Andrew R Lupini

List of Publications by Year
in descending order

142 papers	6,401 citations	47006 47 h-index	66911 78 g-index
146 all docs	146 docs citations	146 times ranked	9298 citing authors

#	Article	IF	Citations
1	Band Gap Engineering and Layer-by-Layer Mapping of Selenium-Doped Molybdenum Disulfide. Nano Letters, 2014, 14, 442-449.	9.1	463
2	Grain-Boundary-Enhanced Carrier Collection in CdTe Solar Cells. Physical Review Letters, 2014, 112, 156103.	7.8	258
3	Flexible metallic nanowires with self-adaptive contacts to semiconducting transition-metal dichalcogenide monolayers. Nature Nanotechnology, 2014, 9, 436-442.	31.5	228
4	Depth sectioning with the aberration-corrected scanning transmission electron microscope. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 3044-3048.	7.1	216
5	Patterned arrays of lateral heterojunctions within monolayer two-dimensional semiconductors. Nature Communications, 2015, 6, 7749.	12.8	213
6	Three-dimensional imaging of individual hafnium atoms inside a semiconductor device. Applied Physics Letters, 2005, 87, 034104.	3.3	206
7	Efficient phase contrast imaging in STEM using a pixelated detector. Part 1: Experimental demonstration at atomic resolution. Ultramicroscopy, 2015, 151, 160-167.	1.9	192
8	Thermal stability and catalytic activity of gold nanoparticles supported on silica. Journal of Catalysis, 2009, 262, 92-101.	6.2	170
9	Surface faceting and elemental diffusion behaviour at atomic scale for alloy nanoparticles during in situ annealing. Nature Communications, 2015, 6, 8925.	12.8	159
10	Preparation and Comparison of Supported Gold Nanocatalysts on Anatase, Brookite, Rutile, and P25 Polymorphs of TiO2for Catalytic Oxidation of CO. Journal of Physical Chemistry B, 2005, 109, 10676-10685.	2.6	146
11	Transfer-matrix formalism for the calculation of optical response in multilayer systems: from coherent to incoherent interference. Optics Express, 2010, 18, 24715.	3.4	145
12	Bifunctional nanoprecipitates strengthen and ductilize a medium-entropy alloy. Nature, 2021, 595, 245-249.	27.8	141
13	AC/AB Stacking Boundaries in Bilayer Graphene. Nano Letters, 2013, 13, 3262-3268.	9.1	137
14	Electron Transfer and Ionic Displacements at the Origin of the 2D Electron Gas at the LAO/STO Interface: Direct Measurements with Atomicâ€Column Spatial Resolution. Advanced Materials, 2012, 24, 3952-3957.	21.0	132
15	Criteria for Predicting the Formation of Single-Phase High-Entropy Alloys. Physical Review X, 2015, 5, .	8.9	123
16	Three-dimensional ADF imaging of individual atoms by through-focal series scanning transmission electron microscopy. Ultramicroscopy, 2006, 106, 1062-1068.	1.9	122
17	Role of the nanoscale in catalytic CO oxidation by supported Au and Pt nanostructures. Physical Review B, 2007, 76, .	3.2	122
18	Beyond Atomic Sizes and Hume-Rothery Rules: Understanding and Predicting High-Entropy Alloys. Jom, 2015, 67, 2350-2363.	1.9	99

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19	Directing Matter: Toward Atomic-Scale 3D Nanofabrication. ACS Nano, 2016, 10, 5600-5618.	14.6	99
20	Temperature Measurement by a Nanoscale Electron Probe Using Energy Gain and Loss Spectroscopy. Physical Review Letters, 2018, 120, 095901.	7.8	97
21	Nanoparticles of gold on -AlO produced by dc magnetron sputtering. Journal of Catalysis, 2005, 231, 151-158.	6.2	95
22	The observation of square ice in graphene questioned. Nature, 2015, 528, E1-E2.	27.8	95
23	Structure and Ultrafast Dynamics of White-Light-Emitting CdSe Nanocrystals. Journal of the American Chemical Society, 2009, 131, 5730-5731.	13.7	91
24	Direct Observation of Dopant Atom Diffusion in a Bulk Semiconductor Crystal Enhanced by a Large Size Mismatch. Physical Review Letters, 2014, 113, 155501.	7.8	91
25	Three-Dimensional Location of a Single Dopant with Atomic Precision by Aberration-Corrected Scanning Transmission Electron Microscopy. Nano Letters, 2014, 14, 1903-1908.	9.1	89
26	<i>In Situ</i> Observation of Oxygen Vacancy Dynamics and Ordering in the Epitaxial LaCoO₃ System. ACS Nano, 2017, 11, 6942-6949.	14.6	89
27	From atomic structure to photovoltaic properties in CdTe solar cells. Ultramicroscopy, 2013, 134, 113-125.	1.9	80
28	Quantitative Annular Dark Field Electron Microscopy Using Single Electron Signals. Microscopy and Microanalysis, 2014, 20, 99-110.	0.4	80
29	Towards 3D Mapping of BO₆ Octahedron Rotations at Perovskite Heterointerfaces, Unit Cell by Unit Cell. ACS Nano, 2015, 9, 8412-8419.	14.6	78
30	Gold on carbon: one billion catalysts under a single label. Physical Chemistry Chemical Physics, 2012, 14, 2969.	2.8	74
31	Depth sectioning of aligned crystals with the aberration-corrected scanning transmission electron microscope. Journal of Electron Microscopy, 2006, 55, 7-12.	0.9	73
32	Atomicâ€Level Sculpting of Crystalline Oxides: Toward Bulk Nanofabrication with Single Atomic Plane Precision. Small, 2015, 11, 5895-5900.	10.0	73
33	Atom-by-atom fabrication with electron beams. Nature Reviews Materials, 2019, 4, 497-507.	48.7	73
34	Nanoscale analysis of YBa2Cu3O7â^’x/La0.67Ca0.33MnO3 interfaces. Solid-State Electronics, 2003, 47, 2245-2248.	1.4	72
35	Magnetron sputtering of gold nanoparticles onto WO3 and activated carbon. Catalysis Today, 2007, 122, 248-253.	4.4	68
36	Role of pH in the Formation of Structurally Stable and Catalytically Active TiO₂-Supported Gold Catalysts. Journal of Physical Chemistry C, 2009, 113, 269-280.	3.1	67

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37	Exploring the capabilities of monochromated electron energy loss spectroscopy in the infrared regime. Scientific Reports, 2018, 8, 5637.	3.3	67
38	Atomic-resolution spectroscopic imaging: past, present and future. Journal of Electron Microscopy, 2009, 58, 87-97.	0.9	66
39	Single Atom Microscopy. Microscopy and Microanalysis, 2012, 18, 1342-1354.	0.4	63
40	Directed Atom-by-Atom Assembly of Dopants in Silicon. ACS Nano, 2018, 12, 5873-5879.	14.6	62
41	Dynamic scan control in STEM: spiral scans. Advanced Structural and Chemical Imaging, 2016, 2, .	4.0	59
42	Machine learning in scanning transmission electron microscopy. Nature Reviews Methods Primers, 2022, 2, .	21.2	59
43	Interface dipole between two metallic oxides caused by localized oxygen vacancies. Physical Review B, 2012, 86, .	3.2	56
44	Monolithic graded-refractive-index glass-based antireflective coatings: broadband/omnidirectional light harvesting and self-cleaning characteristics. Journal of Materials Chemistry C, 2015, 3, 5440-5449.	5.5	55
45	Large-angle illumination STEM: Toward three-dimensional atom-by-atom imaging. Ultramicroscopy, 2015, 151, 122-129.	1.9	54
46	Carrier Separation at Dislocation Pairs in CdTe. Physical Review Letters, 2013, 111, 096403.	7.8	51
47	Automated and Autonomous Experiments in Electron and Scanning Probe Microscopy. ACS Nano, 2021, 15, 12604-12627.	14.6	49
48	Persistent Photoconductivity in 2D Electron Gases at Different Oxide Interfaces. Advanced Optical Materials, 2013, 1, 834-843.	7.3	48
49	Optically transparent, mechanically durable, nanostructured superhydrophobic surfaces enabled by spinodally phase-separated glass thin films. Nanotechnology, 2013, 24, 315602.	2.6	47
50	Direct atomic fabrication and dopant positioning in Si using electron beams with active real-time image-based feedback. Nanotechnology, 2018, 29, 255303.	2.6	46
51	Polar-Graded Multiferroic SrMnO₃ Thin Films. Nano Letters, 2016, 16, 2221-2227.	9.1	45
52	Atomic Structure of Luminescent Centers in High-Efficiency Ce-doped w-AlN Single Crystal. Scientific Reports, 2014, 4, 3778.	3.3	43
53	Single atom visibility in STEM optical depth sectioning. Applied Physics Letters, 2016, 109, .	3.3	40
54	Manifold learning of four-dimensional scanning transmission electron microscopy. Npj Computational Materials, 2019, 5, .	8.7	37

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55	Electron-beam introduction of heteroatomic Ptâ€“Si structures in graphene. Carbon, 2020, 161, 750-757.	10.3	34
56	Evidence for the Formation of Nitrogen-Rich Platinum and Palladium Nitride Nanoparticles. Chemistry of Materials, 2013, 25, 4936-4945.	6.7	33
57	Single-atom dynamics in scanning transmission electron microscopy. MRS Bulletin, 2017, 42, 644-652.	3.5	33
58	Direct-write liquid phase transformations with a scanning transmission electron microscope. Nanoscale, 2016, 8, 15581-15588.	5.6	29
59	Few-Layer Graphene as a Support Film for Transmission Electron Microscopy Imaging of Nanoparticles. ACS Applied Materials & Interfaces, 2009, 1, 2886-2892.	8.0	28
60	Spatial Resolution and Information Transfer in Scanning Transmission Electron Microscopy. Microscopy and Microanalysis, 2008, 14, 36-47.	0.4	27
61	Atomic-scale manipulation of potential barriers at SrTiO3 grain boundaries. Applied Physics Letters, 2005, 87, 121917.	3.3	25
62	Using a New Finite Slit Pore Model for NLDFT Analysis of Carbon Pore Structure. Adsorption Science and Technology, 2011, 29, 769-780.	3.2	24
63	Lab on a beamâ€”Big data and artificial intelligence in scanning transmission electron microscopy. MRS Bulletin, 2019, 44, 565-575.	3.5	24
64	Imaging at the picoscale. Materials Today, 2004, 7, 42-48.	14.2	23
65	Precision controlled atomic resolution scanning transmission electron microscopy using spiral scan pathways. Scientific Reports, 2017, 7, 43585.	3.3	23
66	The Three-Dimensional Point Spread Function of Aberration-Corrected Scanning Transmission Electron Microscopy. Microscopy and Microanalysis, 2011, 17, 817-826.	0.4	22
67	Synthesis and characterization of pâ€“n homojunction-containing zinc oxide nanowires. Nanoscale, 2013, 5, 2259.	5.6	22
68	Combined Scanning Transmission Electron Microscopy Tilt- and Focal Series. Microscopy and Microanalysis, 2014, 20, 548-560.	0.4	21
69	Ultra-high resolution electron microscopy. Reports on Progress in Physics, 2017, 80, 026101.	20.1	21
70	Direct Cation Exchange in Monolayer <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msub><mml:mrow><mml:mi>MoS</mml:mi></mml:mrow><mml:mn>2</mml:mn></mml:msub></ via Recombination-Enhanced Migration. Physical Review Letters, 2019, 122, 106101.	7.8	21
71	Correlated oxide Dirac semimetal in the extreme quantum limit. Science Advances, 2021, 7, eabf9631.	10.3	19
72	Hierarchical TiO₂:Cu₂O Nanostructures for Gas/Vapor Sensing and CO₂ Sequestration. ACS Applied Materials & Interfaces, 2019, 11, 48466-48475.	8.0	18

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73	Nanostructured columnar heterostructures of TiO2 and Cu2O enabled by a thin-film self-assembly approach: Potential for photovoltaics. Materials Research Bulletin, 2013, 48, 352-356.	5.2	15
74	Probing atomic-scale symmetry breaking by rotationally invariant machine learning of multidimensional electron scattering. Npj Computational Materials, 2021, 7, .	8.7	15
75	Variable voltage electron microscopy: Toward atom-by-atom fabrication in 2D materials. Ultramicroscopy, 2020, 211, 112949.	1.9	14
76	A Novel Sb₂Te₃ Polymorph Stable at the Nanoscale. Chemistry of Materials, 2015, 27, 4368-4373.	6.7	13
77	Polarization- and wavelength-resolved near-field imaging of complex plasmonic modes in Archimedean nanospirals. Optics Letters, 2018, 43, 927.	3.3	13
78	High-K dielectric sulfur-selenium alloys. Science Advances, 2019, 5, eaau9785.	10.3	13
79	Rapid autotuning for crystalline specimens from an inline hologram. Microscopy (Oxford, England), 2008, 57, 195-201.	1.5	11
80	The Electron Ronchigram. , 2011, , 117-161.		11
81	A Pathway for the Growth of Coreâ€"Shell Ptâ€"Pd Nanoparticles. Journal of Physical Chemistry C, 2015, 119, 25114-25121.	3.1	11
82	Detection of defects in atomic-resolution images of materials using cycle analysis. Advanced Structural and Chemical Imaging, 2020, 6, .	4.0	11
83	Defect detection in atomic-resolution images via unsupervised learning with translational invariance. Npj Computational Materials, 2021, 7, .	8.7	11
84	The use of Magnetron Sputtering for the Production of Heterogeneous Catalysts. Studies in Surface Science and Catalysis, 2006, , 71-78.	1.5	10
85	Mechanism of Electron-Beam Manipulation of Single-Dopant Atoms in Silicon. Journal of Physical Chemistry C, 2021, 125, 16041-16048.	3.1	10
86	Pushing the limits of electron ptychography. Science, 2018, 362, 399-400.	12.6	9
87	An evaluation of phase separated, self-assembled LaMnO₃-MgO nanocomposite films directly on IBAD-MgO as buffer layers for flux pinning enhancements in YBa₂Cu₃O_{7-Î´} coated conductors. Journal of Materials Research, 2010, 25, 437-443.	2.6	7
88	Mapping Conductance and Switching Behavior of Graphene Devices In Situ. Small Methods, 2022, 6, e2101245.	8.6	7
89	Column-by-column observation of dislocation motion in CdTe: Dynamic scanning transmission electron microscopy. Applied Physics Letters, 2016, 109, .	3.3	6
90	Gaussian process analysis of electron energy loss spectroscopy data: multivariate reconstruction and kernel control. Npj Computational Materials, 2021, 7, .	8.7	6

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91	Theory-assisted determination of nano-rippling and impurities in atomic resolution images of angle-mismatched bilayer graphene. 2D Materials, 2018, 5, 041008.	4.4	5
92	Imaging Secondary Electron Emission from a Single Atomic Layer. Small Methods, 2021, 5, 2000950.	8.6	5
93	Controlling hydrocarbon transport and electron beam induced deposition on single layer graphene: Toward atomic scale synthesis in the scanning transmission electron microscope. Nano Select, 0, , .	3.7	5
94	Sculpting the Plasmonic Responses of Nanoparticles by Directed Electron Beam Irradiation. Small, 2022, 18, e2105099.	10.0	5
95	Tuning Fifth-Order Aberrations in a Quadrupole-Octupole Corrector. Microscopy and Microanalysis, 2012, 18, 699-704.	0.4	4
96	Ptychographic Imaging in an Aberration Corrected STEM. Microscopy and Microanalysis, 2015, 21, 1219-1220.	0.4	4
97	Studying Dynamics of Oxygen Vacancy Ordering in Epitaxial LaCoO₃ / SrTiO₃ Superlattice with Real-Time Observation. Microscopy and Microanalysis, 2014, 20, 422-423.	0.4	3
98	Homo-endotaxial one-dimensional Si nanostructures. Nanoscale, 2018, 10, 260-267.	5.6	3
99	Contrast Mechanisms in Secondary Electron e-Beam-Induced Current (SEEBIC) Imaging. Microscopy and Microanalysis, 0, , 1-17.	0.4	3
100	TFS: Combined Tilt- and Focal Series Scanning Transmission Electron Microscopy. Microscopy and Microanalysis, 2014, 20, 786-787.	0.4	2
101	Using Multivariate Analysis of Scanning-Rochigram Data to Reveal Material Functionality. Microscopy and Microanalysis, 2016, 22, 292-293.	0.4	2
102	Mapping Magnetic Ordering With Aberrated Electron Probes in STEM. Microscopy and Microanalysis, 2016, 22, 1676-1677.	0.4	2
103	Structure retrieval from four-dimensional scanning transmission electron microscopy: Statistical analysis of potential pitfalls in high-dimensional data. Physical Review E, 2019, 100, 023308.	2.1	2
104	An Atomic-Scale Perspective of the Challenging Microstructure of YBa2Cu3O7âˆ’x Thin Films. , 2020, , 189-212.		2
105	Magnetron Sputtering to Prepare Supported Metal Catalysts. , 2008, , 347-353.		2
106	Understanding Individual Defects in CdTe Solar Cells: From Atomic Structure to Electrical Activity. Microscopy and Microanalysis, 2014, 20, 518-519.	0.4	1
107	Column-by-Column Imaging of Dislocation Slip Processes in CdTe. Microscopy and Microanalysis, 2014, 20, 1054-1055.	0.4	1
108	Flexible Metallic Nanowires with Self-Adaptive Contacts to Semiconducting Transition-Metal Dichalcogenide Monolayers. Microscopy and Microanalysis, 2014, 20, 1760-1761.	0.4	1

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109	Fast Aberration Measurement in Multi-Dimensional STEM. Microscopy and Microanalysis, 2016, 22, 252-253.	0.4	1
110	Combined Tilt- and Focal-Series Tomography for HAADF-STEM. Microscopy Today, 2016, 24, 26-31.	0.3	1
111	Three-Dimensional Point Defect Imaging by Large-angle Illumination STEM. Microscopy and Microanalysis, 2017, 23, 424-425.	0.4	1
112	Identifying Novel Polar Distortion Modes in Engineered Magnetic Oxide Superlattices. Microscopy and Microanalysis, 2017, 23, 1590-1591.	0.4	1
113	Towards topological spectroscopy in the electron microscope with atomic resolution. Microscopy and Microanalysis, 2018, 24, 926-927.	0.4	1
114	Automatic detection of crystallographic defects in STEM images by unsupervised learning with translational invariance. Microscopy and Microanalysis, 2021, 27, 1460-1462.	0.4	1
115	Tracking Dopant Diffusion Pathways inside Bulk Materials. Microscopy and Microanalysis, 2014, 20, 50-51.	0.4	0
116	Toward 3D Mapping of Octahedral Rotations at Perovskite Thin Film Heterointerfaces Unit Cell by Unit Cell. Microscopy and Microanalysis, 2014, 20, 1038-1039.	0.4	0
117	Quantification of Dopant Distribution and the Local Band Gap in Selenium-Doped Molybdenum Disulfide. Microscopy and Microanalysis, 2014, 20, 1754-1755.	0.4	0
118	Automated and Shaped-Controlled Liquid STEM Nanolithography. Microscopy and Microanalysis, 2015, 21, 1127-1128.	0.4	0
119	Direct Observation of Plasmonic Enhancement of Emission in Ag-nanoparticle-decorated ZnO nanostructures. Microscopy and Microanalysis, 2015, 21, 2389-2390.	0.4	0
120	Probing Plasmons in Three Dimensions within Random Morphology Nanostructures. Microscopy and Microanalysis, 2015, 21, 1683-1684.	0.4	0
121	Quantitative Electron Microscopy and the Application by Single Electron Signals. Microscopy and Microanalysis, 2015, 21, 1449-1450.	0.4	0
122	STEM in 4 Dimensions: Using Multivariate Analysis of Ptychographic Data to Reveal Material Functionality. Microscopy and Microanalysis, 2015, 21, 1863-1864.	0.4	0
123	Pushing the Limits of Cathodoluminescence Signal Detection: Analyzing 2D Materials. Microscopy and Microanalysis, 2015, 21, 2049-2050.	0.4	0
124	Tracking BO 6 Coupling in Perovskite Superlattices to Engineer Magnetic Interface Behavior. Microscopy and Microanalysis, 2016, 22, 904-905.	0.4	0
125	Single Atom Imaging and Spectroscopy of Impurities in 2D Materials. Microscopy and Microanalysis, 2016, 22, 862-863.	0.4	0
126	Probing Strain-Induced Phenomena in Low Dimensionality Multiferroic Oxides. Microscopy and Microanalysis, 2017, 23, 1726-1727.	0.4	0

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127	Acquisition and Fast Analysis of Multi-Dimensional STEM Data. Microscopy and Microanalysis, 2017, 23, 168-169.	0.4	0
128	Movement and Imaging of Single-Atom Dopants in Silicon. Microscopy and Microanalysis, 2017, 23, 1706-1707.	0.4	0
129	Temperature Measurement by a Nanoscale Electron Probe using Energy Gain and Loss Spectroscopy. Microscopy and Microanalysis, 2018, 24, 98-99.	0.4	0
130	Towards Atomic-Scale Fabrication in Silicon. Microscopy and Microanalysis, 2018, 24, 158-159.	0.4	0
131	Atomic Manipulation on a Scanning Transmission Electron Microscope Platform using Real-Time Image Processing and Feedback. Microscopy and Microanalysis, 2018, 24, 534-535.	0.4	0
132	Automated Atom-by-Atom Assembly of Structures in Graphene: The Rise of STEM for Atomic Scale Control. Microscopy and Microanalysis, 2018, 24, 1594-1595.	0.4	0
133	Direct Imaging of Low-Dimensional Nanostructures. Microscopy and Microanalysis, 2018, 24, 90-91.	0.4	0
134	A STEM-based Path Towards Atomic-scale Silicon-based Devices. Microscopy and Microanalysis, 2019, 25, 2290-2291.	0.4	0
135	From Control of the Electron Beam to Control of Single Atoms. Microscopy and Microanalysis, 2019, 25, 1678-1679.	0.4	0
136	Unsupervised Machine Learning to Distill Structural-Property Insights from 4D-STEM. Microscopy and Microanalysis, 2019, 25, 12-13.	0.4	0
137	Evolution of lattice defects upon Bi-doping of epitaxial Si overlayers on Si(1â€¯0â€¯0). Applied Surface Science, 2020, 502, 144284.	6.1	0
138	Accurately Imaging, Tracking and Moving Single Atoms. Microscopy and Microanalysis, 2020, 26, 2556-2557.	0.4	0
139	Uncovering the Mechanism for Electron-beam Manipulation of Dopants in Silicon. Microscopy and Microanalysis, 2020, 26, 2560-2561.	0.4	0
140	van der Waals Epitaxy Growth of Bi2Se3 on a Freestanding Monolayer Graphene Membrane: Implications for Layered Materials and Heterostructures. ACS Applied Nano Materials, 2021, 4, 7607-7613.	5.0	0
141	Atomic-scale Feedback-controlled Electron Beam Fabrication of 2D Materials. Microscopy and Microanalysis, 2021, 27, 3072-3073.	0.4	0
142	Electron Beam Control of Dopants in 2D and 3D Materials. Microscopy and Microanalysis, 2021, 27, 2150-2153.	0.4	0