Erdmann Spiecker

List of Publications by Year
in descending order

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125	5,435	117571	85498
papers	citations	34 h-index	71 g-index

128	128	128	9482
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Covalent bulk functionalization of graphene. Nature Chemistry, 2011, 3, 279-286.	6.6	596
2	A generic interface to reduce the efficiency-stability-cost gap of perovskite solar cells. Science, 2017, 358, 1192-1197.	6.0	554
3	Bipolar-shell resurfacing for blue LEDs based on strongly confined perovskite quantum dots. Nature Nanotechnology, 2020, 15, 668-674.	15.6	541
4	Black TiO₂ Nanotubes: Cocatalyst-Free Open-Circuit Hydrogen Generation. Nano Letters, 2014, 14, 3309-3313.	4.5	417
5	Overcoming the Interface Losses in Planar Heterojunction Perovskiteâ€Based Solar Cells. Advanced Materials, 2016, 28, 5112-5120.	11.1	188
6	â€œBlackâ€•TiO₂ Nanotubes Formed by High-Energy Proton Implantation Show Noble-Metal-co-Catalyst Free Photocatalytic H₂-Evolution. Nano Letters, 2015, 15, 6815-6820.	4.5	174
7	Epitaxial Growth of PbSe Quantum Dots on MoS₂ Nanosheets and their Nearâ€Infrared Photoresponse. Advanced Functional Materials, 2014, 24, 5798-5806.	7.8	134
8	Nonâ€Covalent Chemistry of Graphene: Electronic Communication with Dendronized Perylene Bisimides. Advanced Materials, 2010, 22, 5483-5487.	11.1	120
9	Advanced Scale Bridging Microstructure Analysis of Single Crystal Niâ€Base Superalloys. Advanced Engineering Materials, 2015, 17, 216-230.	1.6	117
10	Bioactive glass (type 45S5) nanoparticles: in vitro reactivity on nanoscale and biocompatibility. Journal of Nanoparticle Research, 2012, 14, 1.	0.8	114
11	Butterfly gyroid nanostructures as a time-frozen glimpse of intracellular membrane development. Science Advances, 2017, 3, e1603119.	4.7	109
12	Planar defect formation in the Î³â€² phase during high temperature creep in single crystal CoNi-base superalloys. Acta Materialia, 2016, 113, 335-349.	3.8	108
13	On the diffusive phase transformation mechanism assisted by extended dislocations during creep of a single crystal CoNi-based superalloy. Acta Materialia, 2018, 155, 362-371.	3.8	89
14	Strain-activated light-induced halide segregation in mixed-halide perovskite solids. Nature Communications, 2020, 11, 6328.	5.8	86
15	On the grain boundary strengthening effect of boron in Î³/Î³â€² Cobalt-base superalloys. Acta Materialia, 2018, 145, 247-254.	3.8	73
16	The process of solid-state dewetting of Au thin films studied by in situ scanning transmission electron microscopy. Acta Materialia, 2015, 90, 118-132.	3.8	71
17	Encapsulation of silver nanowire networks by atomic layer deposition for indium-free transparent electrodes. Nano Energy, 2015, 16, 196-206.	8.2	68
18	Local temperature measurement in TEM by parallel beam electron diffraction. Ultramicroscopy, 2017, 176, 161-169.	0.8	67

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19	Organic and perovskite solar modules innovated by adhesive top electrode and depth-resolved laser patterning. Energy and Environmental Science, 2016, 9, 2302-2313.	15.6	64
20	Photophysics of Molecularâ€Weightâ€Induced Losses in Indacenodithienothiopheneâ€Based Solar Cells. Advanced Functional Materials, 2015, 25, 4898-4907.	7.8	61
21	Coexistence of both gyroid chiralities in individual butterfly wing scales of Callophrys rubi. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 12911-12916.	3.3	58
22	Thermophysical and Mechanical Properties of Advanced Single Crystalline Co-base Superalloys. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2018, 49, 4099-4109.	1.1	58
23	High efficiency and stability small molecule solar cells developed by bulk microstructure fine-tuning. Nano Energy, 2016, 28, 241-249.	8.2	57
24	Suppression of Hysteresis Effects in Organohalide Perovskite Solar Cells. Advanced Materials Interfaces, 2017, 4, 1700007.	1.9	57
25	Unravelling the Mechanisms of Goldâ€“Silver Coreâ€“Shell Nanostructure Formation by in Situ TEM Using an Advanced Liquid Cell Design. Nano Letters, 2018, 18, 7222-7229.	4.5	57
26	Early stages of scale formation during oxidation of Î³ / Î³ â€² strengthened single crystal ternary Co-base superalloy at 900â€¯Â°C. Corrosion Science, 2018, 135, 78-86.	3.0	56
27	Elemental segregation to antiphase boundaries in a crept CoNi-based single crystal superalloy. Scripta Materialia, 2018, 157, 62-66.	2.6	48
28	Tension/Compression asymmetry of a creep deformed single crystal Co-base superalloy. Acta Materialia, 2019, 166, 597-610.	3.8	48
29	Broadband NIR photoluminescence from Ni²⁺-doped nanocrystalline Baâ€“Al titanate glass ceramics. Journal of Materials Chemistry, 2012, 22, 2582-2588.	6.7	47
30	Interface Molecular Engineering for Laminated Monolithic Perovskite/Silicon Tandem Solar Cells with 80.4% Fill Factor. Advanced Functional Materials, 2019, 29, 1901476.	7.8	43
31	Crack healing induced electrical and mechanical properties recovery in a Ti 2 SnC ceramic. Journal of the European Ceramic Society, 2016, 36, 25-32.	2.8	42
32	Inducing a Nanotwinned Grain Structure within the TiO₂ Nanotubes Provides Enhanced Electron Transport and DSSC Efficiencies >10%. Advanced Energy Materials, 2018, 8, 1800981.	10.2	42
33	A comprehensive study on the mechanism behind formation and depletion of Cu₂ZnSnS₄ (CZTS) phases. CrystEngComm, 2015, 17, 6972-6984.	1.3	37
34	Influence of anisotropic elasticity on the mechanical properties of fivefold twinned nanowires. Journal of the Mechanics and Physics of Solids, 2015, 84, 358-379.	2.3	37
35	Mechanical cleaning of graphene using in situ electron microscopy. Nature Communications, 2020, 11, 1743.	5.8	36
36	Pushing PbS/Metalâ€Halideâ€Perovskite Core/Epitaxialâ€Ligandâ€Shell Nanocrystal Photodetectors beyond 3 Âµm Wavelength. Advanced Functional Materials, 2019, 29, 1807964.	7.8	35

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37	Combining Atomistic Simulation and X-ray Diffraction for the Characterization of Nanostructures: A Case Study on Fivefold Twinned Nanowires. ACS Nano, 2014, 8, 1629-1638.	7.3	34
38	In situ manipulation and switching of dislocations in bilayer graphene. Science Advances, 2018, 4, eaat4712.	4.7	33
39	Accessing local electron-beam induced temperature changes during in situ liquid-phase transmission electron microscopy. Nanoscale Advances, 2021, 3, 2466-2474.	2.2	30
40	Uniform Surface Modification of 3D BioglassÂ®-Based Scaffolds with Mesoporous Silica Particles (MCM-41) for Enhancing Drug Delivery Capability. Frontiers in Bioengineering and Biotechnology, 2015, 3, 177.	2.0	29
41	Segregation-assisted climb of Frank partial dislocations: An alternative route to superintrinsic stacking faults in L12-hardened superalloys. Acta Materialia, 2020, 191, 270-279.	3.8	26
42	Reduced grey brookite for noble metal free photocatalytic H₂evolution. Journal of Materials Chemistry A, 2021, 9, 1168-1179.	5.2	26
43	Texture evolution and microstructural changes during solid-state dewetting: A correlative study by complementary in situ TEM techniques. Acta Materialia, 2016, 115, 230-241.	3.8	23
44	In Situ Liquid Cell TEM Studies on Etching and Growth Mechanisms of Gold Nanoparticles at a Solidâ€“Liquidâ€“Gas Interface. Advanced Materials Interfaces, 2019, 6, 1901027.	1.9	23
45	Microscopic Deformation Modes and Impact of Network Anisotropy on the Mechanical and Electrical Performance of Five-fold Twinned Silver Nanowire Electrodes. ACS Nano, 2021, 15, 362-376.	7.3	23
46	The effects of post-processing on the surface and the optical properties of copper indium sulfide quantum dots. Journal of Colloid and Interface Science, 2015, 445, 337-347.	5.0	22
47	Early stages of high-temperature oxidation of Ni- and Co-base model superalloys: A comparative study using rapid thermal annealing and advanced electron microscopy. Corrosion Science, 2021, 191, 109744.	3.0	22
48	Epitaxial Metal Halide Perovskites by Inkjetâ€Printing on Various Substrates. Advanced Functional Materials, 2020, 30, 2004612.	7.8	21
49	ZnS Ultrathin Interfacial Layers for Optimizing Carrier Management in Sb₂S₃-based Photovoltaics. ACS Applied Materials & Interfaces, 2021, 13, 11861-11868.	4.0	20
50	Well-separated water-soluble carbon dots via gradient chromatography. Nanoscale, 2021, 13, 13116-13128.	2.8	19
51	Grain boundary mediated plasticity: A blessing for the ductility of metallic thin films?. Acta Materialia, 2021, 215, 117079.	3.8	18
52	On the identification of superdislocations in the Î³â€²-phase of single-crystal Ni-base superalloys â€“ An application of the LACBED method to complex microstructures. Acta Materialia, 2015, 87, 34-44.	3.8	17
53	Insights into fundamental deformation processes from advanced in situ transmission electron microscopy. MRS Bulletin, 2019, 44, 443-449.	1.7	16
54	Assembling Mesoscaleâ€Structured Organic Interfaces in Perovskite Photovoltaics. Advanced Materials, 2019, 31, e1806516.	11.1	16

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55	Yielding behavior of a single-crystalline Î³'-strengthened Co-Ti-Cr superalloy. Scripta Materialia, 2021, 200, 113928.	2.6	16
56	A significant cathodic shift in the onset potential of photoelectrochemical water splitting for hematite nanostructures grown from Feâ€“Si alloys. Materials Horizons, 2014, 1, 344-347.	6.4	15
57	Deformation behavior of nanocrystalline titania particles accessed by complementary inÂsitu electron microscopy techniques. Journal of the American Ceramic Society, 2017, 100, 5709-5722.	1.9	15
58	RadiolysisâEDriven Evolution of Gold Nanostructures â€“ Model Verification by Scale Bridging In Situ LiquidâEPhase Transmission Electron Microscopy and Xâ€Ray Diffraction. Advanced Science, 2022, 9, .	5.6	15
59	Direct observation of dislocation formation and plastic anisotropy in Nb2AlC MAX phase using in situ nanomechanics in transmission electron microscopy. Scripta Materialia, 2017, 137, 104-108.	2.6	14
60	Understanding the Role of Surface Charge in Cellular Uptake and X-ray-Induced ROS Enhancing of Auâ€“Fe₃O₄ Nanoheterodimers. ACS Applied Bio Materials, 2018, 1, 2002-2011.	2.3	14
61	Determination of 3D electrostatic field at an electron nano-emitter. Applied Physics Letters, 2019, 114, 013101.	1.5	14
62	Effect of the Counteranion on the Formation Pathway of Cu₂ZnSnS₄ (CZTS) Nanoparticles under Solvothermal Conditions. Inorganic Chemistry, 2020, 59, 1973-1984.	1.9	14
63	Quantification of the temperature-dependent evolution of defect structures in a CoNi-base superalloy. Acta Materialia, 2022, 227, 117702.	3.8	14
64	A flexible method for the preparation of thin film samples for in situ TEM characterization combining shadow-FIB milling and electron-beam-assisted etching. Ultramicroscopy, 2016, 171, 82-88.	0.8	13
65	Memory Effect of Selfâ€Assembled PSâ€bâ€PEO Block Copolymer Films with Selectively Embedded Functionalized TiO₂ Nanoparticles. Advanced Materials Interfaces, 2017, 4, 1700230.	1.9	13
66	Transforming layered MoS₂ into functional MoO₂ nanowires. Nanoscale, 2019, 11, 11687-11695.	2.8	12
67	LPE growth of Tb₃Al₅O₁₂:Ce single crystalline film converters for WLED application. CrystEngComm, 2021, 23, 3212-3219.	1.3	12
68	A New Crystal Phase Molybdate Yb₂Mo₄O₁₅: The Synthesis and Upconversion Properties. Particle and Particle Systems Characterization, 2015, 32, 340-346.	1.2	11
69	Correlative micro-diffraction and differential phase contrast study of mean inner potential and subtle beam-specimen interaction. Ultramicroscopy, 2017, 176, 233-245.	0.8	11
70	Impact of N Incorporation on VLS Growth of GaP(N) Nanowires Utilizing UDMH. Nanoscale Research Letters, 2018, 13, 417.	3.1	11
71	In Vitro Endothelialization of Surface-Integrated Nanofiber Networks for Stretchable Blood Interfaces. ACS Applied Materials & Interfaces, 2019, 11, 5740-5751.	4.0	11
72	Correlative Laboratory Nanoâ€CT and 360Â° Electron Tomography of Macropore Structures in Hierarchical Zeolites. Advanced Materials Interfaces, 2021, 8, 2001154.	1.9	11

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73	Effect of size and shape on the elastic modulus of metal nanowires. MRS Advances, 2021, 6, 665-673.	0.5	11
74	Scavenging of bacteria or bacterial products by magnetic particles functionalized with a broad-spectrum pathogen recognition receptor motif offers diagnostic and therapeutic applications. Acta Biomaterialia, 2022, 141, 418-428.	4.1	11
75	Areaâ€Selective Growth of HfS₂ Thin Films via Atomic Layer Deposition at Low Temperature. Advanced Materials Interfaces, 2020, 7, 2001493.	1.9	10
76	Rapid fabrication and interface structure of highly faceted epitaxial Ni-Au solid solution nanoparticles on sapphire. Acta Materialia, 2021, 220, 117318.	3.8	10
77	Intrinsic nano-diffusion-couple for studying high temperature diffusion in multi-component superalloys. Scripta Materialia, 2021, 192, 120-124.	2.6	8
78	Noncovalent Liquid Phase Functionalization of 2H-WS₂ with PDI: An Energy Conversion Platform with Long-Lived Charge Separation. Journal of the American Chemical Society, 2022, 144, 5834-5840.	6.6	8
79	Understanding and Controlling the Evolution of Nanomorphology and Crystallinity of Organic Bulkâ€Heterojunction Blends with Solvent Vapor Annealing. Solar Rrl, 2022, 6, .	3.1	8
80	Nanoscale distribution of Bi atoms in InP1â^'xBix. Scientific Reports, 2017, 7, 12278.	1.6	7
81	Low temperature solid-state wetting and formation of nanowelds in silver nanowires. Nanotechnology, 2017, 28, 385701.	1.3	7
82	Fabrication and structural characterization of diamond-coated tungsten tips. Diamond and Related Materials, 2019, 97, 107446.	1.8	7
83	Collecting up to 115% of Singlet-Fission Products by Single-Walled Carbon Nanotubes. ACS Nano, 2020, 14, 8875-8886.	7.3	7
84	Unraveling the Complex Nanomorphology of Ternary Organic Solar Cells with Multimodal Analytical Transmission Electron Microscopy. Solar Rrl, 2020, 4, 2000114.	3.1	7
85	Unraveling Structural Details in Ga-Pd SCALMS Systems Using Correlative Nano-CT, 360Â° Electron Tomography and Analytical TEM. Catalysts, 2021, 11, 810.	1.6	7
86	Hydrogenated anatase TiO₂ single crystals: defects formation and structural changes as microscopic origin of co-catalyst free photocatalytic H₂ evolution activity. Journal of Materials Chemistry A, 2021, 9, 24932-24942.	5.2	7
87	Overcoming Temperatureâ€Induced Degradation of Silver Nanowire Electrodes by an Ag@SnO_x Coreâ€Shell Approach. Advanced Electronic Materials, 2022, 8, .	2.6	7
88	Preparation of Graphene-Supported Microwell Liquid Cells for In Situ Transmission Electron Microscopy. Journal of Visualized Experiments, 2019, , .	0.2	6
89	Buried Microphase Separation by Dynamic Interplay of Crystallization and Microphase Separation in Semicrystalline PEO-Rich PS-b-PEO Block Copolymer Thin Films. Macromolecules, 2020, 53, 5604-5613.	2.2	6
90	Crystal-structure of active layers of small molecule organic photovoltaics before and after solvent vapor annealing. Zeitschrift Fur Kristallographie - Crystalline Materials, 2020, 235, 15-28.	0.4	6

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91	Exploring the Preparation Dependence of Crystalline 2D-Extended Ultrathin C8-BTBT-C8 Films. ACS Applied Materials & Interfaces, 2022, 14, 16830-16838.	4.0	6
92	Sub-Kelvin thermometry for evaluating the local temperature stability within in situ TEM gas cells. Ultramicroscopy, 2022, 235, 113494.	0.8	6
93	Seeing structural evolution of organic molecular nano-crystallites using 4D scanning confocal electron diffractionÂ(4D-SCED). Nature Communications, 2022, 13, .	5.8	6
94	Phase evolution of Cu₂ZnSnS₄ (CZTS) nanoparticles from in situ formed binary sulphides under solvothermal conditions. CrystEngComm, 2021, 23, 7944-7954.	1.3	5
95	Pressure induced local phase transformation in nanocrystalline tetragonal zirconia microparticles. Scripta Materialia, 2019, 163, 86-90.	2.6	4
96	Correlative Nanoâ€Computed Tomography and Focused Ionâ€Beam Sectioning: A Case Study on a Coâ€Base Superalloy Oxide Scale. Advanced Engineering Materials, 2020, 22, 1900823.	1.6	4
97	Efficient charge-transfer from diketopyrrolopyrroles to single-walled carbon nanotubes. Nanoscale, 2021, 13, 11544-11551.	2.8	4
98	Distinct endocytosis and immune activation of poly(lactic-co-glycolic) acidÂnanoparticles prepared by single- and double-emulsion evaporation. Nanomedicine, 2021, 16, 2075-2094.	1.7	4
99	Ptâ€“Fe₃O₄, Pdâ€“Fe₃O₄, and Auâ€“Fe₃O₄ Nanoheterodimers and Their Efficacy as Radiosensitizers in Cancer Therapy. ACS Applied Bio Materials, 2021, 4, 7879-7892.	2.3	4
100	Unraveling Complexity: A Strategy for the Characterization of Anisotropic Core Multishell Nanoparticles. Particle and Particle Systems Characterization, 2020, 37, 2000145.	1.2	3
101	Structural characterization of Î±,Ï‰-DH6T monolayer films grown at the liquidâ€“liquid interface. Soft Matter, 2021, 17, 9765-9771.	1.2	3
102	Creep properties and deformation mechanisms of single-crystalline Î³â€²-strengthened superalloys in dependence of the Co/Ni ratio. Philosophical Magazine, 2022, 102, 718-744.	0.7	3
103	Atomically resolved TEM imaging of covalently functionalised graphene. Npj 2D Materials and Applications, 2022, 6, .	3.9	3
104	Epitaxial upward transport of Al at the beginning of the Alâ€induced layer exchange process. Physica Status Solidi - Rapid Research Letters, 2011, 5, 172-174.	1.2	2
105	Lowâ€temperature oxidationâ€induced crack healing in Ti 2 Al 0.5 Sn 0.5 Câ€“Al 2 O 3 composites. International Journal of Applied Ceramic Technology, 2019, 16, 1744-1751.	1.1	2
106	Facile one-pot synthesis of water-soluble fcc FePt3 alloy nanostructures. SN Applied Sciences, 2020, 2, 1.	1.5	2
107	Comprehensive, multidimensional and correlative particle characterization of a saxolite and talcum compound to support the understanding of complex separation processes. Microscopy and Microanalysis, 2021, 27, 934-937.	0.2	2
108	Atomic Structure and Chemical Composition of Planar Fault Structures in Co-Base Superalloys. Minerals, Metals and Materials Series, 2020, , 920-928.	0.3	2

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109	The effect of Î³ matrix channel width on the compositional evolution in a multi-component nickel-based superalloy. Scripta Materialia, 2022, 219, 114853.	2.6	2
110	Publisherâ€™s note. Ultramicroscopy, 2017, 177, 1-13.	0.8	1
111	Nanoparticles: In Situ Liquid Cell TEM Studies on Etching and Growth Mechanisms of Gold Nanoparticles at a Solidâ€“Liquidâ€“Gas Interface (Adv. Mater. Interfaces 20/2019). Advanced Materials Interfaces, 2019, 6, 1970126.	1.9	1
112	In situ chip-based heating studies of metal-induced layer exchange and Si crystallization using STEM, LEND and SE imaging in SEM. Microscopy and Microanalysis, 2021, 27, 2696-2698.	0.2	1
113	Extending lab-based X-ray nanotomography of low Z and porous materials to larger sample volumes without compromising resolution. Microscopy and Microanalysis, 2021, 27, 1218-1221.	0.2	1
114	Modelling the Radiolysis of Silver Nitrate Solutions in presence of Bromide Ions in Liquid-Phase Transmission Electron Microscopy. Microscopy and Microanalysis, 2021, 27, 103-104.	0.2	1
115	Germanium Template Assisted Integration of Gallium Arsenide Nanocrystals on Silicon: A Versatile Platform for Modern Optoelectronic Materials. Advanced Optical Materials, 2018, 6, 1701329.	3.6	0
116	Scanning Transmission Electron Microscopy and Diffraction in SEM: Novel Approaches for In Situ Studies. Microscopy and Microanalysis, 2019, 25, 25-26.	0.2	0
117	Early stages of phase decomposition in NiAu alloy thin films studied by in situ TEM using ultrafast quenching methods. Microscopy and Microanalysis, 2021, 27, 2692-2694.	0.2	0
118	Diffraction contrast analysis of dislocations in 2D materials using true dark-field and 4D-STEM in SEM. Microscopy and Microanalysis, 2021, 27, 1816-1819.	0.2	0
119	Combining in situ heating with transmission diffraction and imaging in SEM for investigation of early stages of solid-state dewetting. Microscopy and Microanalysis, 2021, 27, 1052-1054.	0.2	0
120	Multi-modal characterization of collagen fibril orientation in human cortical bone by a combination of quantitative polarized Raman spectroscopy, nanoscale X-ray computed tomography and 360Â° electron tomography. Microscopy and Microanalysis, 2021, 27, 96-101.	0.2	0
121	Correlative Zernike phase contrast X-ray nanotomography to determine the distribution and orientation of graphite particles in a carbon fiber reinforced epoxy resin for improved thermal conductivity. Microscopy and Microanalysis, 2021, 27, 944-946.	0.2	0
122	Correlative relationship between nanomorphology, crystallinity, texture and device efficiency of organic BHJ solar cells studied by energy-filtered TEM. Microscopy and Microanalysis, 2021, 27, 390-392.	0.2	0
123	Scanning confocal electron diffraction (SCED): high angular resolution diffraction imaging with order-of-magnitude improved dose efficiency. Microscopy and Microanalysis, 2021, 27, 194-197.	0.2	0
124	Beam-induced heating at low electron fluxes during liquid phase transmission electron microscopy. Microscopy and Microanalysis, 2021, 27, 1040-1042.	0.2	0
125	A scale-bridging study of the influence of TCP phases on the mechanical properties of an additive manufactured Ni-base superalloy combining microcompression testing, X-ray nanotomography and TEM. Microscopy and Microanalysis, 2021, 27, 938-942.	0.2	0