrystal Thin Films. ACS Nano, 2015, 9, 4096-4102.	7.3	8
84	Probing surface states in PbS nanocrystal films using pentacene field effect transistors: controlling carrier concentration and charge transport in pentacene. Physical Chemistry Chemical Physics, 2014, 16, 25729-25733.	1.3	7
85	Fundamental Processes and Practical Considerations of Lead Chalcogenide Mesocrystals Formed via Self-Assembly and Directed Attachment of Nanocrystals at a Fluid Interface. Chemistry of Materials, 2021, 33, 9457-9472.	3.2	6
86	Inkjet printing of epitaxially connected nanocrystal superlattices. Nano Research, 2022, 15, 4536-4543.	5.8	5
87	Reaction Kinetics of Germanium Nanowire Growth on Inductively Heated Copper Surfaces. Chemistry of Materials, 2017, 29, 4792-4800.	3.2	4
88	Simultaneous ligand and cation exchange in PbSe/CdSe nanocrystal films. Chemical Physics, 2016, 471, 69-74.	0.9	3
89	Photoinitiated Transformation of Nanocrystal Superlattice Polymorphs Assembled at a Fluid Interface. Advanced Materials Interfaces, 2020, 7, 2001064.	1.9	3
90	Three-Dimensional Arrangement and Connectivity of Lead-Chalcogenide Nanoparticle Assemblies for Next Generation Photovoltaics. Microscopy and Microanalysis, 2014, 20, 542-543.	0.2	2

#	Article	IF	Citations
91	Î¼-Rainbow: CdSe Nanocrystal Photoluminescence Gradients via Laser Spike Annealing for Kinetic Investigations and Tunable Device Design. Nano Letters, 2016, 16, 967-972.	4.5	2
92	Mesoscale metamorphosis. Nature Materials, 2020, 19, 2-3.	13.3	2
93	Long Range Order and Atomic Connectivity in Two-Dimensional Square PbSe Nanocrystal Superlattices. Microscopy and Microanalysis, 2015, 21, 1329-1330.	0.2	1
94	Quantifying Atomic-Scale Quantum Dot Superlattice Behavior Upon in situ Heating. Microscopy and Microanalysis, 2019, 25, 1538-1539.	0.2	1
95	Monitoring Seed Formation Dynamics of Bulk-Nucleated Vaporâ€“Solidâ€“Solid Germanium Nanowires via Resistance Measurements. Chemistry of Materials, 2019, 31, 912-918.	3.2	1
96	Mapping and Controlling Strain in Epitaxially Connected Quantum Dot Superlattices â€“ a Path to Designer Quantum Materials. Microscopy and Microanalysis, 2020, 26, 2828-2830.	0.2	1
97	Processingâ€“Structureâ€“Performance Relationships of Microporous Metalâ€“Organic Polymers for Size-Selective Separations. ACS Applied Materials & Interfaces, 2021, 13, 3521-3527.	4.0	1
98	Re-entrant transition as a bridge of broken ergodicity in confined monolayers of hexagonal prisms and cylinders. Journal of Colloid and Interface Science, 2022, 607, 1478-1490.	5.0	1
99	Bioelectronic Platform to Investigate Charge Transfer between Photoexcited Quantum Dots and Microbial Outer Membranes. ACS Applied Materials & Interfaces, 2022, 14, 15799-15810.	4.0	1
100	Advanced Microscopy for the Semiconductor Industry. Microscopy and Microanalysis, 2004, 10, 526-527.	0.2	0
101	Bright infrared LEDs based on colloidal quantum-dots. Materials Research Society Symposia Proceedings, 2013, 1509, 1.	0.1	0
102	Quantitative, Real-Space Statistical Analysis of Imperfect Lattices. Microscopy and Microanalysis, 2016, 22, 892-893.	0.2	0
103	New Full-Range Electron Tomography Procedure for Accurate Quantification of Surfaces, Curvature, and Porosity in Energy-Related Nanomaterials. Microscopy and Microanalysis, 2017, 23, 2002-2003.	0.2	0
104	Epitaxial Quantum Dot Superlattices: From Synthesis to Characterization to Electronic Structure. Microscopy and Microanalysis, 2017, 23, 1884-1885.	0.2	0
105	Controlled reactive assembly of colloidal nanocrystal superlattices: mechanism and kinetics. , 0, , .		0
106	Quantitative Mapping of Strain Defects in Multidomain Quantum Materials. Microscopy and Microanalysis, 2021, 27, 1950-1952.	0.2	0
107	The Direct Electrospinning and Manipulation of Magicâ€Sized Cluster Quantum Dots. Advanced Engineering Materials, 0, , 2100661.	1.6	0
108	The Direct Electrospinning and Manipulation of Magicâ€Sized Cluster Quantum Dots. Advanced Engineering Materials, 2021, 23, .	1.6	0