Tobias Hanrath

List of Publications by Year in Descending Order

105 papers	5,939 citations	38 h-index	76 g-index
109 ext. papers	6,478 ext. citations	10.2 avg, IF	5.85 L-index

#	Paper	IF	Citations
105	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	9.3	0
104	Pulse Symmetry Impacts the C2 Product Selectivity in Pulsed Electrochemical CO2 Reduction. *ACS Energy Letters*, **2022**, 7, 292-299	20.1	4
103	Cu(I) Reducibility Controls Ethylene vs Ethanol Selectivity on (100)-Textured Copper during Pulsed CO Reduction. *ACS Applied Materials & Interfaces*, **2021**, 13, 14050-14055	9.5	5
102	Quantitative Mapping of Strain Defects in Multidomain Quantum Materials. *Microscopy and Microanalysis*, **2021**, 27, 1950-1952	0.5	
101	Effect of Electrolyte Composition and Concentration on Pulsed Potential Electrochemical CO2 Reduction. *ChemElectroChem*, **2021**, 8, 681-688	4.3	7
100	Processing-Structure-Performance Relationships of Microporous Metal-Organic Polymers for Size-Selective Separations. *ACS Applied Materials & Interfaces*, **2021**, 13, 3521-3527	9.5	1
99	Mapping Defect Relaxation in Quantum Dot Solids upon Heating. *ACS Nano*, **2021**, 15, 719-726	16.7	5
98	Pulse check: Potential opportunities in pulsed electrochemical CO2 reduction. *Joule*, **2021**, 5, 1987-2026	27.8	11
97	The Direct Electrospinning and Manipulation of Magic-Sized Cluster Quantum Dots. *Advanced Engineering Materials*, **2021**, 23, 2170051	3.5	
96	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	9.6	1
95	HI-Light: A Glass-Waveguide-Based "Shell-and-Tube" Photothermal Reactor Platform for Converting CO to Fuels. *IScience*, **2020**, 23, 101856	6.1	8
94	Coupled Dynamics of Colloidal Nanoparticle Spreading and Self-Assembly at a Fluid-Fluid Interface. *Langmuir*, **2020**, 36, 6106-6115	4	13
93	Mechanistic Insights into Superlattice Transformation at a Single Nanocrystal Level Using Nanobeam Electron Diffraction. *Nano Letters*, **2020**, 20, 5267-5274	11.5	13
92	Selective Electrochemical CO2 Reduction during Pulsed Potential Stems from Dynamic Interface. *ACS Catalysis*, **2020**, 10, 8632-8639	13.1	24
91	Mapping and Controlling Strain in Epitaxially Connected Quantum Dot Superlattices Path to Designer Quantum Materials. *Microscopy and Microanalysis*, **2020**, 26, 2828-2830	0.5	1
90	Photoinitiated Transformation of Nanocrystal Superlattice Polymorphs Assembled at a Fluid Interface. *Advanced Materials Interfaces*, **2020**, 7, 2001064	4.6	2
89	Porous cage-derived nanomaterial inks for direct and internal three-dimensional printing. *Nature Communications*, **2020**, 11, 4695	17.4	5

88	The Role of Dimer Formation in the Nucleation of Superlattice Transformations and Its Impact on Disorder. *ACS Nano*, **2020**, 14, 11431-11441	16.7	4
87	Mesoscale metamorphosis. *Nature Materials*, **2020**, 19, 2-3	27	1
86	Orientational Disorder in Epitaxially Connected Quantum Dot Solids. *ACS Nano*, **2019**, 13, 11460-11468	16.7	9
85	Three-Dimensional Printing of Hierarchical Porous Architectures. *Chemistry of Materials*, **2019**, 31, 10017-10022	9.6	11
84	Monitoring Seed Formation Dynamics of Bulk-Nucleated Vapor–Solid–Solid Germanium Nanowires via Resistance Measurements. *Chemistry of Materials*, **2019**, 31, 912-918	9.6	1
83	Quantifying Atomic-Scale Quantum Dot Superlattice Behavior Upon in situ Heating. *Microscopy and Microanalysis*, **2019**, 25, 1538-1539	0.5	1
82	Chemically reversible isomerization of inorganic clusters. *Science*, **2019**, 363, 731-735	33.3	42
81	Mesophase Formation Stabilizes High-Purity Magic-Sized Clusters. *Journal of the American Chemical Society*, **2018**, 140, 3652-3662	16.4	44
80	. *Chemistry of Materials*, **2018**, 30, 54-63	9.6	30
79	Controlled Selectivity of CO Reduction on Copper by Pulsing the Electrochemical Potential. *ChemSusChem*, **2018**, 11, 1781-1786	8.3	43
78	Coupled Slow and Fast Charge Dynamics in Cesium Lead Bromide Perovskite. *ACS Energy Letters*, **2017**, 2, 488-496	20.1	11
77	Surface chemistry of cadmium sulfide magic-sized clusters: a window into ligand-nanoparticle interactions. *Chemical Communications*, **2017**, 53, 2866-2869	5.8	27
76	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	9.5	18
75	Reaction Kinetics of Germanium Nanowire Growth on Inductively Heated Copper Surfaces. *Chemistry of Materials*, **2017**, 29, 4792-4800	9.6	3
74	Formation of Epitaxially Connected Quantum Dot Solids: Nucleation and Coherent Phase Transition. *Journal of Physical Chemistry Letters*, **2017**, 8, 2623-2628	6.4	35
73	Epitaxial Quantum Dot Superlattices: From Synthesis to Characterization to Electronic Structure. *Microscopy and Microanalysis*, **2017**, 23, 1884-1885	0.5	
72	Superlattice self-assembly: Watching nanocrystals in action. *Europhysics Letters*, **2017**, 119, 28003	1.6	10
71	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	0.5	

70	A Simple Preparation Method for Full-Range Electron Tomography of Nanoparticles and Fine Powders. *Microscopy and Microanalysis*, **2017**, 23, 1150-1158	0.5	8
69	Simultaneous ligand and cation exchange in PbSe/CdSe nanocrystal films. *Chemical Physics*, **2016**, 471, 69-74	2.3	2
68	Propagation of Structural Disorder in Epitaxially Connected Quantum Dot Solids from Atomic to Micron Scale. *Nano Letters*, **2016**, 16, 5714-8	11.5	34
67	Colloidal Synthesis of PbS and PbS/CdS Nanosheets Using Acetate-Free Precursors. *Chemistry of Materials*, **2016**, 28, 127-134	9.6	40
66	Charge transport and localization in atomically coherent quantum dot solids. *Nature Materials*, **2016**, 15, 557-63	27	192
65	Tuning of Coupling and Surface Quality of PbS Nanocrystals via a Combined Ammonium Sulfide and Iodine Treatment. *Journal of Physical Chemistry Letters*, **2016**, 7, 642-6	6.4	15
64	Rainbow: CdSe Nanocrystal Photoluminescence Gradients via Laser Spike Annealing for Kinetic Investigations and Tunable Device Design. *Nano Letters*, **2016**, 16, 967-72	11.5	2
63	Quantitative, Real-Space Statistical Analysis of Imperfect Lattices. *Microscopy and Microanalysis*, **2016**, 22, 892-893	0.5	
62	Quantitative Framework for Evaluating Semitransparent Photovoltaic Windows. *ACS Energy Letters*, **2016**, 1, 391-394	20.1	9
61	Reconfigurable Nanorod Films: An in Situ 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	9.6	12
60	Processing-Structure-Property Relationships in Laser-Annealed PbSe Nanocrystal Thin Films. *ACS Nano*, **2015**, 9, 4096-102	16.7	8
59	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	5.3	9
58	An Obtuse Rhombohedral Superlattice Assembled by Pt Nanocubes. *Nano Letters*, **2015**, 15, 6254-60	11.5	51
57	Prodigious Effects of Concentration Intensification on Nanoparticle Synthesis: A High-Quality, Scalable Approach. *Journal of the American Chemical Society*, **2015**, 137, 15843-51	16.4	46
56	Long Range Order and Atomic Connectivity in Two-Dimensional Square PbSe Nanocrystal Superlattices. *Microscopy and Microanalysis*, **2015**, 21, 1329-1330	0.5	1
55	Operando X-ray scattering and spectroscopic analysis of germanium nanowire anodes in lithium ion batteries. *Langmuir*, **2015**, 31, 2028-35	4	31
54	Connecting the particles in the box--controlled fusion of hexamer nanocrystal clusters within an AB binary nanocrystal superlattice. *Scientific Reports*, **2014**, 4, 6731	4.9	12
53	A detailed balance analysis of conversion efficiencies limits for nanocrystal solar cells Relating the shape of the excitonic peak to conversion efficiencies. *Journal of Applied Physics*, **2014**, 115, 054313	2.5	9

52	The Strongest Particle: Size-Dependent Elastic Strength and Debye Temperature of PbS Nanocrystals. *Journal of Physical Chemistry Letters*, **2014**, 5, 3688-93	6.4	24
51	Optical properties of PbS nanocrystal quantum dots at ambient and elevated pressure. *Physical Chemistry Chemical Physics*, **2014**, 16, 8515-20	3.6	19
50	Sub-10 nm monodisperse PbS cubes by post-synthesis shape engineering. *Physical Chemistry Chemical Physics*, **2014**, 16, 14640-3	3.6	7
49	Nanoparticle metamorphosis: an in situ high-temperature transmission electron microscopy study of the structural evolution of heterogeneous Au:Fe2O3 nanoparticles. *ACS Nano*, **2014**, 8, 5315-22	16.7	11
48	Direct growth of germanium and silicon nanowires on metal films. *Journal of Materials Chemistry C*, **2014**, 2, 1869	7.1	20
47	Decoding the superlattice and interface structure of truncate PbS nanocrystal-assembled supercrystal and associated interaction forces. *Journal of the American Chemical Society*, **2014**, 136, 12047-55	16.4	96
46	The nanocrystal superlattice pressure cell: a novel approach to study molecular bundles under uniaxial compression. *Nano Letters*, **2014**, 14, 4763-6	11.5	7
45	Chalcogenidometallate Clusters as Surface Ligands for PbSe Nanocrystal Field-Effect Transistors. *Journal of Physical Chemistry C*, **2014**, 118, 3377-3385	3.8	27
44	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, 25729-33	3.6	6
43	Thermally induced structural evolution and performance of mesoporous block copolymer-directed alumina perovskite solar cells. *ACS Nano*, **2014**, 8, 4730-9	16.7	241
42	Three-Dimensional Arrangement and Connectivity of Lead-Chalcogenide Nanoparticle Assemblies for Next Generation Photovoltaics. *Microscopy and Microanalysis*, **2014**, 20, 542-543	0.5	2
41	Heterojunction PbS nanocrystal solar cells with oxide charge-transport layers. *ACS Nano*, **2013**, 7, 10938-47	16.7	29
40	Correlating superlattice polymorphs to internanoparticle distance, packing density, and surface lattice in assemblies of PbS nanoparticles. *Nano Letters*, **2013**, 13, 1303-11	11.5	101
39	Confined-but-connected quantum solids via controlled ligand displacement. *Nano Letters*, **2013**, 13, 3225-31	11.5	147
38	Bright infrared LEDs based on colloidal quantum-dots. *Materials Research Society Symposia Proceedings*, **2013**, 1509, 1		
37	Colloidal nanocrystal quantum dot assemblies as artificial solids. *Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films*, **2012**, 30, 030802	2.9	101
36	Facile Synthesis of Colloidal CuO Nanocrystals for Light-Harvesting Applications. *Journal of Nanomaterials*, **2012**, 2012, 1-6	3.2	42
35	Interface-induced nucleation, orientational alignment and symmetry transformations in nanocube superlattices. *Nano Letters*, **2012**, 12, 4791-8	11.5	69

34	Timing matters: the underappreciated role of temperature ramp rate for shape control and reproducibility of quantum dot synthesis. *Nanoscale*, **2012**, 4, 3625-8	7.7	13
33	Predicting nanocrystal shape through consideration of surface-ligand interactions. *ACS Nano*, **2012**, 6, 2118-27	16.7	201
32	Bright infrared quantum-dot light-emitting diodes through inter-dot spacing control. *Nature Nanotechnology*, **2012**, 7, 369-73	28.7	363
31	Comparing the structural stability of PbS nanocrystals assembled in fcc and bcc superlattice allotropes. *Journal of the American Chemical Society*, **2012**, 134, 10787-90	16.4	59
30	Pulsed laser annealing of thin films of self-assembled nanocrystals. *ACS Nano*, **2011**, 5, 7010-9	16.7	23
29	Solution-processed nanocrystal quantum dot tandem solar cells. *Advanced Materials*, **2011**, 23, 3144-8	24	112
28	Shape-anisotropy driven symmetry transformations in nanocrystal superlattice polymorphs. *ACS Nano*, **2011**, 5, 2815-23	16.7	171
27	Control of electron transfer from lead-salt nanocrystals to TiO*Nano Letters*, **2011**, 11, 2126-32	11.5	73
26	Controlling nanocrystal superlattice symmetry and shape-anisotropic interactions through variable ligand surface coverage. *Journal of the American Chemical Society*, **2011**, 133, 3131-8	16.4	176
25	Role of solvent dielectric properties on charge transfer from PbS nanocrystals to molecules. *Nano Letters*, **2010**, 10, 318-23	11.5	73
24	SnSe nanocrystals: synthesis, structure, optical properties, and surface chemistry. *Journal of the American Chemical Society*, **2010**, 132, 9519-21	16.4	248
23	Photogenerated exciton dissociation in highly coupled lead salt nanocrystal assemblies. *Nano Letters*, **2010**, 10, 1805-11	11.5	168
22	Fundamental aspects of nucleation and growth in the solution-phase synthesis of germanium nanocrystals. *CrystEngComm*, **2010**, 12, 2903	3.3	19
21	PbSe nanocrystal network formation during pyridine ligand displacement. *ACS Applied Materials & Interfaces*, **2009**, 1, 244-50	9.5	62
20	PbSe nanocrystal excitonic solar cells. *Nano Letters*, **2009**, 9, 3749-55	11.5	333
19	Structure/processing relationships of highly ordered lead salt nanocrystal superlattices. *ACS Nano*, **2009**, 3, 2975-88	16.7	68
18	In spite of recent doubts carrier multiplication does occur in PbSe nanocrystals. *Nano Letters*, **2008**, 8, 1713-8	11.5	275
17	Application of Aberration-Corrected TEM and Image Simulation to Nanoelectronics and Nanotechnology. *IEEE Transactions on Semiconductor Manufacturing*, **2006**, 19, 391-396	2.6	13

16	Temperature dependence of the field effect mobility of solution-grown germanium nanowires. *Journal of Physical Chemistry B*, **2006**, 110, 6816-23	3.4	29
15	Influence of surface states on electron transport through intrinsic Ge nanowires. *Journal of Physical Chemistry B*, **2005**, 109, 5518-24	3.4	127
14	Germanium Nanowire Synthesis:An Example of Solid-Phase Seeded Growth with Nickel Nanocrystals. *Chemistry of Materials*, **2005**, 17, 5705-5711	9.6	93
13	Catalytic solid-phase seeding of silicon nanowires by nickel nanocrystals in organic solvents. *Nano Letters*, **2005**, 5, 681-4	11.5	84
12	Crystallography and surface faceting of germanium nanowires. *Small*, **2005**, 1, 717-21	11	78
11	Chemical surface passivation of Ge nanowires. *Journal of the American Chemical Society*, **2004**, 126, 15466672	16.4	190
10	Inverse Opal Nanocrystal Superlattice Films. *Nano Letters*, **2004**, 4, 1943-1948	11.5	58
9	A Comprehensive Study of Electron Energy Losses in Ge Nanowires. *Nano Letters*, **2004**, 4, 1455-1461	11.5	25
8	Nanocrystal and Nanowire Synthesis and Dispersibility in Supercritical Fluids. *Journal of Physical Chemistry B*, **2004**, 108, 9574-9587	3.4	158
7	Advanced Microscopy for the Semiconductor Industry. *Microscopy and Microanalysis*, **2004**, 10, 526-527	0.5	
6	Solventless synthesis of monodisperse Cu2S nanorods, nanodisks, and nanoplatelets. *Journal of the American Chemical Society*, **2003**, 125, 16050-7	16.4	399
5	Growth of Single Crystal Silicon Nanowires in Supercritical Solution from Tethered Gold Particles on a Silicon Substrate. *Nano Letters*, **2003**, 3, 93-99	11.5	129
4	Nucleation and growth of germanium nanowires seeded by organic monolayer-coated gold nanocrystals. *Journal of the American Chemical Society*, **2002**, 124, 1424-9	16.4	259
3	Characterization of the passivation layer at the polymer electrolyte/lithium electrode interface. *Solid State Ionics*, **2000**, 135, 283-290	3.3	32
2	The Direct Electrospinning and Manipulation of Magic-Sized Cluster Quantum Dots. *Advanced Engineering Materials*,2100661	3.5	
1	Inkjet printing of epitaxially connected nanocrystal superlattices. *Nano Research*,1	10	1