

# Tobias Hanrath

## List of Publications by Year in descending order

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108  
papers

6,957  
citations

71102

41  
h-index

58581

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. <i>Nature Nanotechnology</i> , 2012, 7, 369-373.	31.5	429
2	Solventless Synthesis of Monodisperse Cu <sub>2</sub> S Nanorods, Nanodisks, and Nanoplatelets. <i>Journal of the American Chemical Society</i> , 2003, 125, 16050-16057.	13.7	423
3	PbSe Nanocrystal Excitonic Solar Cells. <i>Nano Letters</i> , 2009, 9, 3749-3755.	9.1	360
4	In Spite of Recent Doubts Carrier Multiplication Does Occur in PbSe Nanocrystals. <i>Nano Letters</i> , 2008, 8, 1713-1718.	9.1	291
5	Nucleation and Growth of Germanium Nanowires Seeded by Organic Monolayer-Coated Gold Nanocrystals. <i>Journal of the American Chemical Society</i> , 2002, 124, 1424-1429.	13.7	284
6	SnSe Nanocrystals: Synthesis, Structure, Optical Properties, and Surface Chemistry. <i>Journal of the American Chemical Society</i> , 2010, 132, 9519-9521.	13.7	271
7	Thermally Induced Structural Evolution and Performance of Mesoporous Block Copolymer-Directed Alumina Perovskite Solar Cells. <i>ACS Nano</i> , 2014, 8, 4730-4739.	14.6	269
8	Charge transport and localization in atomically coherent quantum dot solids. <i>Nature Materials</i> , 2016, 15, 557-563.	27.5	244
9	Predicting Nanocrystal Shape through Consideration of Surface-Ligand Interactions. <i>ACS Nano</i> , 2012, 6, 2118-2127.	14.6	236
10	Chemical Surface Passivation of Ge Nanowires. <i>Journal of the American Chemical Society</i> , 2004, 126, 15466-15472.	13.7	206
11	Controlling Nanocrystal Superlattice Symmetry and Shape-Anisotropic Interactions through Variable Ligand Surface Coverage. <i>Journal of the American Chemical Society</i> , 2011, 133, 3131-3138.	13.7	198
12	Photogenerated Exciton Dissociation in Highly Coupled Lead Salt Nanocrystal Assemblies. <i>Nano Letters</i> , 2010, 10, 1805-1811.	9.1	194
13	Shape-Anisotropy Driven Symmetry Transformations in Nanocrystal Superlattice Polymorphs. <i>ACS Nano</i> , 2011, 5, 2815-2823.	14.6	188
14	Nanocrystal and Nanowire Synthesis and Dispersibility in Supercritical Fluids. <i>Journal of Physical Chemistry B</i> , 2004, 108, 9574-9587.	2.6	169
15	Confined-but-Connected Quantum Solids via Controlled Ligand Displacement. <i>Nano Letters</i> , 2013, 13, 3225-3231.	9.1	166
16	Influence of Surface States on Electron Transport through Intrinsic Ge Nanowires. <i>Journal of Physical Chemistry B</i> , 2005, 109, 5518-5524.	2.6	139
17	Growth of Single Crystal Silicon Nanowires in Supercritical Solution from Tethered Gold Particles on a Silicon Substrate. <i>Nano Letters</i> , 2003, 3, 93-99.	9.1	137
18	Solution-Processed Nanocrystal Quantum Dot Tandem Solar Cells. <i>Advanced Materials</i> , 2011, 23, 3144-3148.	21.0	128

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19	Colloidal nanocrystal quantum dot assemblies as artificial solids. <i>Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films</i> , 2012, 30, 030802.	2.1	111
20	Decoding the Superlattice and Interface Structure of Truncate PbS Nanocrystal-Assembled Supercrystal and Associated Interaction Forces. <i>Journal of the American Chemical Society</i> , 2014, 136, 12047-12055.	13.7	109
21	Correlating Superlattice Polymorphs to Internanoparticle Distance, Packing Density, and Surface Lattice in Assemblies of PbS Nanoparticles. <i>Nano Letters</i> , 2013, 13, 1303-1311.	9.1	107
22	Germanium Nanowire Synthesis: An Example of Solid-Phase Seeded Growth with Nickel Nanocrystals. <i>Chemistry of Materials</i> , 2005, 17, 5705-5711.	6.7	100
23	Catalytic Solid-Phase Seeding of Silicon Nanowires by Nickel Nanocrystals in Organic Solvents. <i>Nano Letters</i> , 2005, 5, 681-684.	9.1	93
24	Crystallography and Surface Faceting of Germanium Nanowires. <i>Small</i> , 2005, 1, 717-721.	10.0	88
25	Role of Solvent Dielectric Properties on Charge Transfer from PbS Nanocrystals to Molecules. <i>Nano Letters</i> , 2010, 10, 318-323.	9.1	79
26	Control of Electron Transfer from Lead-Salt Nanocrystals to TiO <sub>2</sub> . <i>Nano Letters</i> , 2011, 11, 2126-2132.	9.1	77
27	Interface-Induced Nucleation, Orientational Alignment and Symmetry Transformations in Nanocube Superlattices. <i>Nano Letters</i> , 2012, 12, 4791-4798.	9.1	76
28	Structure/Processing Relationships of Highly Ordered Lead Salt Nanocrystal Superlattices. <i>ACS Nano</i> , 2009, 3, 2975-2988.	14.6	75
29	Chemically reversible isomerization of inorganic clusters. <i>Science</i> , 2019, 363, 731-735.	12.6	72
30	Mesophase Formation Stabilizes High-Purity Magic-Sized Clusters. <i>Journal of the American Chemical Society</i> , 2018, 140, 3652-3662.	13.7	71
31	Controlled Selectivity of CO <sub>2</sub> Reduction on Copper by Pulsing the Electrochemical Potential. <i>ChemSusChem</i> , 2018, 11, 1781-1786.	6.8	68
32	Comparing the Structural Stability of PbS Nanocrystals Assembled in fcc and bcc Superlattice Allotropes. <i>Journal of the American Chemical Society</i> , 2012, 134, 10787-10790.	13.7	66
33	An Obtuse Rhombohedral Superlattice Assembled by Pt Nanocubes. <i>Nano Letters</i> , 2015, 15, 6254-6260.	9.1	65
34	PbSe Nanocrystal Network Formation during Pyridine Ligand Displacement. <i>ACS Applied Materials &amp; Interfaces</i> , 2009, 1, 244-250.	8.0	64
35	Pulse check: Potential opportunities in pulsed electrochemical CO <sub>2</sub> reduction. <i>Joule</i> , 2021, 5, 1987-2026.	24.0	64
36	Selective Electrochemical CO <sub>2</sub> Reduction during Pulsed Potential Stems from Dynamic Interface. <i>ACS Catalysis</i> , 2020, 10, 8632-8639.	11.2	62

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37	Inverse Opal Nanocrystal Superlattice Films. <i>Nano Letters</i> , 2004, 4, 1943-1948.	9.1	61
38	Facile Synthesis of Colloidal CuO Nanocrystals for Light-Harvesting Applications. <i>Journal of Nanomaterials</i> , 2012, 2012, 1-6.	2.7	61
39	Prodigious Effects of Concentration Intensification on Nanoparticle Synthesis: A High-Quality, Scalable Approach. <i>Journal of the American Chemical Society</i> , 2015, 137, 15843-15851.	13.7	53
40	Colloidal Synthesis of PbS and PbS/CdS Nanosheets Using Acetate-Free Precursors. <i>Chemistry of Materials</i> , 2016, 28, 127-134.	6.7	51
41	Propagation of Structural Disorder in Epitaxially Connected Quantum Dot Solids from Atomic to Micron Scale. <i>Nano Letters</i> , 2016, 16, 5714-5718.	9.1	43
42	Characterization of the passivation layer at the polymer electrolyte/lithium electrode interface. <i>Solid State Ionics</i> , 2000, 135, 283-290.	2.7	42
43	Surface chemistry of cadmium sulfide magic-sized clusters: a window into ligand-nanoparticle interactions. <i>Chemical Communications</i> , 2017, 53, 2866-2869.	4.1	42
44	Formation of Epitaxially Connected Quantum Dot Solids: Nucleation and Coherent Phase Transition. <i>Journal of Physical Chemistry Letters</i> , 2017, 8, 2623-2628.	4.6	41
45	Entropic, Enthalpic, and Kinetic Aspects of Interfacial Nanocrystal Superlattice Assembly and Attachment. <i>Chemistry of Materials</i> , 2018, 30, 54-63.	6.7	40
46	Cu(I) Reducibility Controls Ethylene vs Ethanol Selectivity on (100)-Textured Copper during Pulsed CO <sub>2</sub> Reduction. <i>ACS Applied Materials &amp; Interfaces</i> , 2021, 13, 14050-14055.	8.0	36
47	Heterojunction PbS Nanocrystal Solar Cells with Oxide Charge-Transport Layers. <i>ACS Nano</i> , 2013, 7, 10938-10947.	14.6	34
48	Temperature Dependence of the Field Effect Mobility of Solution-Grown Germanium Nanowires. <i>Journal of Physical Chemistry B</i> , 2006, 110, 6816-6823.	2.6	33
49	<i>Operando</i> X-ray Scattering and Spectroscopic Analysis of Germanium Nanowire Anodes in Lithium Ion Batteries. <i>Langmuir</i> , 2015, 31, 2028-2035.	3.5	33
50	The Strongest Particle: Size-Dependent Elastic Strength and Debye Temperature of PbS Nanocrystals. <i>Journal of Physical Chemistry Letters</i> , 2014, 5, 3688-3693.	4.6	31
51	Chalcogenidometallate Clusters as Surface Ligands for PbSe Nanocrystal Field-Effect Transistors. <i>Journal of Physical Chemistry C</i> , 2014, 118, 3377-3385.	3.1	28
52	Multiscale hierarchical structures from a nanocluster mesophase. <i>Nature Materials</i> , 2022, 21, 518-525.	27.5	27
53	Pulsed Laser Annealing of Thin Films of Self-Assembled Nanocrystals. <i>ACS Nano</i> , 2011, 5, 7010-7019.	14.6	26
54	A Comprehensive Study of Electron Energy Losses in Ge Nanowires. <i>Nano Letters</i> , 2004, 4, 1455-1461.	9.1	25

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55	Direct growth of germanium and silicon nanowires on metal films. <i>Journal of Materials Chemistry C</i> , 2014, 2, 1869.	5.5	25
56	Optical properties of PbS nanocrystal quantum dots at ambient and elevated pressure. <i>Physical Chemistry Chemical Physics</i> , 2014, 16, 8515-8520.	2.8	24
57	Fundamental aspects of nucleation and growth in the solution-phase synthesis of germanium nanocrystals. <i>CrystEngComm</i> , 2010, 12, 2903.	2.6	20
58	Mechanistic Insights into Superlattice Transformation at a Single Nanocrystal Level Using Nanobeam Electron Diffraction. <i>Nano Letters</i> , 2020, 20, 5267-5274.	9.1	20
59	Effect of Electrolyte Composition and Concentration on Pulsed Potential Electrochemical CO <sub>2</sub> Reduction. <i>ChemElectroChem</i> , 2021, 8, 681-688.	3.4	20
60	Coupled Dynamics of Colloidal Nanoparticle Spreading and Self-Assembly at a Fluid–Fluid Interface. <i>Langmuir</i> , 2020, 36, 6106-6115.	3.5	19
61	Application of Aberration-Corrected TEM and Image Simulation to Nanoelectronics and Nanotechnology. <i>IEEE Transactions on Semiconductor Manufacturing</i> , 2006, 19, 391-396.	1.7	18
62	Successive Ionic Layer Absorption and Reaction for Postassembly Control over Inorganic Interdot Bonds in Long-Range Ordered Nanocrystal Films. <i>ACS Applied Materials &amp; Interfaces</i> , 2017, 9, 13500-13507.	8.0	18
63	Three-Dimensional Printing of Hierarchical Porous Architectures. <i>Chemistry of Materials</i> , 2019, 31, 10017-10022.	6.7	18
64	Porous cage-derived nanomaterial inks for direct and internal three-dimensional printing. <i>Nature Communications</i> , 2020, 11, 4695.	12.8	18
65	HI-Light: A Glass-Waveguide-Based “Shell-and-Tube” Photothermal Reactor Platform for Converting CO <sub>2</sub> to Fuels. <i>IScience</i> , 2020, 23, 101856.	4.1	18
66	Pulse Symmetry Impacts the C <sub>2</sub> Product Selectivity in Pulsed Electrochemical CO <sub>2</sub> Reduction. <i>ACS Energy Letters</i> , 2022, 7, 292-299.	17.4	17
67	Tuning of Coupling and Surface Quality of PbS Nanocrystals via a Combined Ammonium Sulfide and Iodine Treatment. <i>Journal of Physical Chemistry Letters</i> , 2016, 7, 642-646.	4.6	15
68	Timing matters: the underappreciated role of temperature ramp rate for shape control and reproducibility of quantum dot synthesis. <i>Nanoscale</i> , 2012, 4, 3625.	5.6	14
69	Connecting the Particles in the Box - Controlled Fusion of Hexamer Nanocrystal Clusters within an AB <sub>6</sub> Binary Nanocrystal Superlattice. <i>Scientific Reports</i> , 2014, 4, 6731.	3.3	13
70	Coupled Slow and Fast Charge Dynamics in Cesium Lead Bromide Perovskite. <i>ACS Energy Letters</i> , 2017, 2, 488-496.	17.4	13
71	Nanoparticle Metamorphosis: An <i>in Situ</i> High-Temperature Transmission Electron Microscopy Study of the Structural Evolution of Heterogeneous Au:Fe <sub>2</sub> O <sub>3</sub> Nanoparticles. <i>ACS Nano</i> , 2014, 8, 5315-5322.	14.6	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. <i>Chemistry of Materials</i> , 2015, 27, 2659-2665.	6.7	12

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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. <i>Combustion and Flame</i> , 2015, 162, 3823-3828.	5.2	12
74	Orientational Disorder in Epitaxially Connected Quantum Dot Solids. <i>ACS Nano</i> , 2019, 13, 11460-11468.	14.6	12
75	Mapping Defect Relaxation in Quantum Dot Solids upon <i>In Situ</i> Heating. <i>ACS Nano</i> , 2021, 15, 719-726.	14.6	12
76	Quantitative Framework for Evaluating Semitransparent Photovoltaic Windows. <i>ACS Energy Letters</i> , 2016, 1, 391-394.	17.4	11
77	Superlattice self-assembly: Watching nanocrystals in action. <i>Europhysics Letters</i> , 2017, 119, 28003.	2.0	11
78	A Simple Preparation Method for Full-Range Electron Tomography of Nanoparticles and Fine Powders. <i>Microscopy and Microanalysis</i> , 2017, 23, 1150-1158.	0.4	11
79	A detailed balance analysis of conversion efficiencies limits for nanocrystal solar cells—Relating the shape of the excitonic peak to conversion efficiencies. <i>Journal of Applied Physics</i> , 2014, 115, 054313.	2.5	10
80	Sub-10 nm monodisperse PbS cubes by post-synthesis shape engineering. <i>Physical Chemistry Chemical Physics</i> , 2014, 16, 14640-14643.	2.8	10
81	The Nanocrystal Superlattice Pressure Cell: A Novel Approach To Study Molecular Bundles under Uniaxial Compression. <i>Nano Letters</i> , 2014, 14, 4763-4766.	9.1	9
82	The Role of Dimer Formation in the Nucleation of Superlattice Transformations and Its Impact on Disorder. <i>ACS Nano</i> , 2020, 14, 11431-11441.	14.6	9
83	Processing—Structure—Property Relationships in Laser-Annealed PbSe Nanocrystal Thin Films. <i>ACS Nano</i> , 2015, 9, 4096-4102.	14.6	8
84	Probing surface states in PbS nanocrystal films using pentacene field effect transistors: controlling carrier concentration and charge transport in pentacene. <i>Physical Chemistry Chemical Physics</i> , 2014, 16, 25729-25733.	2.8	7
85	Fundamental Processes and Practical Considerations of Lead Chalcogenide Mesocrystals Formed via Self-Assembly and Directed Attachment of Nanocrystals at a Fluid Interface. <i>Chemistry of Materials</i> , 2021, 33, 9457-9472.	6.7	6
86	Inkjet printing of epitaxially connected nanocrystal superlattices. <i>Nano Research</i> , 2022, 15, 4536-4543.	10.4	5
87	Reaction Kinetics of Germanium Nanowire Growth on Inductively Heated Copper Surfaces. <i>Chemistry of Materials</i> , 2017, 29, 4792-4800.	6.7	4
88	Simultaneous ligand and cation exchange in PbSe/CdSe nanocrystal films. <i>Chemical Physics</i> , 2016, 471, 69-74.	1.9	3
89	Photoinitiated Transformation of Nanocrystal Superlattice Polymorphs Assembled at a Fluid Interface. <i>Advanced Materials Interfaces</i> , 2020, 7, 2001064.	3.7	3
90	Three-Dimensional Arrangement and Connectivity of Lead-Chalcogenide Nanoparticle Assemblies for Next Generation Photovoltaics. <i>Microscopy and Microanalysis</i> , 2014, 20, 542-543.	0.4	2

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91	¼-Rainbow: CdSe Nanocrystal Photoluminescence Gradients via Laser Spike Annealing for Kinetic Investigations and Tunable Device Design. Nano Letters, 2016, 16, 967-972.	9.1	2
92	Mesoscale metamorphosis. Nature Materials, 2020, 19, 2-3.	27.5	2
93	Long Range Order and Atomic Connectivity in Two-Dimensional Square PbSe Nanocrystal Superlattices. Microscopy and Microanalysis, 2015, 21, 1329-1330.	0.4	1
94	Quantifying Atomic-Scale Quantum Dot Superlattice Behavior Upon in situ Heating. Microscopy and Microanalysis, 2019, 25, 1538-1539.	0.4	1
95	Monitoring Seed Formation Dynamics of Bulk-Nucleated Vapor-Solid Germanium Nanowires via Resistance Measurements. Chemistry of Materials, 2019, 31, 912-918.	6.7	1
96	Mapping and Controlling Strain in Epitaxially Connected Quantum Dot Superlattices – a Path to Designer Quantum Materials. Microscopy and Microanalysis, 2020, 26, 2828-2830.	0.4	1
97	Processing-Structure-Performance Relationships of Microporous Metal-Organic Polymers for Size-Selective Separations. ACS Applied Materials & Interfaces, 2021, 13, 3521-3527.	8.0	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.	9.4	1
99	Bioelectronic Platform to Investigate Charge Transfer between Photoexcited Quantum Dots and Microbial Outer Membranes. ACS Applied Materials & Interfaces, 2022, 14, 15799-15810.	8.0	1
100	Advanced Microscopy for the Semiconductor Industry. Microscopy and Microanalysis, 2004, 10, 526-527.	0.4	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.	0.4	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.	0.4	0
104	Epitaxial Quantum Dot Superlattices: From Synthesis to Characterization to Electronic Structure. Microscopy and Microanalysis, 2017, 23, 1884-1885.	0.4	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.	0.4	0
107	The Direct Electrospinning and Manipulation of Magic-Sized Cluster Quantum Dots. Advanced Engineering Materials, 0, , 2100661.	3.5	0
108	The Direct Electrospinning and Manipulation of Magic-Sized Cluster Quantum Dots. Advanced Engineering Materials, 2021, 23, .	3.5	0