Lei Chen

List of Publications by Year
in descending order

79 papers	3,765 citations	136950 32 h-index	133252 59 g-index
80 all docs	80 docs citations	80 times ranked	2891 citing authors

#	Article	IF	Citations
1	Evolution of the Adsorbed Water Layer Structure on Silicon Oxide at Room Temperature. Journal of Physical Chemistry B, 2005, 109, 16760-16763.	2.6	614
2	Nanotribology and MEMS. Nano Today, 2007, 2, 22-29.	11.9	329
3	Effects of adsorbed water layer structure on adhesion force of silicon oxide nanoasperity contact in humid ambient. Journal of Chemical Physics, 2006, 124, 174712.	3.0	205
4	Shear-Induced Structural Changes and Origin of Ultralow Friction of Hydrogenated Diamond-like Carbon (DLC) in Dry Environment. ACS Applied Materials & Interfaces, 2017, 9, 16704-16714.	8.0	127
5	Nanomanufacturing of silicon surface with a single atomic layer precision via mechanochemical reactions. Nature Communications, 2018, 9, 1542.	12.8	124
6	Water Adsorption on Hydrophilic and Hydrophobic Surfaces of Silicon. Journal of Physical Chemistry C, 2018, 122, 11385-11391.	3.1	118
7	Effect of Humidity on Friction and Wearâ€"A Critical Review. Lubricants, 2018, 6, 74.	2.9	106
8	Mechanochemistry at Solid Surfaces: Polymerization of Adsorbed Molecules by Mechanical Shear at Tribological Interfaces. ACS Applied Materials & Interfaces, 2017, 9, 3142-3148.	8.0	99
9	Macro- to Nanoscale Wear Prevention via Molecular Adsorption. Langmuir, 2008, 24, 155-159.	3.5	97
10	Role of Tribochemistry in Nanowear of Single-Crystalline Silicon. ACS Applied Materials & Interfaces, 2012, 4, 1585-1593.	8.0	93
11	Atomic insight into tribochemical wear mechanism of silicon at the Si/SiO2 interface in aqueous environment: Molecular dynamics simulations using ReaxFF reactive force field. Applied Surface Science, 2016, 390, 216-223.	6.1	89
12	2D nano-materials beyond graphene: from synthesis to tribological studies. Applied Nanoscience (Switzerland), 2020, 10, 3353-3388.	3.1	89
13	Effects of Surface Chemistry on Structure and Thermodynamics of Water Layers at Solidâ^'Vapor Interfaces. Journal of Physical Chemistry C, 2009, 113, 2128-2133.	3.1	83
14	Humidity Dependence of Tribochemical Wear of Monocrystalline Silicon. ACS Applied Materials & Interfaces, 2015, 7, 14785-14792.	8.0	80
15	Tribology of Si/SiO₂ in Humid Air: Transition from Severe Chemical Wear to Wearless Behavior at Nanoscale. Langmuir, 2015, 31, 149-156.	3.5	64
16	Chemical and physical origins of friction on surfaces with atomic steps. Science Advances, 2019, 5, eaaw0513.	10.3	62
17	Thickness and Structure of Adsorbed Water Layer and Effects on Adhesion and Friction at Nanoasperity Contact. Colloids and Interfaces, 2019, 3, 55.	2.1	54
18	Role of interfacial water in adhesion, friction, and wearâ€"A critical review. Friction, 2021, 9, 1-28.	6.4	53

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19	Running-in process of Si-SiO x /SiO2 pair at nanoscaleâ€”Sharp drops in friction and wear rate during initial cycles. Friction, 2013, 1, 81-91.	6.4	50
20	Interplay between counter-surface chemistry and mechanical activation in mechanochemical removal of N-faced GaN surface in humid ambient. Tribology International, 2021, 159, 107004.	5.9	49
21	Origin of low friction in hydrogenated diamond-like carbon films due to graphene nanoscroll formation depending on sliding mode: Unidirection and reciprocation. Carbon, 2021, 173, 696-704.	10.3	48
22	Spectroscopic ellipsometry study of thickness and porosity of the alteration layer formed on international simple glass surface in aqueous corrosion conditions. Npj Materials Degradation, 2018, 2, .	5.8	44
23	Friction-induced subsurface densification of glass at contact stress far below indentation damage threshold. Acta Materialia, 2020, 189, 166-173.	7.9	41
24	Effects of gas adsorption isotherm and liquid contact angle on capillary force for sphere-on-flat and cone-on-flat geometries. Journal of Colloid and Interface Science, 2010, 352, 549-557.	9.4	39
25	Investigation of humidity-dependent nanotribology behaviors of Si(1 0 0)/SiO2 pair moving from stick to slip. Applied Surface Science, 2013, 265, 192-200.	6.1	38
26	Friction at single-layer graphene step edges due to chemical and topographic interactions. Carbon, 2019, 154, 67-73.	10.3	38
27	Mechanochemical reactions of GaN-Al2O3 interface at the nanoasperity contact: Roles of crystallographic polarity and ambient humidity. Friction, 2022, 10, 1005-1018.	6.4	38
28	Role of water in the tribochemical removal of bare silicon. Applied Surface Science, 2016, 390, 696-702.	6.1	37
29	Effect of crystal plane orientation on tribochemical removal of monocrystalline silicon. Scientific Reports, 2017, 7, 40750.	3.3	37
30	Boundary lubrication effect of organic residue left on surface after evaporation of organic cleaning solvent. Wear, 2016, 350-351, 21-26.	3.1	36
31	Coadsorption of n-Propanol and Water on SiO₂: Study of Thickness, Composition, and Structure of Binary Adsorbate Layer Using Attenuated Total Reflection Infrared (ATR-IR) and Sum Frequency Generation (SFG) Vibration Spectroscopy. Journal of Physical Chemistry C, 2012, 116, 9909-9916.	3.1	35
32	What Governs Friction of Silicon Oxide in Humid Environment: Contact Area between Solids, Water Meniscus around the Contact, or Water Layer Structure?. Langmuir, 2017, 33, 9673-9679.	3.5	33
33	Key Role of Transfer Layer in Load Dependence of Friction on Hydrogenated Diamond-Like Carbon Films in Humid Air and Vacuum. Materials, 2019, 12, 1550.	2.9	33
34	Water Adsorption Isotherms on CH₃-, OH-, and COOH-Terminated Organic Surfaces at Ambient Conditions Measured with PM-RAIRS. Langmuir, 2012, 28, 15263-15269.	3.5	30
35	Friction and Tribochemical Wear Behaviors of Native Oxide Layer on Silicon at Nanoscale. Tribology Letters, 2017, 65, 1.	2.6	30
36	Surface Structure Dependence of Mechanochemical Etching: Scanning Probe-Based Nanolithography Study on Si(100), Si(110), and Si(111). ACS Applied Materials & Interfaces, 2019, 11, 20583-20588.	8.0	30

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37	Effect of abrasive particle size on tribochemical wear of monocrystalline silicon. Tribology International, 2017, 109, 222-228.	5.9	29
38	Threshold contact pressure for the material removal on monocrystalline silicon by SiO 2 microsphere. Wear, 2017, 376-377, 188-193.	3.1	28
39	Activation Volume in Shear-Driven Chemical Reactions. Tribology Letters, 2021, 69, 1.	2.6	27
40	Temperature-Dependent Mechanochemical Wear of Silicon in Water: The Role of Siâ€“OH Surfacial Groups. Langmuir, 2019, 35, 7735-7743.	3.5	26
41	Investigation of silicon wear against non-porous and micro-porous SiO₂ spheres in water and in humid air. RSC Advances, 2016, 6, 89627-89634.	3.6	23
42	Dependence of water adsorption on the surface structure of silicon wafers aged under different environmental conditions. Physical Chemistry Chemical Physics, 2019, 21, 26041-26048.	2.8	23
43	Interplay between solution chemistry and mechanical activation in friction-induced material removal of silicon surface in aqueous solution. Tribology International, 2020, 148, 106319.	5.9	21
44	Water adsorption on silica and calciumâ€boroaluminosilicate glass surfacesâ€”Thickness and hydrogen bonding of water layer. Journal of the American Ceramic Society, 2021, 104, 1568-1580.	3.8	21
45	Nanofretting behaviours of ultrathin DLC coating on Si(100) substrate. Wear, 2011, 271, 1980-1986.	3.1	19
46	Sliding Speed-Dependent Tribochemical Wear of Oxide-Free Silicon. Nanoscale Research Letters, 2017, 12, 404.	5.7	19
47	Roles of phase transition and surface property evolution in nanotribological behaviors of H-DLC: Effects of thermal and UV irradiation treatments. Applied Surface Science, 2020, 514, 145960.	6.1	19
48	Effects of surface chemical groups and environmental media on tribochemical running-in behaviors of silicon surface. Tribology International, 2018, 128, 174-180.	5.9	17
49	Nanoasperity Adhesion of the Silicon Surface in Humid Air: The Roles of Surface Chemistry and Oxidized Layer Structures. Langmuir, 2020, 36, 5483-5491.	3.5	17
50	Temporary or permanent liquid superlubricity failure depending on shear-induced evolution of surface topography. Tribology International, 2021, 161, 107076.	5.9	17
51	Differences in surface failure modes of soda lime silica glass under normal indentation versus tangential shear: A comparative study on Na⁺/K⁺â€ion exchange effects. Journal of the American Ceramic Society, 2019, 102, 1665-1676.	3.8	16
52	Origin of High Friction at Graphene Step Edges on Graphite. ACS Applied Materials & Interfaces, 2021, 13, 1895-1902.	8.0	16
53	Effect of Atomic Corrugation on Adhesion and Friction: A Model Study with Graphene Step Edges. Journal of Physical Chemistry Letters, 2019, 10, 6455-6461.	4.6	15
54	Nanoscopic humidity-dependent adhesion behaviors of 2D materials. Applied Surface Science, 2022, 572, 151394.	6.1	15

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55	Humidity effects on tribochemical removal of GaAs surfaces. Applied Physics Express, 2016, 9, 066703.	2.4	14
56	Perspectives of the Friction Mechanism of Hydrogenated Diamond-Like Carbon Film in Air by Varying Sliding Velocity. Coatings, 2018, 8, 331.	2.6	13
57	Revealing silicon crystal defects by conductive atomic force microscope. Applied Physics Letters, 2018, 113, .	3.3	13
58	Mechanochemical Reactions of Adsorbates at Tribological Interfaces: Tribopolymerizations of Allyl Alcohol Coadsorbed with Water on Silicon Oxide. Langmuir, 2019, 35, 15451-15458.	3.5	13
59	Friction and Wear Behaviors of Steel Ball Against Polyimide-PTFE Composite Under Rolling-Sliding Motion. Tribology Letters, 2021, 69, 1.	2.6	13
60	Self-lubrication of Si/SiO2 interface achieved through running-in at low sliding speed. Wear, 2019, 426-427, 828-834.	3.1	12
61	Anisotropic Optical and Frictional Properties of Langmuirâ€“Blodgett Film Consisting of Uniaxiallyâ€Aligned Rodâ€Shaped Cellulose Nanocrystals. Advanced Materials Interfaces, 2020, 7, 1902169.	3.7	12
62	Effect of counter-surface chemistry on defect-free material removal of monocrystalline silicon. Wear, 2019, 426-427, 1233-1239.	3.1	11
63	Gradual degeneration of liquid superlubricity: Transition from superlubricity to ordinary lubrication, and lubrication failure. Tribology International, 2019, 130, 352-358.	5.9	11
64	Measuring nanoscale friction at graphene step edges. Friction, 2020, 8, 802-811.	6.4	11
65	Study on the polishing mechanism of pH-dependent tribochemical removal in CMP of CaF2 crystal. Tribology International, 2020, 150, 106370.	5.9	11
66	Effect of mechanical interaction on the tribochemical wear of bare silicon in water. Wear, 2017, 376-377, 1307-1313.	3.1	10
67	Effect of Ambient Chemistry on Friction at the Basal Plane of Graphite. ACS Applied Materials & Interfaces, 2019, 11, 40800-40807.	8.0	10
68	Inverse Relationship between Thickness and Wear of Fluorinated Graphene: â€œThinner Is Betterâ€• Nano Letters, 0, , .	9.1	10
69	Environmental effects on superlubricity of hydrogenated diamond-like carbon: Understanding tribochemical kinetics in O2 and H2O environments. Applied Surface Science, 2022, 580, 152299.	6.1	9
70	Role of Interfacial Bonding in Tribochemical Wear. Frontiers in Chemistry, 2022, 10, 852371.	3.6	9
71	Role of mechanically-driven distorted microstructure in mechanochemical removal of silicon. Applied Surface Science, 2020, 520, 146337.	6.1	8
72	Factors governing wear of soda lime silicate glass: Insights from comparison between nano- and macro-scale wear. Tribology International, 2022, 171, 107566.	5.9	8

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73	Nondestructive nanofabrication on monocrystalline silicon via site-controlled formation and removal of oxide mask. Applied Physics Express, 2018, 11, 116501.	2.4	7
74	Identifying Physical and Chemical Contributions to Friction: A Comparative Study of Chemically Inert and Active Graphene Step Edges. ACS Applied Materials & Interfaces, 2020, 12, 30007-30015.	8.0	6
75	Stress-enhanced dissolution and delamination wear of crystal CaF2 in water condition. Wear, 2019, 418-419, 86-93.	3.1	4
76	Effect of humidity on friction, wear, and plastic deformation during nanoscratch of soda lime silica glass. Journal of the American Ceramic Society, 2022, 105, 1367-1374.	3.8	4
77	Effect of abrasive particle degradation on tribochemical wear of monocrystalline silicon. Wear, 2019, 426-427, 1240-1245.	3.1	2
78	Effect of Native Oxide Layer on Mechanochemical Reaction at the GaNâ€“Al2O3 Interface. Frontiers in Chemistry, 2021, 9, 672240.	3.6	2
79	Development of a symmetrical micro-beam minimizing horizontal drift for indentation and scratch. Review of Scientific Instruments, 2020, 91, 043702.	1.3	1