Sergei V Kalinin

List of Publications by Year
in descending order

269 papers	15,962 citations	12322 69 h-index	20343 116 g-index
270 all docs	270 docs citations	270 times ranked	11561 citing authors

#	Article	IF	Citations
1	Imaging mechanism of piezoresponse force microscopy of ferroelectric surfaces. Physical Review B, 2002, 65, .	1.1	446
2	Polarization Control of Electron Tunneling into Ferroelectric Surfaces. Science, 2009, 324, 1421-1425.	6.0	441
3	Dual-frequency resonance-tracking atomic force microscopy. Nanotechnology, 2007, 18, 475504.	1.3	428
4	The band excitation method in scanning probe microscopy for rapid mapping of energy dissipation on the nanoscale. Nanotechnology, 2007, 18, 435503.	1.3	413
5	Local potential and polarization screening on ferroelectric surfaces. Physical Review B, 2001, 63, .	1.1	334
6	Enhanced electric conductivity at ferroelectric vortex cores in BiFeO3. Nature Physics, 2012, 8, 81-88.	6.5	324
7	Electromechanical Imaging and Spectroscopy of Ferroelectric and Piezoelectric Materials: State of the Art and Prospects for the Future. Journal of the American Ceramic Society, 2009, 92, 1629-1647.	1.9	287
8	Probing oxygen vacancy concentration and homogeneity in solid-oxide fuel-cell cathode materials on the subunit-cell level. Nature Materials, 2012, 11, 888-894.	13.3	282
9	Bigâ€“deepâ€“smart data in imaging for guiding materials design. Nature Materials, 2015, 14, 973-980.	13.3	281
10	Direct imaging of the spatial and energy distribution of nucleation centres in ferroelectric materials. Nature Materials, 2008, 7, 209-215.	13.3	250
11	Ferroelectric or non-ferroelectric: Why so many materials exhibit â€œferroelectricityâ€•on the nanoscale. Applied Physics Reviews, 2017, 4, .	5.5	240
12	Measuring oxygen reduction/evolution reactions on the nanoscale. Nature Chemistry, 2011, 3, 707-713.	6.6	233
13	Differentiating Ferroelectric and Nonferroelectric Electromechanical Effects with Scanning Probe Microscopy. ACS Nano, 2015, 9, 6484-6492.	7.3	231
14	Nanoelectromechanics of piezoresponse force microscopy. Physical Review B, 2004, 70, .	1.1	230
15	Vector Piezoresponse Force Microscopy. Microscopy and Microanalysis, 2006, 12, 206-220.	0.2	228
16	Functional Ion Defects in Transition Metal Oxides. Science, 2013, 341, 858-859.	6.0	227
17	Dynamic Conductivity of Ferroelectric Domain Walls in BiFeO₃. Nano Letters, 2011, 11, 1906-1912.	4.5	223
18	Switching of ferroelectric polarization in epitaxial BaTiO3 films on silicon without a conducting bottom electrode. Nature Nanotechnology, 2013, 8, 748-754.	15.6	218

#	Article	IF	Citations
19	Direct observation of ferroelectric field effect andÂvacancy-controlled screening at the BiFeO3/LaxSr1â”xMnO3 interface. Nature Materials, 2014, 13, 1019-1025.	13.3	218
20	Nanoscale Electromechanics of Ferroelectric and Biological Systems: A New Dimension in Scanning Probe Microscopy. Annual Review of Materials Research, 2007, 37, 189-238.	4.3	204
21	Quantitative mapping of switching behavior in piezoresponse force microscopy. Review of Scientific Instruments, 2006, 77, 073702.	0.6	193
22	Large Resistive Switching in Ferroelectric BiFeO₃ Nanoâ€Island Based Switchable Diodes. Advanced Materials, 2013, 25, 2339-2343.	11.1	192
23	Chemical nature of ferroelastic twin domains in CH3NH3PbI3 perovskite. Nature Materials, 2018, 17, 1013-1019.	13.3	183
24	A decade of piezoresponse force microscopy: progress, challenges, and opportunities. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2006, 53, 2226-2252.	1.7	170
25	Tunable Metallic Conductance in Ferroelectric Nanodomains. Nano Letters, 2012, 12, 209-213.	4.5	153
26	Mapping Octahedral Tilts and Polarization Across a Domain Wall in BiFeO₃ from Z-Contrast Scanning Transmission Electron Microscopy Image Atomic Column Shape Analysis. ACS Nano, 2010, 4, 6071-6079.	7.3	150
27	Band excitation in scanning probe microscopy: sines of change. Journal Physics D: Applied Physics, 2011, 44, 464006.	1.3	150
28	Nanoscale Switching Characteristics of Nearly Tetragonal BiFeO₃ Thin Films. Nano Letters, 2010, 10, 2555-2561.	4.5	149
29	Domain polarity and temperature induced potential inversion on the BaTiO3(100) surface. Journal of Applied Physics, 2002, 91, 3816-3823.	1.1	133
30	Surface-screening mechanisms in ferroelectric thin films and their effect on polarization dynamics and domain structures. Reports on Progress in Physics, 2018, 81, 036502.	8.1	129
31	Thermotropic phase boundaries in classic ferroelectrics. Nature Communications, 2014, 5, 3172.	5.8	123
32	Exploring Local Electrostatic Effects with Scanning Probe Microscopy: Implications for Piezoresponse Force Microscopy and Triboelectricity. ACS Nano, 2014, 8, 10229-10236.	7.3	123
33	Nanoscale Ferroelectricity in Crystalline Î³â€Glycine. Advanced Functional Materials, 2012, 22, 2996-3003.	7.8	119
34	Resonance enhancement in piezoresponse force microscopy: Mapping electromechanical activity, contact stiffness, and Q factor. Applied Physics Letters, 2006, 89, 022906.	1.5	117
35	Nanoscale Elastic Changes in 2D Ti₃C₂T_x (MXene) Pseudocapacitive Electrodes. Advanced Energy Materials, 2016, 6, 1502290.	10.2	117
36	Tunneling Electroresistance Induced by Interfacial Phase Transitions in Ultrathin Oxide Heterostructures. Nano Letters, 2013, 13, 5837-5843.	4.5	115

#	Article	IF	Citations
37	Surface Domain Structures and Mesoscopic Phase Transition in Relaxor Ferroelectrics. Advanced Functional Materials, 2011, 21, 1977-1987.	7.8	113
38	Domain Wall Conduction and Polarizationâ€Mediated Transport in Ferroelectrics. Advanced Functional Materials, 2013, 23, 2592-2616.	7.8	113
39	Principal component and spatial correlation analysis of spectroscopic-imaging data in scanning probe microscopy. Nanotechnology, 2009, 20, 085714.	1.3	112
40	The Role of Electrochemical Phenomena in Scanning Probe Microscopy of Ferroelectric Thin Films. ACS Nano, 2011, 5, 5683-5691.	7.3	109
41	Dynamic behaviour in piezoresponse force microscopy. Nanotechnology, 2006, 17, 1615-1628.	1.3	108
42	Big, Deep, and Smart Data in Scanning Probe Microscopy. ACS Nano, 2016, 10, 9068-9086.	7.3	103
43	Interplay of Octahedral Tilts and Polar Order in BiFeO₃ Films. Advanced Materials, 2013, 25, 2497-2504.	11.1	101
44	Directing Matter: Toward Atomic-Scale 3D Nanofabrication. ACS Nano, 2016, 10, 5600-5618.	7.3	99
45	Mixed electrochemicalâ€“ferroelectric states in nanoscale ferroelectrics. Nature Physics, 2017, 13, 812-818.	6.5	98
46	Temperature dependence of polarization and charge dynamics on the BaTiO3(100) surface by scanning probe microscopy. Applied Physics Letters, 2001, 78, 1116-1118.	1.5	97
47	Decoupling Electrochemical Reaction and Diffusion Processes in Ionically-Conductive Solids on the Nanometer Scale. ACS Nano, 2010, 4, 7349-7357.	7.3	96
48	Domain wall conduction in multiaxial ferroelectrics. Physical Review B, 2012, 85, .	1.1	95
49	Electromechanical imaging of biological systems with sub-10nm resolution. Applied Physics Letters, 2005, 87, 053901.	1.5	93
50	Resolution-function theory in piezoresponse force microscopy: Wall imaging, spectroscopy, and lateral resolution. Physical Review B, 2007, 75, .	1.1	93
51	Quantification of surface displacements and electromechanical phenomena via dynamic atomic force microscopy. Nanotechnology, 2016, 27, 425707.	1.3	92
52	A review of molecular beam epitaxy of ferroelectric BaTiO₃films on Si, Ge and GaAs substrates and their applications. Science and Technology of Advanced Materials, 2015, 16, 036005.	2.8	89
53	In Situ Observation of Oxygen Vacancy Dynamics and Ordering in the Epitaxial LaCoO₃ System. ACS Nano, 2017, 11, 6942-6949.	7.3	89
54	Beyond Condensed Matter Physics on the Nanoscale: The Role of Ionic and Electrochemical Phenomena in the Physical Functionalities of Oxide Materials. ACS Nano, 2012, 6, 10423-10437.	7.3	88

#	Article	IF	Citations
55	Electrochemical strain microscopy: Probing ionic and electrochemical phenomena in solids at the nanometer level. MRS Bulletin, 2012, 37, 651-658.	1.7	83
56	Direct Observation of Capacitor Switching Using Planar Electrodes. Advanced Functional Materials, 2010, 20, 3466-3475.	7.8	81
57	Microwave a.c. conductivity of domain walls in ferroelectric thin films. Nature Communications, 2016, 7, 11630.	5.8	81
58	High Resolution Electromechanical Imaging of Ferroelectric Materials in a Liquid Environment by Piezoresponse Force Microscopy. Physical Review Letters, 2006, 96, 237602.	2.9	80
59	Electromechanical detection in scanning probe microscopy: Tip models and materials contrast. Journal of Applied Physics, 2007, 102, .	1.1	80
60	Atomically Resolved Mapping of Polarization and Electric Fields Across Ferroelectric/Oxide Interfaces by Zâ€contrast Imaging. Advanced Materials, 2011, 23, 2474-2479.	11.1	79
61	Nanoscale Control of Phase Variants in Strain-Engineered BiFeO₃. Nano Letters, 2011, 11, 3346-3354.	4.5	76
62	Imaging physical phenomena with local probes: From electrons to photons. Reviews of Modern Physics, 2012, 84, 1343-1381.	16.4	76
63	Ionically-Mediated Electromechanical Hysteresis in Transition Metal Oxides. ACS Nano, 2012, 6, 7026-7033.	7.3	75
64	Carrier density modulation in a germanium heterostructure by ferroelectric switching. Nature Communications, 2015, 6, 6067.	5.8	75
65	Conductivity of twin-domain-wall/surface junctions in ferroelastics: Interplay of deformation potential, octahedral rotations, improper ferroelectricity, and flexoelectric coupling. Physical Review B, 2012, 86, .	1.1	74
66	Piezoresponse force spectroscopy of ferroelectric-semiconductor materials. Journal of Applied Physics, 2007, 102, 114108.	1.1	73
67	Rapid multidimensional data acquisition in scanning probe microscopy applied to local polarization dynamics and voltage dependent contact mechanics. Applied Physics Letters, 2008, 93, .	1.5	73
68	Deep Data Analysis of Conductive Phenomena on Complex Oxide Interfaces: Physics from Data Mining. ACS Nano, 2014, 8, 6449-6457.	7.3	73
69	Materials contrast in piezoresponse force microscopy. Applied Physics Letters, 2006, 88, 232904.	1.5	71
70	Mapping Irreversible Electrochemical Processes on the Nanoscale: Ionic Phenomena in Li Ion Conductive Glass Ceramics. Nano Letters, 2011, 11, 4161-4167.	4.5	70
71	Towards nanoscale electrical measurements in liquid by advanced KPFM techniques: a review. Reports on Progress in Physics, 2018, 81, 086101.	8.1	70
72	Nonlinear Phenomena in Multiferroic Nanocapacitors: Joule Heating and Electromechanical Effects. ACS Nano, 2011, 5, 9104-9112.	7.3	69

#	Article	IF	Citations
73	Mesoscopic Metalâ^'Insulator Transition at Ferroelastic Domain Walls in VO₂. ACS Nano, 2010, 4, 4412-4419.	7.3	68
74	Locally Controlled Cu-Ion Transport in Layered Ferroelectric CuInP₂S₆. ACS Applied Materials & Interfaces, 2018, 10, 27188-27194.	4.0	68
75	Bioelectromechanical imaging by scanning probe microscopy: Galvani's experiment at the nanoscale. Ultramicroscopy, 2006, 106, 334-340.	0.8	66
76	Ferroelectric domain wall pinning at a bicrystal grain boundary in bismuth ferrite. Applied Physics Letters, 2008, 93, .	1.5	66
77	Size-effect in layered ferrielectric CuInP2S6. Applied Physics Letters, 2016, 109, .	1.5	66
78	Unraveling Deterministic Mesoscopic Polarization Switching Mechanisms: Spatially Resolved Studies of a Tilt Grain Boundary in Bismuth Ferrite. Advanced Functional Materials, 2009, 19, 2053-2063.	7.8	65
79	Probing Surface and Bulk Electrochemical Processes on the LaAlO₃â€“SrTiO₃ Interface. ACS Nano, 2012, 6, 3841-3852.	7.3	65
80	Anisotropic conductivity of uncharged domain walls in BiFeO<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msub><mml:mrow /><mml:mn>3</mml:mn></mml:msub></mml:math>. Physical Review B, 2012, 86, .	1.1	64
81	Thermodynamics of nanodomain formation and breakdown in scanning probe microscopy: Landau-Ginzburg-Devonshire approach. Physical Review B, 2009, 80, .	1.1	63
82	Identification of phases, symmetries and defects through local crystallography. Nature Communications, 2015, 6, 7801.	5.8	63
83	Defectâ€Mediated Polarization Switching in Ferroelectrics and Related Materials: From Mesoscopic Mechanisms to Atomistic Control. Advanced Materials, 2010, 22, 314-322.	11.1	62
84	Direct Mapping of Ionic Transport in a Si Anode on the Nanoscale: Time Domain Electrochemical Strain Spectroscopy Study. ACS Nano, 2011, 5, 9682-9695.	7.3	61
85	Current and surface charge modified hysteresis loops in ferroelectric thin films. Journal of Applied Physics, 2015, 118, .	1.1	60
86	Surface effect on domain wall width in ferroelectrics. Journal of Applied Physics, 2009, 106, .	1.1	59
87	Local Detection of Activation Energy for Ionic Transport in Lithium Cobalt Oxide. Nano Letters, 2012, 12, 3399-3403.	4.5	58
88	Highly enhanced ferroelectricity in HfO ₂ -based ferroelectric thin film by light ion bombardment. Science, 2022, 376, 731-738.	6.0	58
89	Switching spectroscopy piezoresponse force microscopy of polycrystalline capacitor structures. Applied Physics Letters, 2009, 94, .	1.5	57
90	Watching domains grow: In-situ studies of polarization switching by combined scanning probe and scanning transmission electron microscopy. Journal of Applied Physics, 2011, 110, .	1.1	57

#	Article	IF	Citations
91	Ferroionic states in ferroelectric thin films. Physical Review B, 2017, 95, .	1.1	57
92	Imaging mechanism of piezoresponse force microscopy in capacitor structures. Applied Physics Letters, 2008, 92, .	1.5	56
93	Interface dipole between two metallic oxides caused by localized oxygen vacancies. Physical Review B, 2012, 86, .	1.1	56
94	Probing Local Ionic Dynamics in Functional Oxides at the Nanoscale. Nano Letters, 2013, 13, 3455-3462.	4.5	55
95	Mechanical Control of Electroresistive Switching. Nano Letters, 2013, 13, 4068-4074.	4.5	55
96	The piezoresponse force microscopy of surface layers and thin films: Effective response and resolution function. Journal of Applied Physics, 2007, 102, 074105.	1.1	51
97	First-Order Reversal Curve Probing of Spatially Resolved Polarization Switching Dynamics in Ferroelectric Nanocapacitors. ACS Nano, 2012, 6, 491-500.	7.3	50
98	Dual harmonic Kelvin probe force microscopy at the grapheneâ€“liquid interface. Applied Physics Letters, 2014, 104, .	1.5	50
99	Local bias-induced phase transitions. Materials Today, 2008, 11, 16-27.	8.3	49
100	Intrinsic Nucleation Mechanism and Disorder Effects in Polarization Switching on Ferroelectric Surfaces. Physical Review Letters, 2009, 102, 017601.	2.9	49
101	Structural phase transitions and electronic phenomena at 180-degree domain walls in rhombohedral BaTiO<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msub><mml:mrow /><mml:mn>3</mml:mn></mml:msub></mml:math>. Physical Review B, 2013, 87, .	1.1	49
102	Direct Probing of Charge Injection and Polarizationâ€Controlled Ionic Mobility on Ferroelectric LiNbO₃ Surfaces. Advanced Materials, 2014, 26, 958-963.	11.1	49
103	Automated and Autonomous Experiments in Electron and Scanning Probe Microscopy. ACS Nano, 2021, 15, 12604-12627.	7.3	49
104	Space- and Time-Resolved Mapping of Ionic Dynamic and Electroresistive Phenomena in Lateral Devices. ACS Nano, 2013, 7, 6806-6815.	7.3	48
105	A bridge for accelerating materials by design. Npj Computational Materials, 2015, 1, .	3.5	47
106	Giant negative electrostriction and dielectric tunability in a van der Waals layered ferroelectric. Physical Review Materials, 2019, 3, .	0.9	47
107	Oxygen-Induced Surface Reconstruction of SrRuO₃ and Its Effect on the BaTiO₃ Interface. ACS Nano, 2010, 4, 4190-4196.	7.3	44
108	Pressure-induced switching in ferroelectrics: Phase-field modeling, electrochemistry, flexoelectric effect, and bulk vacancy dynamics. Physical Review B, 2017, 96, .	1.1	44

#	Article	IF	Citations
109	Nanoscale polarization profile across a 180Â° ferroelectric domain wall extracted by quantitative piezoelectric force microscopy. Journal of Applied Physics, 2008, 104, 074110.	1.1	43
110	Interaction of a<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:mn>180</mml:mn><mml:mo>Â°</mml:mo></mml:mrow></mml:math>ferroelectric domain wall with a biased scanning probe microscopy tip: Effective wall geometry and thermodynamics in Ginzburg-Landau-Devonshire theory. Physical Review B, 2008, 78, .	1.1	43
111	Electromechanics on the Nanometer Scale: Emerging Phenomena, Devices, and Applications. MRS Bulletin, 2009, 34, 634-642.	1.7	43
112	Quantification of in-contact probe-sample electrostatic forces with dynamic atomic force microscopy. Nanotechnology, 2017, 28, 065704.	1.3	43
113	Deep neural networks for understanding noisy data applied to physical property extraction in scanning probe microscopy. Npj Computational Materials, 2019, 5, .	3.5	43
114	Domain Wall Motion Across Various Grain Boundaries in Ferroelectric Thin Films. Journal of the American Ceramic Society, 2015, 98, 1848-1857.	1.9	42
115	Extrinsic size effect in piezoresponse force microscopy of thin films. Physical Review B, 2007, 76, .	1.1	40
116	Electrical Modulation of the Local Conduction at Oxide Tubular Interfaces. ACS Nano, 2013, 7, 8627-8633.	7.3	40
117	Magnetostriction-polarization coupling in multiferroic Mn2MnWO6. Nature Communications, 2017, 8, 2037.	5.8	40
118	Defect-driven flexochemical coupling in thin ferroelectric films. Physical Review B, 2018, 97, .	1.1	39
119	Defect-induced asymmetry of local hysteresis loops on BiFeO3 surfaces. Journal of Materials Science, 2009, 44, 5095-5101.	1.7	38
120	Time-Resolved Electrical Scanning Probe Microscopy of Layered Perovskites Reveals Spatial Variations in Photoinduced Ionic and Electronic Carrier Motion. ACS Nano, 2019, 13, 2812-2821.	7.3	38
121	Probing Local Bias-Induced Transitions Using Photothermal Excitation Contact Resonance Atomic Force Microscopy and Voltage Spectroscopy. ACS Nano, 2015, 9, 1848-1857.	7.3	37
122	Fast Scanning Probe Microscopy via Machine Learning: Nonâ€Rectangular Scans with Compressed Sensing and Gaussian Process Optimization. Small, 2020, 16, e2002878.	5.2	37
123	Experimental discovery of structureâ€“property relationships in ferroelectric materials via active learning. Nature Machine Intelligence, 2022, 4, 341-350.	8.3	37
124	Multifrequency spectrum analysis using fully digital G Mode-Kelvin probe force microscopy. Nanotechnology, 2016, 27, 105706.	1.3	36
125	Reducing Time to Discovery: Materials and Molecular Modeling, Imaging, Informatics, and Integration. ACS Nano, 2021, 15, 3971-3995.	7.3	36
126	Paving the way to nanoionics: atomic origin of barriers for ionic transport through interfaces. Scientific Reports, 2015, 5, 17229.	1.6	35

#	Article	IF	Citations
127	Labyrinthine domains in ferroelectric nanoparticles: Manifestation of a gradient-induced morphological transition. Physical Review B, 2018, 98, .	1.1	35
128	Effect of Doping on Surface Reactivity and Conduction Mechanism in Samarium-Doped Ceria Thin Films. ACS Nano, 2014, 8, 12494-12501.	7.3	34
129	Chemical State Evolution in Ferroelectric Films during Tip-Induced Polarization and Electroresistive Switching. ACS Applied Materials & Interfaces, 2016, 8, 29588-29593.	4.0	33
130	Quantitative determination of tip parameters in piezoresponse force microscopy. Applied Physics Letters, 2007, 90, 212905.	1.5	32
131	Local polarization switching in the presence of surface-charged defects: Microscopic mechanisms and piezoresponse force spectroscopy observations. Physical Review B, 2008, 78, .	1.1	32
132	Open-loop band excitation Kelvin probe force microscopy. Nanotechnology, 2012, 23, 125704.	1.3	32
133	Field enhancement of electronic conductance at ferroelectric domain walls. Nature Communications, 2017, 8, 1318.	5.8	32
134	Mitigating e-beam-induced hydrocarbon deposition on graphene forâ€‰atomic-scale scanning transmission electron microscopy studies. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2018, 36, .	0.6	32
135	Toward Electrochemical Studies on the Nanometer and Atomic Scales: Progress, Challenges, and Opportunities. ACS Nano, 2019, 13, 9735-9780.	7.3	32
136	Mapping mesoscopic phase evolution during E-beam induced transformations via deep learning of atomically resolved images. Npj Computational Materials, 2018, 4, .	3.5	31
137	Piezoresponse amplitude and phase quantified for electromechanical characterization. Journal of Applied Physics, 2020, 128, .	1.1	31
138	Knowledge Extraction from Atomically Resolved Images. ACS Nano, 2017, 11, 10313-10320.	7.3	30
139	Hypothesis Learning in Automated Experiment: Application to Combinatorial Materials Libraries. Advanced Materials, 2022, 34, e2201345.	11.1	30
140	Finite size effects in ferroelectric-semiconductor thin films under open-circuit electric boundary conditions. Journal of Applied Physics, 2015, 117, .	1.1	29
141	Domain dynamics in piezoresponse force spectroscopy: Quantitative deconvolution and hysteresis loop fine structure. Applied Physics Letters, 2008, 92, 182909.	1.5	28
142	Intermittent contact mode piezoresponse force microscopy in a liquid environment. Nanotechnology, 2009, 20, 195701.	1.3	28
143	Full information acquisition in piezoresponse force microscopy. Applied Physics Letters, 2015, 107, 263102.	1.5	28
144	Acoustic Detection of Phase Transitions at the Nanoscale. Advanced Functional Materials, 2016, 26, 478-486.	7.8	28

#	Article	IF	Citations
145	Single-atom fabrication with electron and ion beams: From surfaces and two-dimensional materials toward three-dimensional atom-by-atom assembly. MRS Bulletin, 2017, 42, 637-643.	1.7	28
146	Solid-state electrochemistry on the nanometer and atomic scales: the scanning probe microscopy approach. Nanoscale, 2016, 8, 13838-13858.	2.8	27
147	Dynamic behavior of CH3NH3PbI3 perovskite twin domains. Applied Physics Letters, 2018, 113, .	1.5	27
148	Energy dissipation measurements in frequency-modulated scanning probe microscopy. Nanotechnology, 2010, 21, 455705.	1.3	26
149	Origin of piezoelectric response under a biased scanning probe microscopy tip across a 180<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msup><mml:mrow /><mml:mo>â˜</mml:mo></mml:msup></mml:math>ferroelectric domain wall. Physical Review B, 2012, 86, .	1.1	26
150	Multifrequency Imaging in the Intermittent Contact Mode of Atomic Force Microscopy: Beyond Phase Imaging. Small, 2012, 8, 1264-1269.	5.2	26
151	Exploring the Magnetoelectric Coupling at the Composite Interfaces of FE/FM/FE Heterostructures. Scientific Reports, 2018, 8, 17381.	1.6	26
152	Ensemble learning-iterative training machine learning for uncertainty quantification and automated experiment in atom-resolved microscopy. Npj Computational Materials, 2021, 7, .	3.5	26
153	Local probing of relaxation time distributions in ferroelectric polymer nanomesas: Time-resolved piezoresponse force spectroscopy and spectroscopic imaging. Applied Physics Letters, 2008, 92, 232903.	1.5	25
154	Atomic Mechanisms for the Si Atom Dynamics in Graphene: Chemical Transformations at the Edge and in the Bulk. Advanced Functional Materials, 2019, 29, 1904480.	7.8	25
155	Scaling and disorder analysis of localâ€“Vcurves from ferroelectric thin films of lead zirconate titanate. Nanotechnology, 2011, 22, 254031.	1.3	24
156	Direct Probe of Interplay between Local Structure and Superconductivity in FeTe_{0.55}Se_{0.45}. ACS Nano, 2013, 7, 2634-2641.	7.3	24
157	Probing Local and Global Ferroelectric Phase Stability and Polarization Switching in Ordered Macroporous PZT. Advanced Functional Materials, 2011, 21, 941-947.	7.8	23
158	Constraining Data Mining with Physical Models: Voltage- and Oxygen Pressure-Dependent Transport in Multiferroic Nanostructures. Nano Letters, 2015, 15, 6650-6657.	4.5	23
159	Lost surface waves in nonpiezoelectric solids. Physical Review B, 2017, 96, .	1.1	23
160	Direct Probing of Polarization Charge at Nanoscale Level. Advanced Materials, 2018, 30, 1703675.	11.1	23
161	Polarization Dynamics in Ferroelectric Capacitors: Local Perspective on Emergent Collective Behavior and Memory Effects. Advanced Functional Materials, 2013, 23, 2490-2508.	7.8	22
162	Universality of Polarization Switching Dynamics in Ferroelectric Capacitors Revealed by 5D Piezoresponse Force Microscopy. Advanced Functional Materials, 2013, 23, 3971-3979.	7.8	22

#	Article	IF	Citations
163	YCrWO₆: Polar and Magnetic Oxide with CaTa₂O₆-Related Structure. Chemistry of Materials, 2018, 30, 1045-1054.	3.2	22
164	Intrinsic structural instabilities of domain walls driven by gradient coupling: Meandering antiferrodistortive-ferroelectric domain walls inBiFeO3. Physical Review B, 2019, 99, .	1.1	22
165	Toward Decoding the Relationship between Domain Structure and Functionality in Ferroelectrics via Hidden Latent Variables. ACS Applied Materials & Interfaces, 2021, 13, 1693-1703.	4.0	22
166	Effect of the intrinsic width on the piezoelectric force microscopy of a single ferroelectric domain wall. Journal of Applied Physics, 2008, 103, 124110.	1.1	21
167	Coupling of electrical and mechanical switching in nanoscale ferroelectrics. Applied Physics Letters, 2015, 107, .	1.5	21
168	Rapid mapping of polarization switching through complete information acquisition. Nature Communications, 2016, 7, 13290.	5.8	21
169	E-beam manipulation of Si atoms on graphene edges with an aberration-corrected scanning transmission electron microscope. Nano Research, 2018, 11, 6217-6226.	5.8	21
170	Half-harmonic Kelvin probe force microscopy with transfer function correction. Applied Physics Letters, 2012, 100, 063118.	1.5	20
171	Nanoscale Origins of Nonlinear Behavior in Ferroic Thin Films. Advanced Functional Materials, 2013, 23, 81-90.	7.8	20
172	Interrelation between Structure â€“ Magnetic Properties in La_{0.5}Sr_{0.5}CoO₃. Advanced Materials Interfaces, 2014, 1, 1400203.	1.9	20
173	Electrochemical strain microscopy of local electrochemical processes in solids: mechanism of imaging and spectroscopy in the diffusion limit. Journal of Electroceramics, 2014, 32, 51-59.	0.8	20
174	Surface Chemistry Controls Anomalous Ferroelectric Behavior in Lithium Niobate. ACS Applied Materials & Interfaces, 2018, 10, 29153-29160.	4.0	20
175	Resonance frequency analysis for surface-coupled atomic force microscopy cantilever in ambient and liquid environments. Applied Physics Letters, 2008, 92, 083102.	1.5	19
176	Nanoscale Probing of Voltage Activated Oxygen Reduction/Evolution Reactions in Nanopatterned (La_xSr_{1â€x})CoO_{3â€}_{Î´} Cathodes. Advanced Energy Materials, 2013, 3, 788-797.	10.2	19
177	Variable temperature electrochemical strain microscopy of Sm-doped ceria. Nanotechnology, 2013, 24, 145401.	1.3	19
178	Machine learning-based multidomain processing for texture-based image segmentation and analysis. Applied Physics Letters, 2020, 116, .	1.5	19
179	Imaging mechanism for hyperspectral scanning probe microscopy via Gaussian process modelling. Npj Computational Materials, 2020, 6, .	3.5	19
180	Roto-flexoelectric coupling impact on the phase diagrams and pyroelectricity of thin SrTiO3 films. Journal of Applied Physics, 2012, 112, .	1.1	18

#	Article	IF	Citations
181	High-Frequency Electromechanical Imaging of Ferroelectrics in a Liquid Environment. ACS Nano, 2012, 6, 5559-5565.	7.3	18
182	Local probing of electrochemically induced negative differential resistance in TiO2memristive materials. Nanotechnology, 2013, 24, 085702.	1.3	18
183	Ion transport and softening in a polymerized ionic liquid. Nanoscale, 2015, 7, 947-955.	2.8	18
184	Nanoscale Electrochemical Phenomena of Polarization Switching in Ferroelectrics. ACS Applied Materials & Interfaces, 2018, 10, 38217-38222.	4.0	18
185	Multidimensional dynamic piezoresponse measurements: Unraveling local relaxation behavior in relaxor-ferroelectrics via big data. Journal of Applied Physics, 2015, 118, .	1.1	17
186	Thickness, humidity, and polarization dependent ferroelectric switching and conductivity in Mg doped lithium niobate. Journal of Applied Physics, 2015, 118, .	1.1	17
187	Finite-size effects of hysteretic dynamics in multilayer graphene on a ferroelectric. Physical Review B, 2015, 91, .	1.1	17
188	Local Probing of Ferroelectric and Ferroelastic Switching through Stressâ€Mediated Piezoelectric Spectroscopy. Advanced Materials Interfaces, 2016, 3, 1500470.	1.9	17
189	Decoupling indirect topographic cross-talk in band excitation piezoresponse force microscopy imaging and spectroscopy. Applied Physics Letters, 2016, 108, .	1.5	17
190	Disentangling Ferroelectric Wall Dynamics and Identification of Pinning Mechanisms via Deep Learning. Advanced Materials, 2021, 33, e2103680.	11.1	17
191	Cold-Field Switching in PVDF-TrFE Ferroelectric Polymer Nanomesas. Physical Review Letters, 2012, 108, 027603.	2.9	16
192	Piezoresponse of ferroelectric films in ferroionic states: Time and voltage dynamics. Applied Physics Letters, 2017, 110, 182907.	1.5	16
193	Multi-objective Bayesian optimization of ferroelectric materials with interfacial control for memory and energy storage applications. Journal of Applied Physics, 2021, 130, .	1.1	15
194	Local Polarization Switching in Piezoresponse Force Microscopy. Ferroelectrics, 2007, 354, 198-207.	0.3	14
195	Probing Local Electromechanical Effects in Highly Conductive Electrolytes. ACS Nano, 2012, 6, 10139-10146.	7.3	14
196	Imaging via complete cantilever dynamic detection: general dynamic mode imaging and spectroscopy in scanning probe microscopy. Nanotechnology, 2016, 27, 414003.	1.3	14
197	Selfâ€Assembled Room Temperature Multiferroic BiFeO₃â€LiFe₅O₈ Nanocomposites. Advanced Functional Materials, 2020, 30, 1906849.	7.8	14
198	Dynamic Manipulation in Piezoresponse Force Microscopy: Creating Nonequilibrium Phases with Large Electromechanical Response. ACS Nano, 2020, 14, 10569-10577.	7.3	14

#	Article	IF	Citations
199	Temperature-dependent phase transitions in zeptoliter volumes of a complex biological membrane. Nanotechnology, 2011, 22, 055709.	1.3	13
200	Indentation of a punch with chemical or heat distribution at its base into transversely isotropic half-space: Application to local thermal and electrochemical probes. Journal of Applied Physics, 2013, 113, 187201.	1.1	13
201	Band Excitation Scanning Probe Microscopies. Microscopy Today, 2010, 18, 34-40.	0.2	12
202	Frequency spectroscopy of irreversible electrochemical nucleation kinetics on the nanoscale. Nanoscale, 2013, 5, 11964.	2.8	12
203	High-veracity functional imaging in scanning probe microscopy via Graph-Bootstrapping. Nature Communications, 2018, 9, 2428.	5.8	12
204	Exploring Causal Physical Mechanisms via Non-Gaussian Linear Models and Deep Kernel Learning: Applications for Ferroelectric Domain Structures. ACS Nano, 2022, 16, 1250-1259.	7.3	12
205	Electrochemical Strain Microscopy: Probing Electrochemical Transformations in Nanoscale Volumes. Microscopy Today, 2012, 20, 10-15.	0.2	11
206	Spatially-resolved mapping of history-dependent coupled electrochemical and electronical behaviors of electroresistive NiO. Scientific Reports, 2014, 4, 6725.	1.6	11
207	Unraveling the hysteretic behavior at double cations-double halides perovskite - electrode interfaces. Nano Energy, 2021, 89, 106428.	8.2	11
208	Ferromagnetic-like behavior of Bi0.9La0.1FeO3â€“KBr nanocomposites. Scientific Reports, 2019, 9, 10417.	1.6	10
209	Ferroelastic Nanodomain-mediated Mechanical Switching of Ferroelectricity in Thick Epitaxial Films. Nano Letters, 2021, 21, 445-452.	4.5	10
210	Ferroelectric and Charge Transport Properties in Strain-Engineered Two-Dimensional Lead Iodide Perovskites. Chemistry of Materials, 2021, 33, 4077-4088.	3.2	10
211	Probing Biasâ€Dependent Electrochemical Gasâ€“Solid Reactions in (La_xSr_{1â€“x})CoO_{3â€“}_{Î´} Cathode Materials. Advanced Functional Materials, 2013, 23, 5027-5036.	7.8	9
212	Mesoscopic mechanism of the domain wall interaction with elastic defects in uniaxial ferroelectrics. Journal of Applied Physics, 2013, 113, .	1.1	9
213	Exploring Polarization Rotation Instabilities in Superâ€Tetragonal BiFeO₃ Epitaxial Thin Films and Their Technological Implications. Advanced Electronic Materials, 2016, 2, 1600307.	2.6	9
214	Nanoscale Probing of Elasticâ€“Electronic Response to Vacancy Motion in NiO Nanocrystals. ACS Nano, 2017, 11, 8387-8394.	7.3	9
215	Application of pan-sharpening algorithm for correlative multimodal imaging using AFM-IR. Npj Computational Materials, 2019, 5, .	3.5	9
216	High-Pressure, High-Temperature Synthesis and Characterization of Polar and Magnetic LuCrWO₆. Inorganic Chemistry, 2020, 59, 3579-3584.	1.9	9

#	Article	IF	Citations
217	Flexosensitive polarization vortices in thin ferroelectric films. Physical Review B, 2021, 104, .	1.1	9
218	Photothermoelastic contrast in nanoscale infrared spectroscopy. Applied Physics Letters, 2018, 112, 033105.	1.5	8
219	Decoupling Mesoscale Functional Response in PLZT across the Ferroelectricâ€“Relaxor Phase Transition with Contact Kelvin Probe Force Microscopy and Machine Learning. ACS Applied Materials & Interfaces, 2018, 10, 42674-42680.	4.0	8
220	Bayesian inference in band excitation scanning probe microscopy for optimal dynamic model selection in imaging. Journal of Applied Physics, 2020, 128, 054105.	1.1	8
221	Quantitative Nanometerâ€Scale Mapping of Dielectric Tunability. Advanced Materials Interfaces, 2015, 2, 1500088.	1.9	7
222	Electronicâ€Reconstructionâ€Enhanced Tunneling Conductance at Terrace Edges of Ultrathin Oxide Films. Advanced Materials, 2017, 29, 1702001.	11.1	7
223	Subtractive fabrication of ferroelectric thin films with precisely controlled thickness. Nanotechnology, 2018, 29, 155302.	1.3	7
224	Predictability as a probe of manifest and latent physics: The case of atomic scale structural, chemical, and polarization behaviors in multiferroic Sm-doped BiFeO3. Applied Physics Reviews, 2021, 8, .	5.5	7
225	Decoding Apparent Ferroelectricity in Perovskite Nanofibers. ACS Applied Materials & Interfaces, 2017, 9, 42131-42138.	4.0	6
226	Super-resolution and signal separation in contact Kelvin probe force microscopy of electrochemically active ferroelectric materials. Journal of Applied Physics, 2020, 128, 055101.	1.1	6
227	Probing Metastable Domain Dynamics via Automated Experimentation in Piezoresponse Force Microscopy. ACS Nano, 2021, 15, 15096-15103.	7.3	6
228	Preface to Special Topic: Piezoresponse Force Microscopy and Nanoscale Phenomena in Polar Materials. Journal of Applied Physics, 2012, 112, 051901.	1.1	5
229	Melting of spatially modulated phases at domain wall/surface junctions in antiferrodistortive multiferroics. Physical Review B, 2020, 102, .	1.1	5
230	Decoding the shift-invariant data: applications for band-excitation scanning probe microscopy [*]. Machine Learning: Science and Technology, 2021, 2, 045028.	2.4	5
231	Probing polarization dynamics at specific domain configurations: Computer-vision based automated experiment in piezoresponse force microscopy. Applied Physics Letters, 2021, 119, .	1.5	5
232	Electronic switching by metastable polarization states in <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:mrow><mml:mi>BiFe</mml:mi><mml:msub><mml:mi mathvariant="normal">O</mml:mi><mml:mn>3</mml:mn></mml:msub></mml:mrow></mml:math> thin films. Physical Review Materials, 2018, 2, .	0.9	5
233	Tunable Microwave Conductance of Nanodomains in Ferroelectric PbZr _{0.2} Ti _{0.8} O ₃ Thin Film. Advanced Electronic Materials, 2022, 8, 2100952.	2.6	5
234	Preface to Special Topic: Invited Papers from the International Symposium on Piezoresponse Force Microscopy and Nanoscale Phenomena in Polar Materials, Aveiro, Portugal, 2009. Journal of Applied Physics, 2010, 108, 041901.	1.1	4

#	Article	IF	Citations
235	Intrinsic space charge layers and field enhancement in ferroelectric nanojunctions. Applied Physics Letters, 2015, 107, 022903.	1.5	4
236	Influence of the interfacing with an electrically inhomogeneous bottom electrode on the ferroelectric properties of epitaxial PbTiO3. Applied Physics Letters, 2013, 103, .	1.5	3
237	ELECTROCHEMICAL STRAIN MICROSCOPY OF LI-ION AND LI-AIR BATTERY MATERIALS. World Scientific Series in Nanoscience and Nanotechnology, 2013, , 393-454.	0.1	3
238	Reply to â€œComment on â€˜Origin of piezoelectric response under a biased scanning probe microscopy tip across a 180Â° ferroelectric domain wallâ€™â€. Physical Review B, 2014, 89, .	1.1	3
239	Nanoscale Transport Imaging of Active Lateral Devices: Static and Frequency Dependent Modes. Springer Series in Surface Sciences, 2018, , 251-329.	0.3	3
240	Dynamic Modes in Kelvin Probe Force Microscopy: Band Excitation and G-Mode. Springer Series in Surface Sciences, 2018, , 49-99.	0.3	3
241	Deep Data Analytics in Structural and Functional Imaging of Nanoscale Materials. Springer Series in Materials Science, 2018, , 103-128.	0.4	3
242	Compressive Sensing on Diverse STEM Scans: Real-time Feedback, Low-dose and Dynamic Range. Microscopy and Microanalysis, 2019, 25, 1688-1689.	0.2	3
243	Exploring Responses of Contact Kelvin Probe Force Microscopy in Triple-Cation Double-Halide Perovskites. Journal of Physical Chemistry C, 2021, 125, 12355-12365.	1.5	3
244	A combined theoretical and experimental study of the phase coexistence and morphotropic boundaries in ferroelectric-antiferroelectric-antiferrodistortive multiferroics. Acta Materialia, 2021, 213, 116939.	3.8	3
245	Sub-10 nm Probing of Ferroelectricity in Heterogeneous Materials by Machine Learning Enabled Contact Kelvin Probe Force Microscopy. ACS Applied Electronic Materials, 2021, 3, 4409-4417.	2.0	3
246	Mesoscopic structure of mixed type domain walls in multiaxial ferroelectrics. Physical Review Materials, 2020, 4, .	0.9	3
247	Preface to special topic: Piezoresponse force microscopy and nanoscale phenomena in polar materials. Journal of Applied Physics, 2011, 110, 051901.	1.1	2
248	Scanning Probe Microscopy in US Department of Energy Nanoscale Science Research Centers: Status, Perspectives, and Opportunities. Advanced Functional Materials, 2013, 23, 2468-2476.	7.8	2
249	Patterning: Atomicâ€Ł evel Sculpting of Crystalline Oxides: Toward Bulk Nanofabrication with Single Atomic Plane Precision (Small 44/2015). Small, 2015, 11, 5854-5854.	5.2	2
250	Topological Defects in Ferroic Materials. Springer Series in Materials Science, 2016, , 181-197.	0.4	2
251	Spectral Map Reconstruction Using Pan-Sharpening Algorithm: Enhancing Chemical Imaging with AFM-IR. Microscopy and Microanalysis, 2019, 25, 1024-1025.	0.2	2
252	Tensor factorization for elucidating mechanisms of piezoresponse relaxation via dynamic Piezoresponse Force Spectroscopy. Npj Computational Materials, 2020, 6, .	3.5	2

#	Article	IF	Citations
253	Reconstruction and uncertainty quantification of lattice Hamiltonian model parameters from observations of microscopic degrees of freedom. Journal of Applied Physics, 2020, 128, 214103.	1.1	2
254	Chemical control of polarization in thin strained films of a multiaxial ferroelectric: Phase diagrams and polarization rotation. Physical Review B, 2022, 105, .	1.1	2
255	LOCAL PROBES IN THE NEXT DECADE OF ENERGY RESEARCH: BRIDGING MACROSCOPIC AND ATOMIC WORLDS. World Scientific Series in Nanoscience and Nanotechnology, 2013, , 3-35.	0.1	1
256	Preface to Special Topic: Piezoresponse force microscopy and nanoscale phenomena in polar materials. Journal of Applied Physics, 2014, 116, 066701.	1.1	1
257	G-mode - Full Information Capture Applied to Scanning Probe Microscopy. Microscopy and Microanalysis, 2017, 23, 184-185.	0.2	1
258	Graphene Defect Editing, Deposition, and Growth via E-Beam-Induced Organic Reactions in Aberration Corrected STEM. Microscopy and Microanalysis, 2018, 24, 1994-1995.	0.2	1
259	Nanoelectromechanics of Inorganic and Biological Systems: From Structural Imaging to Local Functionalities. Microscopy Today, 2008, 16, 28-33.	0.2	0
260	Exploring Electro-Chemo-Mechanical Phenomena on the Nanoscale Using Scanning Probe Microscopy. Kluwer International Series in Electronic Materials: Science and Technology, 2017, , 137-160.	0.3	0
261	Multimodal Chemical and Functional Imaging of Nanoscale Transformations Away from Equilibrium. Microscopy and Microanalysis, 2018, 24, 1042-1043.	0.2	0
262	Atom-by-Atom Assembly in Aberration Corrected STEM and the Role of Chemistry at the Surface of Graphene. Microscopy and Microanalysis, 2018, 24, 326-327.	0.2	0
263	Automated Atom-by-Atom Assembly of Structures in Graphene: The Rise of STEM for Atomic Scale Control. Microscopy and Microanalysis, 2018, 24, 1594-1595.	0.2	0
264	The ORNL Lectures on Scanning Probe Microscopy, Part 1: Piezoresponse Force Microscopy and Spectroscopy of Ferroelectrics, Energy Materials, and Biological Systems. Microscopy Today, 2019, 27, 12-16.	0.2	0
265	FerroNet: Machine Learning Flow for Analysis of Ferroelectric and Ferroelastic Materials. Microscopy and Microanalysis, 2019, 25, 170-171.	0.2	0
266	Unsupervised Machine Learning to Distill Structural-Property Insights from 4D-STEM. Microscopy and Microanalysis, 2019, 25, 12-13.	0.2	0
267	Piezoresponse Force Microscopy and Spectroscopy. , 2015, , 1-12.		0
268	Piezoresponse Force Microscopy and Spectroscopy. , 2016, , 3252-3263.		0
269	Mesoscopic theory of defect orderingâ€“disordering transitions in thin oxide films. Scientific Reports, 2020, 10, 22377.	1.6	0