Franz Giessibl

List of Publications by Year
in descending order

125 papers	10,194 citations	76196 40 h-index	32761 100 g-index
129 all docs	129 docs citations	129 times ranked	5591 citing authors

#	Article	IF	Citations
1	Advances in atomic force microscopy. Reviews of Modern Physics, 2003, 75, 949-983.	16.4	1,838
2	Atomic Resolution of the Silicon (111)-(7x7) Surface by Atomic Force Microscopy. Science, 1995, 267, 68-71.	6.0	1,131
3	Forces and frequency shifts in atomic-resolution dynamic-force microscopy. Physical Review B, 1997, 56, 16010-16015.	1.1	631
4	High-speed force sensor for force microscopy and profilometry utilizing a quartz tuning fork. Applied Physics Letters, 1998, 73, 3956-3958.	1.5	529
5	Atomic resolution on Si(111)-(7Ã—7) by noncontact atomic force microscopy with a force sensor based on a quartz tuning fork. Applied Physics Letters, 2000, 76, 1470-1472.	1.5	473
6	The Force Needed to Move an Atom on a Surface. Science, 2008, 319, 1066-1069.	6.0	415
7	Subatomic Features on the Silicon (111)-(7x7) Surface Observed by Atomic Force Microscopy. Science, 2000, 289, 422-425.	6.0	383
8	Measuring the Charge State of an Adatom with Noncontact Atomic Force Microscopy. Science, 2009, 324, 1428-1431.	6.0	317
9	A direct method to calculate tipâ€"sample forces from frequency shifts in frequency-modulation atomic force microscopy. Applied Physics Letters, 2001, 78, 123-125.	1.5	300
10	The qPlus sensor, a powerful core for the atomic force microscope. Review of Scientific Instruments, 2019, 90, 011101.	0.6	208
11	Calculation of the optimal imaging parameters for frequency modulation atomic force microscopy. Applied Surface Science, 1999, 140, 352-357.	3.1	181
12	Force Microscopy with Light-Atom Probes. Science, 2004, 305, 380-383.	6.0	178
13	Physical interpretation of frequency-modulation atomic force microscopy. Physical Review B, 2000, 61, 9968-9971.	1.1	155
14	Revealing the hidden atom in graphite by low-temperature atomic force microscopy. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 12539-12542.	3.3	152
15	Subatomic resolution force microscopy reveals internal structure and adsorption sites of small iron clusters. Science, 2015, 348, 308-311.	6.0	130
16	Revealing the Angular Symmetry of Chemical Bonds by Atomic Force Microscopy. Science, 2012, 336, 444-449.	6.0	127
17	Interplay of Conductance, Force, and Structural Change in Metallic Point Contacts. Physical Review Letters, 2011, 106, 016802.	2.9	124
18	Quantifying Molecular Stiffness and Interaction with Lateral Force Microscopy. Science, 2014, 343, 1120-1122.	6.0	122

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19	Friction traced to the single atom. Proceedings of the National Academy of Sciences of the United States of America, 2002, 99, 12006-12010.	3.3	111
20	Local Spectroscopy and Atomic Imaging of Tunneling Current, Forces, and Dissipation on Graphite. Physical Review Letters, 2005, 94, 056101.	2.9	106
21	Piezoresistive cantilevers utilized for scanning tunneling and scanning force microscope in ultrahigh vacuum. Review of Scientific Instruments, 1994, 65, 1923-1929.	0.6	96
22	Comparison of force sensors for atomic force microscopy based on quartz tuning forks and length-extensional resonators. Physical Review B, 2011, 84, .	1.1	94
23	AFM's path to atomic resolution. Materials Today, 2005, 8, 32-41.	8.3	91
24	Investigation of the (001) cleavage plane of potassium bromide with an atomic force microscope at 4.2 K in ultra-high vacuum. Ultramicroscopy, 1992, 42-44, 281-289.	0.8	86
25	Influence of surface properties of resinâ€based composites on in vitro <i><scp>S</scp>treptococcus mutans</i> biofilm development. European Journal of Oral Sciences, 2012, 120, 458-465.	0.7	86
26	Probing the shape of atoms in real space. Physical Review B, 2003, 68, .	1.1	83
27	Atomic Force Microscopy in Ultrahigh Vacuum. Japanese Journal of Applied Physics, 1994, 33, 3726-3734.	0.8	80
28	A low-temperature atomic force/scanning tunneling microscope for ultrahigh vacuum. Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena, 1991, 9, 984.	1.6	73
29	Stability considerations and implementation of cantilevers allowing dynamic force microscopy with optimal resolution: the qPlus sensor. Nanotechnology, 2004, 15, S79-S86.	1.3	73
30	Chemical bond formation showing a transition from physisorption to chemisorption. Science, 2019, 366, 235-238.	6.0	70
31	Phantom Force Induced by Tunneling Current: A Characterization on Si(111). Physical Review Letters, 2011, 106, 226801.	2.9	68
32	CO Tip Functionalization Inverts Atomic Force Microscopy Contrast via Short-Range Electrostatic Forces. Physical Review Letters, 2014, 112, 166102.	2.9	64
33	Atomically Resolved Graphitic Surfaces in Air by Atomic Force Microscopy. ACS Nano, 2014, 8, 5233-5239.	7.3	62
34	Image correction for atomic force microscopy images with functionalized tips. Physical Review B, 2014, 89, .	1.1	57
35	Exploring the nanoworld with atomic force microscopy. Physics Today, 2006, 59, 44-50.	0.3	55
36	Optimizing atomic resolution of force microscopy in ambient conditions. Physical Review B, 2013, 87, .	1.1	53

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37	Low noise current preamplifier for qPlus sensor deflection signal detection in atomic force microscopy at room and low temperatures. Review of Scientific Instruments, 2017, 88, 073702.	0.6	51
38	Observation of 4 nm Pitch Stripe Domains Formed by Exposing Graphene to Ambient Air. ACS Nano, 2013, 7, 10032-10037.	7.3	48
39	Spin Resolution and Evidence for Superexchange on NiO(001) Observed by Force Microscopy. Physical Review Letters, 2013, 110, 266101.	2.9	46
40	Evaluation of a force sensor based on a quartz tuning fork for operation at low temperatures and ultrahigh vacuum. Applied Surface Science, 2002, 188, 445-449.	3.1	41
41	Atomically Resolved Chemical Reactivity of Small Fe Clusters. Physical Review Letters, 2020, 124, 096001.	2.9	41
42	Atomic Structure Affects the Directional Dependence of Friction. Physical Review Letters, 2013, 111, 126103.	2.9	40
43	Theory for an electrostatic imaging mechanism allowing atomic resolution of ionic crystals by atomic force microscopy. Physical Review B, 1992, 45, 13815-13818.	1.1	38
44	Atomic force microscopy at ambient and liquid conditions with stiff sensors and small amplitudes. Review of Scientific Instruments, 2011, 82, 093703.	0.6	38
45	Force Field Analysis Suggests a Lowering of Diffusion Barriers in Atomic Manipulation Due to Presence of STM Tip. Physical Review Letters, 2015, 114, 146101.	2.9	37
46	Streptococcus mutans biofilm formation and release of fluoride from experimental resin-based composites depending on surface treatment and S-PRG filler particle fraction. Journal of Adhesive Dentistry, 2014, 16, 313-21.	0.3	37
47	Analysis of force-deconvolution methods in frequency-modulation atomic force microscopy. Beilstein Journal of Nanotechnology, 2012, 3, 238-248.	1.5	36
48	Investigating atomic details of the CaF2(111) surface with a qPlus sensor. Nanotechnology, 2005, 16, S118-S124.	1.3	35
49	The Influence of Chemical Bonding Configuration on Atomic Identification by Force Spectroscopy. ACS Nano, 2013, 7, 7377-7382.	7.3	35
50	Interatomic force laws that evade dynamic measurement. Nature Nanotechnology, 2018, 13, 1088-1091.	15.6	33
51	Vibrations of a molecule in an external force field. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 4571-4576.	3.3	31
52	Imaging in Biologically-Relevant Environments with AFM Using Stiff qPlus Sensors. Scientific Reports, 2018, 8, 9330.	1.6	31
53	A simplified but intuitive analytical model for intermittent-contact-mode force microscopy based on Hertzian mechanics. Surface Science, 1999, 440, L863-L867.	0.8	30
54	Chemical and Crystallographic Characterization of the Tip Apex in Scanning Probe Microscopy. Physical Review Letters, 2014, 112, 066101.	2.9	28

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55	Influence of matrix and filler fraction on biofilm formation on the surface of experimental resin-based composites. Journal of Materials Science: Materials in Medicine, 2015, 26, 5372.	1.7	28
56	Higher-harmonic atomic force microscopy. Surface and Interface Analysis, 2006, 38, 1696-1701.	0.8	26
57	Higher-order eigenmodes of qPlus sensors for high resolution dynamic atomic force microscopy. Journal of Applied Physics, 2010, 107, .	1.1	26
58	Intramolecular Force Contrast and Dynamic Current-Distance Measurements at Room Temperature. Physical Review Letters, 2015, 115, 066101.	2.9	25
59	Application of the equipartition theorem to the thermal excitation of quartz tuning forks. Applied Physics Letters, 2011, 99, 084102.	1.5	24
60	Response of the topological surface state to surface disorder in TlBiSe₂. New Journal of Physics, 2015, 17, 023067.	1.2	24
61	Edge channels of broken-symmetry quantum Hall states in graphene visualized by atomic force microscopy. Nature Communications, 2021, 12, 2852.	5.8	24
62	Electron scattering in scanning probe microscopy experiments. Chemical Physics Letters, 2006, 420, 177-182.	1.2	23
63	Atomic Resolution of Calcium and Oxygen Sublattices of Calcite in Ambient Conditions by Atomic Force Microscopy Using qPlus Sensors with Sapphire Tips. ACS Nano, 2015, 9, 3858-3865.	7.3	23
64	Simultaneous current-, force-, and work-function measurement with atomic resolution. Applied Physics Letters, 2005, 86, 153101.	1.5	22
65	Influence of atomic tip structure on the intensity of inelastic tunneling spectroscopy data analyzed by combined scanning tunneling spectroscopy, force microscopy, and density functional theory. Physical Review B, 2016, 93, .	1.1	22
66	Analysis of STM images with pure and CO-functionalized tips: A first-principles and experimental study. Physical Review B, 2017, 96, .	1.1	22
67	Self-oscillating mode for frequency modulation noncontact atomic force microscopy. Applied Physics Letters, 1997, 70, 2529-2531.	1.5	21
68	Searching atomic spin contrast on nickel oxide (001) by force microscopy. Physical Review B, 2008, 77, .	1.1	21
69	Amplitude dependence of image quality in atomically-resolved bimodal atomic force microscopy. Applied Physics Letters, 2016, 109, .	1.5	18
70	qPlus magnetic force microscopy in frequency-modulation mode with millihertz resolution. Beilstein Journal of Nanotechnology, 2012, 3, 174-178.	1.5	17
71	Quantifying the evolution of atomic interaction of a complex surface with a functionalized atomic force microscopy tip. Scientific Reports, 2020, 10, 14104.	1.6	17
72	Achieving <i>Î¼</i>eV tunneling resolution in an <i>in-operando</i> scanning tunneling microscopy, atomic force microscopy, and magnetotransport system for quantum materials research. Review of Scientific Instruments, 2020, 91, 071101.	0.6	17

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73	Oligolayer-Coated Nanoparticles: Impact of Surface Topography at the Nanobio Interface. ACS Applied Materials & Interfaces, 2015, 7, 7891-7900.	4.0	15
74	<i>In-situ</i> characterization of O-terminated Cu tips for high-resolution atomic force microscopy. Applied Physics Letters, 2019, 114, .	1.5	15
75	Very weak bonds to artificial atoms formed by quantum corrals. Science, 2021, 372, 1196-1200.	6.0	15
76	Lateral manipulation of single iron adatoms by means of combined atomic force and scanning tunneling microscopy using CO-terminated tips. Physical Review B, 2018, 98, .	1.1	13
77	Principle of NC-AFM. Nanoscience and Technology, 2002, , 11-46.	1.5	13
78	Imaging silicon by atomic force microscopy with crystallographically oriented tips. Applied Physics A: Materials Science and Processing, 2001, 72, S15-S17.	1.1	12
79	Localization of the phantom force induced by the tunneling current. Physical Review B, 2012, 85, .	1.1	12
80	Lateral Force Microscopy Reveals the Energy Barrier of a Molecular Switch. ACS Nano, 2021, 15, 3264-3271.	7.3	12
81	High-precision atomic force microscopy with atomically-characterized tips. New Journal of Physics, 2020, 22, 063040.	1.2	11
82	Impact of thermal frequency drift on highest precision force microscopy using quartz-based force sensors at low temperatures. Beilstein Journal of Nanotechnology, 2014, 5, 407-412.	1.5	10
83	Attempts to test an alternative electrodynamic theory of superconductors by low-temperature scanning tunneling and atomic force microscopy. Physical Review B, 2016, 94, .	1.1	10
84	Strumming a Single Chemical Bond. Physical Review Letters, 2020, 124, 196101.	2.9	10
85	Higher Harmonics and Time-Varying Forces in Dynamic Force Microscopy. , 2010, , 711-729.		10
86	Experimental use of the inflection point test for force deconvolution in frequency-modulation atomic force microscopy to turn an ill-posed situation into a well-posed one by proper choice of amplitude. Journal of Applied Physics, 2020, 127, 184301.	1.1	9
87	Device for in situ cleaving of hard crystals. Review of Scientific Instruments, 2006, 77, 036101.	0.6	8
88	Preparation of light-atom tips for scanning probe microscopy by explosive delamination. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2010, 28, C4E28-C4E30.	0.6	8
89	The effect of sample resistivity on Kelvin probe force microscopy. Applied Physics Letters, 2012, 101, 213105.	1.5	8
90	A Fourier method for estimating potential energy and lateral forces from frequency-modulation lateral force microscopy data. New Journal of Physics, 2019, 21, 083007.	1.2	8

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91	Analysis of Airborne Contamination on Transition Metal Dichalcogenides with Atomic Force Microscopy Revealing That Sulfur Is the Preferred Chalcogen Atom for Devices Made in Ambient Conditions. ACS Applied Nano Materials, 2019, 2, 2593-2598.	2.4	8
92	Probing the Nature of Chemical Bonds by Atomic Force Microscopy. Molecules, 2021, 26, 4068.	1.7	8
93	Principles and Applications of the qPlus Sensor. Nanoscience and Technology, 2009, , 121-142.	1.5	7
94	Evaluating the potential energy landscape over single molecules at room temperature with lateral force microscopy. Applied Physics Letters, 2018, 112, .	1.5	7
95	Characterization of hydrogen plasma defined graphene edges. Carbon, 2019, 150, 417-424.	5.4	7
96	Combined atomic force microscope and scanning tunneling microscope with high optical access achieving atomic resolution in ambient conditions. Review of Scientific Instruments, 2020, 91, 083701.	0.6	7
97	Biaxial atomically resolved force microscopy based on a qPlus sensor operated simultaneously in the first flexural and length extensional modes. Review of Scientific Instruments, 2021, 92, 043703.	0.6	7
98	Identifying the atomic configuration of the tip apex using STM and frequency-modulation AFM with CO on Pt(111). Physical Review Research, 2020, 2, .	1.3	7
99	Note: In situ cleavage of crystallographic oriented tips for scanning probe microscopy. Review of Scientific Instruments, 2011, 82, 026106.	0.6	5
100	Non-contact AFM. Journal of Physics Condensed Matter, 2012, 24, 080301.	0.7	5
101	Advances in AFM: Seeing Atoms in Ambient Conditions. E-Journal of Surface Science and Nanotechnology, 2018, 16, 351-355.	0.1	5
102	Ion mobility and material transport on KBr in air as a function of the relative humidity. Beilstein Journal of Nanotechnology, 2019, 10, 2084-2093.	1.5	4
103	Imaging of atomic orbitals with the Atomic Force Microscope â€" experiments and simulations. , 2001, 10, 887.		4
104	Radio frequency filter for an enhanced resolution of inelastic electron tunneling spectroscopy in a combined scanning tunneling- and atomic force microscope. Review of Scientific Instruments, 2019, 90, 123104.	0.6	3
105	Determining amplitude and tilt of a lateral force microscopy sensor. Beilstein Journal of Nanotechnology, 2021, 12, 517-524.	1.5	3
106	Higher-Harmonic Force Detection in Dynamic Force Microscopy. , 2007, , 717-736.		3
107	Noncontact Atomic Force Microscopy and Related Topics. , 2011, , 195-237.		3
108	Measuring sliding friction at the atomic scale. Japanese Journal of Applied Physics, 2022, 61, SL0801.	0.8	3

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109	Atomare LadungszustÃnde unter dem Rasterkraftmikroskop. Physik in Unserer Zeit, 2009, 40, 225-226.	0.0	2
110	Scanning probe microscope simulator for the assessment of noise in scanning probe microscopy controllers. Review of Scientific Instruments, 2013, 84, 073704.	0.6	2
111	The Phantom Force. Nanoscience and Technology, 2015, , 71-92.	1.5	2
112	Atomic Force Microscopy on Its Way to Adolescence. AIP Conference Proceedings, 2003, , .	0.3	1
113	Silicon and Its Vital Role in The Evolution of Scanning Probe Microscopy. , 2004, , 191-204.		1
114	Publisherâ€™s Note: Chemical and Crystallographic Characterization of the Tip Apex in Scanning Probe Microscopy [Phys. Rev. Lett. 112, 066101 (2014)]. Physical Review Letters, 2014, 112, .	2.9	1
115	Noncontact Atomic Force Microscopy and Its Related Topics. , 2005, , 141-183.		1
116	Noncontact Atomic Force Microscopy and Related Topics. , 2007, , 651-678.		1
117	Noncontact Atomic Force Microscopy and Its Related Topics. , 2004, , 385-411.		1
118	Noncontact Atomic Force Microscopy and Related Topics. , 2010, , 635-662.		1
119	Revealing buckling of an apparently flat monolayer of NaCl on Pt(111). Physical Review B, 2022, 105, .	1.1	1
120	SCANNING TUNNELING MICROSCOPY AND SCANNING FORCE MICROSCOPY. , 2006, , 69-88.		0
121	Seeing the Reaction. Science, 2013, 340, 1417-1418.	6.0	0
122	Calvin F. Quate (1923â€“2019). Science, 2019, 365, 760-760.	6.0	0
123	Noncontact Atomic Force Microscopy and Its Related Topics. , 2004, , 385-411.		0
124	Relationship between the Geometrical Structure of a Tip Apex of a Scanning Probe Microscope and the Intensity of the Signal in Inelastic Electron Tunneling Spectroscopy. Vacuum and Surface Science, 2018, 61, 651-656.	0.0	0
125	Noncontact Atomic Force Microscopy and Related Topics. , 2008, , 135-177.		0