Udo D Schwarz

List of Publications by Citations

139 papers	4,623 citations	41 h-index	64 g-index
157 ext. papers	4,991 ext. citations	5.7 avg, IF	5.45 L-index

#	Paper	IF	Citations
139	Quantitative analysis of the frictional properties of solid materials at low loads. I. Carbon compounds. *Physical Review B*, **1997**, 56, 6987-6996	3.3	247
138	A generalized analytical model for the elastic deformation of an adhesive contact between a sphere and a flat surface. *Journal of Colloid and Interface Science*, **2003**, 261, 99-106	9.3	193
137	Three-dimensional imaging of short-range chemical forces with picometre resolution. *Nature Nanotechnology*, **2009**, 4, 307-10	28.7	162
136	Frictional duality observed during nanoparticle sliding. *Physical Review Letters*, **2008**, 101, 125505	7.4	135
135	Quantitative analysis of lateral force microscopy experiments. *Review of Scientific Instruments*, **1996**, 67, 2560-2567	1.7	129
134	Determination of Tip-Sample Interaction Potentials by Dynamic Force Spectroscopy. *Physical Review Letters*, **1999**, 83, 4780-4783	7.4	122
133	Calculation of the frequency shift in dynamic force microscopy. *Applied Surface Science*, **1999**, 140, 344-351	6.7	122
132	Friction at atomic-scale surface steps: experiment and theory. *Physical Review Letters*, **2008**, 101, 246105	7.4	112
131	Consequences of the stick-slip movement for the scanning force microscopy imaging of graphite. *Physical Review B*, **1998**, 57, 2477-2481	3.3	109
130	Scaling laws of structural lubricity. *Physical Review Letters*, **2013**, 111, 235502	7.4	101
129	A scanning force microscope with atomic resolution in ultrahigh vacuum and at low temperatures. *Review of Scientific Instruments*, **1998**, 69, 221-225	1.7	101
128	Contact-area dependence of frictional forces: Moving adsorbed antimony nanoparticles. *Physical Review B*, **2005**, 71,	3.3	93
127	Tip artefacts in scanning force microscopy. *Journal of Microscopy*, **1994**, 173, 183-197	1.9	91
126	The velocity dependence of frictional forces in point-contact friction. *Applied Physics A: Materials Science and Processing*, **1998**, 66, S263-S267	2.6	90
125	Low-load friction behavior of epitaxial C60 monolayers under Hertzian contact. *Physical Review B*, **1995**, 52, 14976-14984	3.3	88
124	Quantitative analysis of dynamic-force-spectroscopy data on graphite(0001) in the contact and noncontact regimes. *Physical Review B*, **2000**, 61, 12678-12681	3.3	86
123	Principles of atomic friction: from sticking atoms to superlubric sliding. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2008**, 366, 1383-404	3	79

122	Interpretation of "true atomic resolution" images of graphite (0001) in noncontact atomic force microscopy. *Physical Review B*, **2000**, 62, 6967-6970	3.3	78
121	Mechanical glass transition revealed by the fracture toughness of metallic glasses. *Nature Communications*, **2018**, 9, 3271	17.4	76
120	The atomic force microscope used as a powerful tool for machining surfaces. *Ultramicroscopy*, **1992**, 42-44, 1446-1451	3.1	75
119	Theory of amplitude modulation atomic force microscopy with and without Q-Control. *International Journal of Non-Linear Mechanics*, **2007**, 42, 608-625	2.8	73
118	Imaging physical phenomena with local probes: From electrons to photons. *Reviews of Modern Physics*, **2012**, 84, 1343-1381	40.5	70
117	Modelling of the scan process in lateral force microscopy. *Surface Science*, **1997**, 375, 395-402	1.8	70
116	Interfacial friction obtained by lateral manipulation of nanoparticles using atomic force microscopy techniques. *Journal of Applied Physics*, **2007**, 102, 084306	2.5	68
115	Anisotropy of sliding friction on the triglycine sulfate (010) surface. *Applied Physics A: Materials Science and Processing*, **1995**, 61, 525-533	2.6	68
114	Dynamic scanning force microscopy at low temperatures on a van der Waals surface: graphite (0001). *Applied Surface Science*, **1999**, 140, 247-252	6.7	64
113	Dynamic-mode scanning force microscopy study of n-InAs(110)-(1×1) at low temperatures. *Physical Review B*, **2000**, 61, 2837-2845	3.3	62
112	Three-dimensional atomic force microscopy - taking surface imaging to the next level. *Advanced Materials*, **2010**, 22, 2838-53	24	58
111	Simulation of a scanned tip on a NaF(001) surface in friction force microscopy. *Europhysics Letters*, **1996**, 36, 19-24	1.6	58
110	Combined low-temperature scanning tunneling/atomic force microscope for atomic resolution imaging and site-specific force spectroscopy. *Review of Scientific Instruments*, **2008**, 79, 033704	1.7	58
109	Simultaneous imaging of the In and As sublattice on InAs(110)-(1×1) with dynamic scanning force microscopy. *Applied Surface Science*, **1999**, 140, 293-297	6.7	58
108	Imaging of biomaterials in liquids: a comparison between conventional and Q-controlled amplitude modulation ('tapping mode') atomic force microscopy. *Nanotechnology*, **2006**, 17, S221-6	3.4	51
107	Controlled Translational Manipulation of Small Latex Spheres by Dynamic Force Microscopy. *Langmuir*, **2002**, 18, 7798-7803	4	51
106	Origin of the ferroelectric domain contrast observed in lateral force microscopy. *Physical Review B*, **1998**, 57, 161-169	3.3	51
105	Dynamic scanning force microscopy at low temperatures on a noble-gas crystal: Atomic resolution on the xenon(111) surface. *Europhysics Letters*, **1999**, 48, 276-279	1.6	51

104	Atomically smooth surfaces through thermoplastic forming of metallic glass. *Applied Physics Letters*, **2010**, 97, 101907	3.4	49
103	Quantitative analysis of the frictional properties of solid materials at low loads. II. Mica and germanium sulfide. *Physical Review B*, **1997**, 56, 6997-7000	3.3	46
102	Growth and Characterization of Crystalline Silica Films on Pd(100). *Journal of Physical Chemistry C*, **2013**, 117, 26144-26155	3.8	45
101	Combinatorial development of antibacterial Zr-Cu-Al-Ag thin film metallic glasses. *Scientific Reports*, **2016**, 6, 26950	4.9	43
100	Surface Species Formed by the Adsorption and Dissociation of Water Molecules on a Ru(0001) Surface Containing a Small Coverage of Carbon Atoms Studied by Scanning Tunneling Microscopy. *Journal of Physical Chemistry C*, **2008**, 112, 7445-7454	3.8	43
99	Understanding scanning tunneling microscopy contrast mechanisms on metal oxides: a case study. *ACS Nano*, **2013**, 7, 10233-44	16.7	41
98	A miniature fibre optic force microscope scan head. *Measurement Science and Technology*, **1993**, 4, 769-775	1.5	40
97	Measuring the friction of nanoparticles: a new route towards a better understanding of nanoscale friction. *ChemPhysChem*, **2009**, 10, 2373-82	3.2	37
96	Investigation of the swelling of human skin cells in liquid media by tapping mode scanning force microscopy. *Applied Physics A: Materials Science and Processing*, **2001**, 72, S125-S128	2.6	36
95	Role of double TiO2 layers at the interface of FeSe/SrTiO3 superconductors. *Physical Review B*, **2016**, 93,	3.3	35
94	Nanotribological studies using nanoparticle manipulation: Principles and application to structural lubricity. *Friction*, **2014**, 2, 114-139	5.6	34
93	Transition from static to kinetic friction of metallic nanoparticles. *Applied Physics Letters*, **2009**, 95, 053104	3.4	33
92	Interface and electronic characterization of thin epitaxial Co3O4 films. *Surface Science*, **2009**, 603, 291-297	1.8	33
91	Growth of C60 thin films on GeS(001) studied by scanning force microscopy. *Physical Review B*, **1995**, 52, 5967-5976	3.3	33
90	Atom-specific forces and defect identification on surface-oxidized Cu(100) with combined 3D-AFM and STM measurements. *Physical Review B*, **2013**, 87,	3.3	32
89	Surface phase, morphology, and charge distribution transitions on vacuum and ambient annealed SrTiO3(100). *Physical Review B*, **2016**, 93,	3.3	31
88	Frictional duality of metallic nanoparticles: Influence of particle morphology, orientation, and air exposure. *Physical Review B*, **2010**, 82,	3.3	31
87	Voltage-dependent pore activity of the peptide alamethicin correlated with incorporation in the membrane: salt and cholesterol effects. *Biochimica Et Biophysica Acta - Biomembranes*, **1988**, 941, 11-8	3.8	31

86	Noncontact Atomic Force Microscopy: An Emerging Tool for Fundamental Catalysis Research. *Accounts of Chemical Research*, **2015**, 48, 2640-8	24.3	28
85	Atomic resolution in scanning force microscopy: Concepts, requirements, contrast mechanisms, and image interpretation. *Physical Review B*, **2000**, 62, 13089-13097	3.3	28
84	Regulation of Mesenchymal Stem Cell Differentiation by Nanopatterning of Bulk Metallic Glass. *Scientific Reports*, **2018**, 8, 8758	4.9	27
83	Tribology. Tracking antiwear film formation. *Science*, **2015**, 348, 40-1	33.3	27
82	Regulation of cell-cell fusion by nanotopography. *Scientific Reports*, **2016**, 6, 33277	4.9	26
81	Data acquisition and analysis procedures for high-resolution atomic force microscopy in three dimensions. *Nanotechnology*, **2009**, 20, 264002	3.4	26
80	Mechanisms, kinetics, and dynamics of oxidation and reactions on oxide surfaces investigated by scanning probe microscopy. *Advanced Materials*, **2010**, 22, 2854-69	24	25
79	Interpretation of the atomic scale contrast obtained on graphite and single-walled carbon nanotubes in the dynamic mode of atomic force microscopy. *Nanotechnology*, **2005**, 16, S134-S137	3.4	25
78	Growth of two dimensional silica and aluminosilicate bilayers on Pd(111): from incommensurate to commensurate crystalline. *Physical Chemistry Chemical Physics*, **2017**, 19, 14001-14011	3.6	23
77	Exploring and Explaining Friction with the Prandtl-Tomlinson Model. *ACS Nano*, **2016**, 10, 38-41	16.7	23
76	Probing three-dimensional surface force fields with atomic resolution: Measurement strategies, limitations, and artifact reduction. *Beilstein Journal of Nanotechnology*, **2012**, 3, 637-50	3	23
75	Detection of doping atom distributions and individual dopants in InAs(110) by dynamic-mode scanning force microscopy in ultrahigh vacuum. *Physical Review B*, **2000**, 62, 13617-13622	3.3	23
74	Quantifying Pathways and Friction of Nanoparticles During Controlled Manipulation by Contact-Mode Atomic Force Microscopy. *Tribology Letters*, **2010**, 39, 273-281	2.8	22
73	Dynamic force microscopy with atomic resolution at low temperatures. *Applied Surface Science*, **2002**, 188, 245-251	6.7	21
72	Structural and Electronic Heterogeneity of Two Dimensional Amorphous Silica Layers. *Advanced Materials Interfaces*, **2014**, 1, 1400108	4.6	20
71	Simulation of NC-AFM images of xenon(111). *Applied Physics A: Materials Science and Processing*, **2001**, 72, S35-S38	2.6	20
70	Epitaxial NiPd (111) Alloy Substrates with Continuously Tunable Lattice Constants for 2D Materials Growth. *ACS Applied Materials & Interfaces*, **2017**, 9, 11266-11271	9.5	19
69	Pulsed Laser Beam Welding of PdCuNiP Bulk Metallic Glass. *Scientific Reports*, **2017**, 7, 7989	4.9	19

68	Comparison of the interaction of Pd with positively and negatively poled LiNbO3(0001). *Surface Science*, **2009**, 603, 3145-3154	1.8	19
67	Atomic imprinting into metallic glasses. *Communications Physics*, **2018**, 1,	5.4	19
66	Calculations of the threshold force and threshold power to move adsorbed nanoparticles. *Physical Review B*, **2005**, 71,	3.3	18
65	Three-dimensional interaction force and tunneling current spectroscopy of point defects on rutile TiO2(110). *Applied Physics Letters*, **2016**, 108, 071601	3.4	17
64	Robust high-resolution imaging and quantitative force measurement with tuned-oscillator atomic force microscopy. *Nanotechnology*, **2016**, 27, 065703	3.4	16
63	Advanced atomic force microscopy techniques. *Beilstein Journal of Nanotechnology*, **2012**, 3, 893-4	3	16
62	Quantifying Tip-Sample Interactions in Vacuum Using Cantilever-Based Sensors: An Analysis. *Physical Review Applied*, **2018**, 9,	4.3	15
61	Length Scales of Clustering in Granular Gases. *Physical Review Letters*, **1999**, 82, 4819-4822	7.4	13
60	Optimizing qPlus sensor assemblies for simultaneous scanning tunneling and noncontact atomic force microscopy operation based on finite element method analysis. *Beilstein Journal of Nanotechnology*, **2017**, 8, 657-666	3	10
59	Nonuniform friction-area dependency for antimony oxide surfaces sliding on graphite. *Physical Review B*, **2013**, 88,	3.3	9
58	Nanomechanical investigations and modifications of thin films based on scanning force methods. *Nanotechnology*, **1996**, 7, 346-350	3.4	9
57	Simultaneous Measurement of Multiple Independent Atomic-Scale Interactions Using Scanning Probe Microscopy: Data Interpretation and the Effect of Cross-Talk. *Journal of Physical Chemistry C*, **2015**, 119, 6670-6677	3.8	8
56	Accelerated discovery and mechanical property characterization of bioresorbable amorphous alloys in the Mg-Zn-Ca and the Fe-Mg-Zn systems using high-throughput methods. *Journal of Materials Chemistry B*, **2019**, 7, 5392-5400	7.3	8
55	Exploring atomic-scale lateral forces in the attractive regime: a case study on graphite (0001). *Nanotechnology*, **2012**, 23, 405703	3.4	8
54	Effect of the fictive temperature on the modulus, hardness, yield strength, dynamic mechanical and creep response of Zr44Ti11Cu10Ni10Be25 metallic glasses. *Journal of Alloys and Compounds*, **2020**, 819, 152979	5.7	8
53	Stochastic forces in circumplanetary dust dynamics. *Journal of Geophysical Research*, **2003**, 108,		7
52	Numerical performance analysis of quartz tuning fork-based force sensors. *Measurement Science and Technology*, **2017**, 28, 015102	2	6
51	Revealing surface-state transport in ultrathin topological crystalline insulator SnTe films. *APL Materials*, **2019**, 7, 051106	5.7	6

50	Atomic imprinting in the absence of an intrinsic length scale. *APL Materials*, **2020**, 8, 111104	5.7	6
49	Atomic Force Microscopy: Methods and Applications **2017**, 70-75		5
48	Length Scale and Dimensionality of Defects in Epitaxial SnTe Topological Crystalline Insulator Films. *Advanced Materials Interfaces*, **2017**, 4, 1601011	4.6	5
47	Relaxation and crystallization studied by observing the surface morphology evolution of atomically flat Pt57.5Cu14.7Ni5.3P22.5 upon annealing. *Scripta Materialia*, **2020**, 182, 32-37	5.6	5
46	Exploring site-specific chemical interactions at surfaces: a case study on highly ordered pyrolytic graphite. *Nanotechnology*, **2016**, 27, 485708	3.4	5
45	SURROGATE-BASED HYPOTHESIS TEST WITHOUT SURROGATES. *International Journal of Bifurcation and Chaos in Applied Sciences and Engineering*, **2004**, 14, 2107-2114	2	5
44	Load-dependent topographic and friction studies of individual ion tracks in layered materials by scanning force microscopy and lateral force microscopy. *Physical Review B*, **1996**, 53, R16180-R16183	3.3	5
43	Tuning two-dimensional phase formation through epitaxial strain and growth conditions: silica and silicate on NiPd(111) alloy substrates. *Nanoscale*, **2019**, 11, 21340-21353	7.7	5
42	Dependence of Modulus and Hardness on the Annealing Conditions of Pt57.5Cu14.7Ni5.3P22.5 Bulk Metallic Glass. *MRS Advances*, **2019**, 4, 73-79	0.7	4
41	Accuracy of tip-sample interaction measurements using dynamic atomic force microscopy techniques: Dependence on oscillation amplitude, interaction strength, and tip-sample distance. *Review of Scientific Instruments*, **2019**, 90, 033707	1.7	4
40	Noncontact atomic force microscopy. *Beilstein Journal of Nanotechnology*, **2012**, 3, 172-3	3	4
39	Plate-like microcrystals of silver bromide investigated by scanning force microscopy. *Ultramicroscopy*, **1992**, 41, 435-439	3.1	4
38	Structure of a Two-Dimensional Silicate Layer Formed by Reaction with an Alloy Substrate. *Chemistry of Materials*, **2019**, 31, 851-861	9.6	4
37	Determination of miller indices of side faces of small crystallites from scanning force microscopy angle measurements. *Surface and Interface Analysis*, **1995**, 23, 409-415	1.5	3
36	Suppression of the spectral weight of topological surface states on the nanoscale via local symmetry breaking. *Physical Review Materials*, **2018**, 2,	3.2	3
35	Nanotribological Studies by Nanoparticle Manipulation. *Nanoscience and Technology*, **2007**, 561-582	0.6	3
34	Atomic-Scale Imprinting by Sputter Deposition of Amorphous Metallic Films. *ACS Applied Materials & Interfaces*, **2020**, 12, 52908-52914	9.5	3
33	Atomic-scale homogeneous plastic flow beyond near-theoretical yield stress in a metallic glass. *Communications Materials*, **2021**, 2,	6	3

32	Using ZnO-CrO-ZnO heterostructures to characterize polarization penetration depth through non-polar films. *Physical Chemistry Chemical Physics*, **2017**, 19, 32492-32504	3.6	2
31	Noncontact atomic force microscopy II. *Beilstein Journal of Nanotechnology*, **2014**, 5, 289-90	3	2
30	Dynamic Force Microscopy and Spectroscopy in Ambient Conditions: Theory and Applications **2010**, 71-94		2
29	Force microscopy: on the charge. *Nature Nanotechnology*, **2009**, 4, 477-8	28.7	2
28	Atomen auf den Zahn gefühlt: Dynamische Rasterkraftmikroskopie. *Physik in Unserer Zeit*, **2002**, 33, 178-182		2
27	A cryogenic scanning force microscope for the characterization of frozen biological samples. *Applied Physics A: Materials Science and Processing*, **2003**, 76, 893-898	2.6	2
26	Atomic-Scale Friction Studies Using Scanning Force Microscopy. *Mechanics & Materials Science*, **2000**,		2
25	Nanotribological Studies by Nanoparticle Manipulation. *Nanoscience and Technology*, **2015**, 363-393	0.6	2
24	Low-Temperature Scanning Probe Microscopy **2010**, 663-709		2
23	Inside Cover: Measuring the Friction of Nanoparticles: A New Route towards a Better Understanding of Nanoscale Friction (ChemPhysChem 14/2009). *ChemPhysChem*, **2009**, 10, 2358-2358	3.2	1
22	Scanning probe microscopy for industrial applications: Selected examples. *Scanning*, **1993**, 15, 257-264	1.6	1
21	Scalable production of single 2D van der Waals layers through atomic layer deposition: bilayer silica on metal foils and films. *2D Materials*, **2022**, 9, 021003	5.9	1
20	Single-Crystal Nanostructure Arrays Forming Epitaxially through Thermomechanical Nanomolding. *Nano Letters*, **2021**, 21, 10054-10061	11.5	1
19	Q-controlled Dynamic Force Microscopy in Air and Liquids. *Nanoscience and Technology*, **2007**, 75-97	0.6	1
18	Low-Temperature Measurements: Principles, Instrumentation, and Application. *Nanoscience and Technology*, **2002**, 233-256	0.6	1
17	Force Field Spectroscopy in Three Dimensions. *Nanoscience and Technology*, **2009**, 95-119	0.6	1
16	Noncontact atomic force microscopy III. *Beilstein Journal of Nanotechnology*, **2016**, 7, 946-7	3	1
15	Angstrom-scale replication of surfaces with crystallized bulk metallic glasses. *Materials Today Nano*, **2021**, 16, 100145	9.7	1

List of Publications

14	Revealing the relationships between alloy structure, composition and plastic deformation in a ternary alloy system by a combinatorial approach. *Journal of Materials Science and Technology*, **2021**, 84, 97-104	9.1	1
13	Effect of fictive temperature on tribological properties of Zr44Ti11Cu10Ni10Be25 bulk metallic glasses. *Wear*, **2021**, 486-487, 204075	3.5	1
12	Correlating nano-tribological behavior with the free volume of Zr-based bulk metallic glasses via their fictive temperature. *Wear*, **2022**, 494-495, 204247	3.5	0
11	Low-Temperature Scanning Probe Microscopy. *Springer Handbooks*, **2017**, 769-808	1.3	
10	A Generalized Analytical Model for the Elastic Deformation of an Adhesive Contact Between a Sphere and a Flat Surface **2005**, 365		
9	Low Temperature Scanning Probe Microscopy **2005**, 185-242		
8	Dynamic Force Microscopy and Spectroscopy in Vacuum **2007**, 506-533		
7	Low-Temperature Scanning Probe Microscopy **2008**, 179-234		
6	Low Temperature Scanning Probe Microscopy **2004**, 413-447		
5	Low Temperature Scanning Probe Microscopy **2004**, 413-447		
4	Low-Temperature Scanning Probe Microscopy **2007**, 679-716		
3	Friction Force Microscopy **2016**, 1251-1260		
2	Low-Temperature Scanning Probe Microscopy **2011**, 239-305		
1	Using delaunay triangularization to characterize non-affine displacement fields during athermal, quasistatic deformation of amorphous solids. *Soft Matter*, **2021**, 17, 8612-8623	3.6	