

# Franz Giessibl

## List of Publications by Citations

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122  
papers

8,414  
citations

37  
h-index

91  
g-index

129  
ext. papers

9,476  
ext. citations

8.2  
avg, IF

6.77  
L-index

#	Paper	IF	Citations
122	Advances in atomic force microscopy. <i>Reviews of Modern Physics</i> , <b>2003</b> , 75, 949-983	40.5	1508
121	Atomic resolution of the silicon (111)-(7x7) surface by atomic force microscopy. <i>Science</i> , <b>1995</b> , 267, 68-71	33.3	992
120	Forces and frequency shifts in atomic-resolution dynamic-force microscopy. <i>Physical Review B</i> , <b>1997</b> , 56, 16010-16015	3.3	557
119	High-speed force sensor for force microscopy and profilometry utilizing a quartz tuning fork. <i>Applied Physics Letters</i> , <b>1998</b> , 73, 3956-3958	3.4	459
118	Atomic resolution on Si(111)-(7x7) by noncontact atomic force microscopy with a force sensor based on a quartz tuning fork. <i>Applied Physics Letters</i> , <b>2000</b> , 76, 1470-1472	3.4	402
117	The force needed to move an atom on a surface. <i>Science</i> , <b>2008</b> , 319, 1066-9	33.3	360
116	Subatomic Features on the Silicon (111)-(7x7) Surface Observed by Atomic Force Microscopy. <i>Science</i> , <b>2000</b> , 289, 422-426	33.3	318
115	Measuring the charge state of an adatom with noncontact atomic force microscopy. <i>Science</i> , <b>2009</b> , 324, 1428-31	33.3	281
114	A direct method to calculate tip-sample forces from frequency shifts in frequency-modulation atomic force microscopy. <i>Applied Physics Letters</i> , <b>2001</b> , 78, 123-125	3.4	247
113	Calculation of the optimal imaging parameters for frequency modulation atomic force microscopy. <i>Applied Surface Science</i> , <b>1999</b> , 140, 352-357	6.7	163
112	Force microscopy with light-atom probes. <i>Science</i> , <b>2004</b> , 305, 380-3	33.3	134
111	Revealing the hidden atom in graphite by low-temperature atomic force microscopy. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2003</b> , 100, 12539-42	11.5	131
110	Revealing the angular symmetry of chemical bonds by atomic force microscopy. <i>Science</i> , <b>2012</b> , 336, 444-9	33.3	119
109	The qPlus sensor, a powerful core for the atomic force microscope. <i>Review of Scientific Instruments</i> , <b>2019</b> , 90, 011101	1.7	113
108	Physical interpretation of frequency-modulation atomic force microscopy. <i>Physical Review B</i> , <b>2000</b> , 61, 9968-9971	3.3	113
107	Interplay of conductance, force, and structural change in metallic point contacts. <i>Physical Review Letters</i> , <b>2011</b> , 106, 016802	7.4	110
106	Surface structure. Subatomic resolution force microscopy reveals internal structure and adsorption sites of small iron clusters. <i>Science</i> , <b>2015</b> , 348, 308-11	33.3	104

105	Local spectroscopy and atomic imaging of tunneling current, forces, and dissipation on graphite. <i>Physical Review Letters</i> , <b>2005</b> , 94, 056101	7.4	100
104	Friction traced to the single atom. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2002</b> , 99, 12006-10	11.5	98
103	Quantifying molecular stiffness and interaction with lateral force microscopy. <i>Science</i> , <b>2014</b> , 343, 1120-2333	3.3	97
102	Comparison of force sensors for atomic force microscopy based on quartz tuning forks and length-extensional resonators. <i>Physical Review B</i> , <b>2011</b> , 84,	3.3	81
101	Piezoresistive cantilevers utilized for scanning tunneling and scanning force microscope in ultrahigh vacuum. <i>Review of Scientific Instruments</i> , <b>1994</b> , 65, 1923-1929	1.7	80
100	Investigation of the (001) cleavage plane of potassium bromide with an atomic force microscope at 4.2 K in ultra-high vacuum. <i>Ultramicroscopy</i> , <b>1992</b> , 42-44, 281-289	3.1	76
99	AFM path to atomic resolution. <i>Materials Today</i> , <b>2005</b> , 8, 32-41	21.8	70
98	A low-temperature atomic force/scanning tunneling microscope for ultrahigh vacuum. <i>Journal of Vacuum Science &amp; Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena</i> , <b>1991</b> , 9, 984		67
97	Influence of surface properties of resin-based composites on in vitro <i>Streptococcus mutans</i> biofilm development. <i>European Journal of Oral Sciences</i> , <b>2012</b> , 120, 458-65	2.3	66
96	Stability considerations and implementation of cantilevers allowing dynamic force microscopy with optimal resolution: the qPlus sensor. <i>Nanotechnology</i> , <b>2004</b> , 15, S79-S86	3.4	65
95	Atomic Force Microscopy in Ultrahigh Vacuum. <i>Japanese Journal of Applied Physics</i> , <b>1994</b> , 33, 3726-3734	1.4	65
94	Phantom force induced by tunneling current: a characterization on Si(111). <i>Physical Review Letters</i> , <b>2011</b> , 106, 226801	7.4	61
93	CO tip functionalization inverts atomic force microscopy contrast via short-range electrostatic forces. <i>Physical Review Letters</i> , <b>2014</b> , 112, 166102	7.4	56
92	Probing the shape of atoms in real space. <i>Physical Review B</i> , <b>2003</b> , 68,	3.3	49
91	Image correction for atomic force microscopy images with functionalized tips. <i>Physical Review B</i> , <b>2014</b> , 89,	3.3	47
90	Atomically resolved graphitic surfaces in air by atomic force microscopy. <i>ACS Nano</i> , <b>2014</b> , 8, 5233-9	16.7	46
89	Exploring the nanoworld with atomic force microscopy. <i>Physics Today</i> , <b>2006</b> , 59, 44-50	0.9	46
88	Optimizing atomic resolution of force microscopy in ambient conditions. <i>Physical Review B</i> , <b>2013</b> , 87,	3.3	45

87	Spin resolution and evidence for superexchange on NiO(001) observed by force microscopy. <i>Physical Review Letters</i> , <b>2013</b> , 110, 266101	7.4	40
86	Theory for an electrostatic imaging mechanism allowing atomic resolution of ionic crystals by atomic force microscopy. <i>Physical Review B</i> , <b>1992</b> , 45, 13815-13818	3.3	37
85	Observation of 4 nm pitch stripe domains formed by exposing graphene to ambient air. <i>ACS Nano</i> , <b>2013</b> , 7, 10032-7	16.7	35
84	Evaluation of a force sensor based on a quartz tuning fork for operation at low temperatures and ultrahigh vacuum. <i>Applied Surface Science</i> , <b>2002</b> , 188, 445-449	6.7	35
83	Low noise current preamplifier for qPlus sensor deflection signal detection in atomic force microscopy at room and low temperatures. <i>Review of Scientific Instruments</i> , <b>2017</b> , 88, 073702	1.7	34
82	Atomic force microscopy at ambient and liquid conditions with stiff sensors and small amplitudes. <i>Review of Scientific Instruments</i> , <b>2011</b> , 82, 093703	1.7	34
81	The influence of chemical bonding configuration on atomic identification by force spectroscopy. <i>ACS Nano</i> , <b>2013</b> , 7, 7377-82	16.7	32
80	Atomic structure affects the directional dependence of friction. <i>Physical Review Letters</i> , <b>2013</b> , 111, 126103	16.7	32
79	Investigating atomic details of the CaF <sub>2</sub> (111) surface with a qPlus sensor. <i>Nanotechnology</i> , <b>2005</b> , 16, S118-S124	3.4	32
78	Chemical bond formation showing a transition from physisorption to chemisorption. <i>Science</i> , <b>2019</b> , 366, 235-238	33.3	30
77	Force field analysis suggests a lowering of diffusion barriers in atomic manipulation due to presence of STM tip. <i>Physical Review Letters</i> , <b>2015</b> , 114, 146101	7.4	30
76	Analysis of force-deconvolution methods in frequency-modulation atomic force microscopy. <i>Beilstein Journal of Nanotechnology</i> , <b>2012</b> , 3, 238-48	3	29
75	A simplified but intuitive analytical model for intermittent-contact-mode force microscopy based on Hertzian mechanics. <i>Surface Science</i> , <b>1999</b> , 440, L863-L867	1.8	29
74	Chemical and crystallographic characterization of the tip apex in scanning probe microscopy. <i>Physical Review Letters</i> , <b>2014</b> , 112, 066101	7.4	26
73	Higher-harmonic atomic force microscopy. <i>Surface and Interface Analysis</i> , <b>2006</b> , 38, 1696-1701	1.5	25
72	Streptococcus mutans biofilm formation and release of fluoride from experimental resin-based composites depending on surface treatment and S-PRG filler particle fraction. <i>Journal of Adhesive Dentistry</i> , <b>2014</b> , 16, 313-21	3	25
71	Interatomic force laws that evade dynamic measurement. <i>Nature Nanotechnology</i> , <b>2018</b> , 13, 1088-1091	28.7	25
70	Intramolecular Force Contrast and Dynamic Current-Distance Measurements at Room Temperature. <i>Physical Review Letters</i> , <b>2015</b> , 115, 066101	7.4	23

69	Atomically Resolved Chemical Reactivity of Small Fe Clusters. <i>Physical Review Letters</i> , <b>2020</b> , 124, 0960017.4	2.2	22
68	Higher-order eigenmodes of qPlus sensors for high resolution dynamic atomic force microscopy. <i>Journal of Applied Physics</i> , <b>2010</b> , 107, 104508	2.5	22
67	Electron scattering in scanning probe microscopy experiments. <i>Chemical Physics Letters</i> , <b>2006</b> , 420, 177-182	1.8	22
66	Influence of matrix and filler fraction on biofilm formation on the surface of experimental resin-based composites. <i>Journal of Materials Science: Materials in Medicine</i> , <b>2015</b> , 26, 5372	4.5	21
65	Application of the equipartition theorem to the thermal excitation of quartz tuning forks. <i>Applied Physics Letters</i> , <b>2011</b> , 99, 084102	3.4	21
64	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. <i>Physical Review B</i> , <b>2016</b> , 93,	3.3	20
63	Searching atomic spin contrast on nickel oxide (001) by force microscopy. <i>Physical Review B</i> , <b>2008</b> , 77,	3.3	20
62	Imaging in Biologically-Relevant Environments with AFM Using Stiff qPlus Sensors. <i>Scientific Reports</i> , <b>2018</b> , 8, 9330	4.9	20
61	Vibrations of a molecule in an external force field. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2018</b> , 115, 4571-4576	11.5	19
60	Analysis of STM images with pure and CO-functionalized tips: A first-principles and experimental study. <i>Physical Review B</i> , <b>2017</b> , 96,	3.3	19
59	Self-oscillating mode for frequency modulation noncontact atomic force microscopy. <i>Applied Physics Letters</i> , <b>1997</b> , 70, 2529-2531	3.4	19
58	Simultaneous current-, force-, and work-function measurement with atomic resolution. <i>Applied Physics Letters</i> , <b>2005</b> , 86, 153101	3.4	19
57	Atomic Resolution of Calcium and Oxygen Sublattices of Calcite in Ambient Conditions by Atomic Force Microscopy Using qPlus Sensors with Sapphire Tips. <i>ACS Nano</i> , <b>2015</b> , 9, 3858-65	16.7	18
56	Response of the topological surface state to surface disorder in TlBiSe <sub>2</sub> . <i>New Journal of Physics</i> , <b>2015</b> , 17, 023067	2.9	17
55	qPlus magnetic force microscopy in frequency-modulation mode with millihertz resolution. <i>Beilstein Journal of Nanotechnology</i> , <b>2012</b> , 3, 174-8	3	16
54	Oligolayer-coated nanoparticles: impact of surface topography at the nanobio interface. <i>ACS Applied Materials &amp; Interfaces</i> , <b>2015</b> , 7, 7891-900	9.5	15
53	Amplitude dependence of image quality in atomically-resolved bimodal atomic force microscopy. <i>Applied Physics Letters</i> , <b>2016</b> , 109, 141603	3.4	15
52	Principle of NC-AFM. <i>Nanoscience and Technology</i> , <b>2002</b> , 11-46	0.6	13

51	In-situ characterization of O-terminated Cu tips for high-resolution atomic force microscopy. <i>Applied Physics Letters</i> , <b>2019</b> , 114, 143103	3.4	12
50	Imaging silicon by atomic force microscopy with crystallographically oriented tips. <i>Applied Physics A: Materials Science and Processing</i> , <b>2001</b> , 72, S15-S17	2.6	11
49	Lateral manipulation of single iron adatoms by means of combined atomic force and scanning tunneling microscopy using CO-terminated tips. <i>Physical Review B</i> , <b>2018</b> , 98,	3.3	11
48	Impact of thermal frequency drift on highest precision force microscopy using quartz-based force sensors at low temperatures. <i>Beilstein Journal of Nanotechnology</i> , <b>2014</b> , 5, 407-12	3	10
47	Localization of the phantom force induced by the tunneling current. <i>Physical Review B</i> , <b>2012</b> , 85,	3.3	10
46	Attempts to test an alternative electrodynamic theory of superconductors by low-temperature scanning tunneling and atomic force microscopy. <i>Physical Review B</i> , <b>2016</b> , 94,	3.3	9
45	Achieving $\text{\AA}$ V tunneling resolution in an in-operando scanning tunneling microscopy, atomic force microscopy, and magnetotransport system for quantum materials research. <i>Review of Scientific Instruments</i> , <b>2020</b> , 91, 071101	1.7	8
44	Preparation of light-atom tips for scanning probe microscopy by explosive delamination. <i>Journal of Vacuum Science and Technology B: Nanotechnology and Microelectronics</i> , <b>2010</b> , 28, C4E28-C4E30	1.3	8
43	Higher Harmonics and Time-Varying Forces in Dynamic Force Microscopy <b>2010</b> , 711-729		8
42	Device for in situ cleaving of hard crystals. <i>Review of Scientific Instruments</i> , <b>2006</b> , 77, 036101	1.7	7
41	High-precision atomic force microscopy with atomically-characterized tips. <i>New Journal of Physics</i> , <b>2020</b> , 22, 063040	2.9	6
40	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. <i>Journal of Applied Physics</i> , <b>2020</b> , 127, 184301	2.5	6
39	Evaluating the potential energy landscape over single molecules at room temperature with lateral force microscopy. <i>Applied Physics Letters</i> , <b>2018</b> , 112, 181601	3.4	6
38	The effect of sample resistivity on Kelvin probe force microscopy. <i>Applied Physics Letters</i> , <b>2012</b> , 101, 213105	3.4	6
37	Principles and Applications of the qPlus Sensor. <i>Nanoscience and Technology</i> , <b>2009</b> , 121-142	0.6	6
36	A Fourier method for estimating potential energy and lateral forces from frequency-modulation lateral force microscopy data. <i>New Journal of Physics</i> , <b>2019</b> , 21, 083007	2.9	5
35	Characterization of hydrogen plasma defined graphene edges. <i>Carbon</i> , <b>2019</b> , 150, 417-424	10.4	5
34	Note: In situ cleavage of crystallographic oriented tips for scanning probe microscopy. <i>Review of Scientific Instruments</i> , <b>2011</b> , 82, 026106	1.7	5

33	Quantifying the evolution of atomic interaction of a complex surface with a functionalized atomic force microscopy tip. <i>Scientific Reports</i> , <b>2020</b> , 10, 14104	4.9	5
32	Strumming a Single Chemical Bond. <i>Physical Review Letters</i> , <b>2020</b> , 124, 196101	7.4	4
31	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. <i>ACS Applied Nano Materials</i> , <b>2019</b> , 2, 2593-2598	5.6	3
30	Non-contact AFM. <i>Journal of Physics Condensed Matter</i> , <b>2012</b> , 24, 080301	1.8	3
29	Combined atomic force microscope and scanning tunneling microscope with high optical access achieving atomic resolution in ambient conditions. <i>Review of Scientific Instruments</i> , <b>2020</b> , 91, 083701	1.7	3
28	Very weak bonds to artificial atoms formed by quantum corrals. <i>Science</i> , <b>2021</b> , 372, 1196-1200	33.3	3
27	Edge channels of broken-symmetry quantum Hall states in graphene visualized by atomic force microscopy. <i>Nature Communications</i> , <b>2021</b> , 12, 2852	17.4	3
26	Lateral Force Microscopy Reveals the Energy Barrier of a Molecular Switch. <i>ACS Nano</i> , <b>2021</b> , 15, 3264-3276	6.7	3
25	Imaging of atomic orbitals with the Atomic Force Microscope [Experiments and simulations <b>2001</b> , 10, 887		3
24	Scanning probe microscope simulator for the assessment of noise in scanning probe microscopy controllers. <i>Review of Scientific Instruments</i> , <b>2013</b> , 84, 073704	1.7	2
23	Atomare Ladungszustände unter dem Rasterkraftmikroskop. <i>Physik in Unserer Zeit</i> , <b>2009</b> , 40, 225-226	0.1	2
22	Identifying the atomic configuration of the tip apex using STM and frequency-modulation AFM with CO on Pt(111). <i>Physical Review Research</i> , <b>2020</b> , 2,	3.9	2
21	Noncontact Atomic Force Microscopy and Related Topics <b>2011</b> , 195-237		2
20	Ion mobility and material transport on KBr in air as a function of the relative humidity. <i>Beilstein Journal of Nanotechnology</i> , <b>2019</b> , 10, 2084-2093	3	2
19	Advances in AFM: Seeing Atoms in Ambient Conditions. <i>E-Journal of Surface Science and Nanotechnology</i> , <b>2018</b> , 16, 351-355	0.7	1
18	Atomic Force Microscopy on Its Way to Adolescence. <i>AIP Conference Proceedings</i> , <b>2003</b> ,	0	1
17	Silicon and Its Vital Role in The Evolution of Scanning Probe Microscopy <b>2004</b> , 191-204		1
16	The Phantom Force. <i>Nanoscience and Technology</i> , <b>2015</b> , 71-92	0.6	1

15	Noncontact Atomic Force Microscopy and Related Topics <b>2007</b> , 651-678		1
14	Higher-Harmonic Force Detection in Dynamic Force Microscopy <b>2007</b> , 717-736		1
13	Noncontact Atomic Force Microscopy and Related Topics <b>2010</b> , 635-662		1
12	Biaxial atomically resolved force microscopy based on a qPlus sensor operated simultaneously in the first flexural and length extensional modes. <i>Review of Scientific Instruments</i> , <b>2021</b> , 92, 043703	1.7	1
11	Radio frequency filter for an enhanced resolution of inelastic electron tunneling spectroscopy in a combined scanning tunneling- and atomic force microscope. <i>Review of Scientific Instruments</i> , <b>2019</b> , 90, 123104	1.7	1
10	Noncontact Atomic Force Microscopy and Its Related Topics <b>2005</b> , 141-183		1
9	Noncontact Atomic Force Microscopy and Its Related Topics <b>2004</b> , 385-411		0
8	Determining amplitude and tilt of a lateral force microscopy sensor. <i>Beilstein Journal of Nanotechnology</i> , <b>2021</b> , 12, 517-524	3	0
7	Calvin F. Quate (1923-2019). <i>Science</i> , <b>2019</b> , 365, 760	33.3	
6	Chemistry. Seeing the reaction. <i>Science</i> , <b>2013</b> , 340, 1417-8	33.3	
5	Wie viel Kraft ist nötig, um ein Atom zu bewegen?. <i>Physik in Unserer Zeit</i> , <b>2008</b> , 39, 111-112	0.1	
4	SCANNING TUNNELING MICROSCOPY AND SCANNING FORCE MICROSCOPY <b>2006</b> , 69-88		
3	Noncontact Atomic Force Microscopy and Related Topics <b>2008</b> , 135-177		
2	Noncontact Atomic Force Microscopy and Its Related Topics <b>2004</b> , 385-411		
1	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. <i>Vacuum and Surface Science</i> , <b>2018</b> , 61, 651-656		0