Jacob Klein

List of Publications by Year
in descending order

99 papers	11,117 citations	50276 46 h-index	33894 99 g-index
100 all docs	100 docs citations	100 times ranked	6531 citing authors

#	Article	IF	Citations
1	Lubrication by charged polymers. Nature, 2003, 425, 163-165.	27.8	791
2	Fluidity of Bound Hydration Layers. Science, 2002, 297, 1540-1543.	12.6	615
3	Fluidity of water confined to subnanometre films. Nature, 2001, 413, 51-54.	27.8	603
4	Lubrication at Physiological Pressures by Polyzwitterionic Brushes. Science, 2009, 323, 1698-1701.	12.6	588
5	Reduction of frictional forces between solid surfaces bearing polymer brushes. Nature, 1994, 370, 634-636.	27.8	553
6	Confinement-Induced Phase Transitions in Simple Liquids. Science, 1995, 269, 816-819.	12.6	543
7	Simple liquids confined to molecularly thin layers. I. Confinement-induced liquid-to-solid phase transitions. Journal of Chemical Physics, 1998, 108, 6996-7009.	3.0	455
8	Hydration lubrication. Friction, 2013, 1, 1-23.	6.4	404
9	Forces between polymer-bearing surfaces undergoing shear. Nature, 1991, 352, 143-145.	27.8	315
10	Boundary lubrication under water. Nature, 2006, 444, 191-194.	27.8	304
11	Layering and shear properties of an ionic liquid, 1-ethyl-3-methylimidazolium ethylsulfate, confined to nano-films between mica surfaces. Physical Chemistry Chemical Physics, 2010, 12, 1243-1247.	2.8	269
12	Forces between surfaces bearing terminally anchored polymer chains in good solvents. Nature, 1988, 332, 712-714.	27.8	260
13	Supramolecular synergy in the boundary lubrication of synovial joints. Nature Communications, 2015, 6, 6497.	12.8	254
14	Origins of hydration lubrication. Nature Communications, 2015, 6, 6060.	12.8	246
15	Probing the interactions of proteins and nanoparticles. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 2029-2030.	7.1	245
16	Lubrication of Articular Cartilage. Annual Review of Biomedical Engineering, 2016, 18, 235-258.	12.3	239
17	Simple liquids confined to molecularly thin layers. II. Shear and frictional behavior of solidified films. Journal of Chemical Physics, 1998, 108, 7010-7022.	3.0	221
18	Lubrication forces between surfaces bearing polymer brushes. Macromolecules, 1993, 26, 5552-5560.	4.8	217

#	Article	IF	Citations
19	Repair or Replacement--A Joint Perspective. Science, 2009, 323, 47-48.	12.6	188
20	Recent Progress in Cartilage Lubrication. Advanced Materials, 2021, 33, e2005513.	21.0	172
21	Cartilage-inspired, lipid-based boundary-lubricated hydrogels. Science, 2020, 370, 335-338.	12.6	169
22	Long-range attractive forces between two mica surfaces in an aqueous polymer solution. Nature, 1984, 308, 836-837.	27.8	143
23	Forces between mica surfaces bearing adsorbed macromolecules in liquid media. Journal of the Chemical Society Faraday Transactions I, 1983, 79, 99.	1.0	140
24	Boundary Lubricants with Exceptionally Low Friction Coefficients Based on 2D Closeâ€Packed Phosphatidylcholine Liposomes. Advanced Materials, 2011, 23, 3517-3521.	21.0	131
25	Forces between mica surfaces bearing layers of adsorbed polystyrene in cyclohexane. Nature, 1980, 288, 248-250.	27.8	130
26	Articular Cartilage Proteoglycans As Boundary Lubricants: Structure and Frictional Interaction of Surface-Attached Hyaluronan and Hyaluronanâ€"Aggrecan Complexes. Biomacromolecules, 2011, 12, 3432-3443.	5.4	120
27	Hydration Lubrication: The Macromolecular Domain. Macromolecules, 2015, 48, 5059-5075.	4.8	115
28	Shear and Frictional Interactions between Adsorbed Polymer Layers in a Good Solvent. Journal of Physical Chemistry B, 2001, 105, 8125-8134.	2.6	103
29	Properties and Interactions of Physigrafted End-Functionalized Poly(ethylene glycol) Layers. Langmuir, 2002, 18, 7482-7495.	3.5	93
30	Forces between Mica Surfaces, Prepared in Different Ways, Across Aqueous and Nonaqueous Liquids Confined to Molecularly Thin Films. Langmuir, 2006, 22, 6142-6152.	3.5	93
31	Normal and Frictional Forces between Surfaces Bearing Polyelectrolyte Brushes. Langmuir, 2008, 24, 8678-8687.	3.5	91
32	Long-Range Attraction between Charge-Mosaic Surfaces across Water. Physical Review Letters, 2006, 96, 038301.	7.8	89
33	Large Area, Molecularly Smooth (0.2 nm rms) Gold Films for Surface Forces and Other Studies. Langmuir, 2007, 23, 7777-7783.	3.5	85
34	Polyzwitterionic brushes: Extreme lubrication by design. European Polymer Journal, 2011, 47, 511-523.	5.4	85
35	Forces between mica surfaces bearing adsorbed homopolymers in good solvents. The effect of bridging and dangling tails. Journal of the Chemical Society, Faraday Transactions, 1990, 86, 1363.	1.7	81
36	Hydration lubrication: exploring a new paradigm. Faraday Discussions, 2012, 156, 217.	3.2	78

#	Article	IF	Citations
37	Origins of extreme boundary lubrication by phosphatidylcholine liposomes. Biomaterials, 2013, 34, 5465-5475.	11.4	73
38	Normal and Shear Interactions between Hyaluronanâ€"Aggrecan Complexes Mimicking Possible Boundary Lubricants in Articular Cartilage in Synovial Joints. Biomacromolecules, 2012, 13, 3823-3832.	5.4	72
39	Dense, Highly Hydrated Polymer Brushes via Modified Atom-Transfer-Radical-Polymerization: Structure, Surface Interactions, and Frictional Dissipation. Macromolecules, 2015, 48, 140-151.	4.8	70
40	Time dependence of forces between mica surfaces in water and its relation to the release of surface ions. Journal of Chemical Physics, 2002, 116, 5167.	3.0	65
41	The Role of Hyaluronic Acid in Cartilage Boundary Lubrication. Cells, 2020, 9, 1606.	4.1	65
42	Stability of Self-Assembled Hydrophobic Surfactant Layers in Water. Journal of Physical Chemistry B, 2005, 109, 3832-3837.	2.6	64
43	Interactions between Adsorbed Hydrogenated Soy Phosphatidylcholine (HSPC) Vesicles at Physiologically High Pressures and Salt Concentrations. Biophysical Journal, 2011, 100, 2403-2411.	0.5	63
44	Normal and Shear Forces between Surfaces Bearing Porcine Gastric Mucin, a High-Molecular-Weight Glycoprotein. Biomacromolecules, 2011, 12, 1041-1050.	5.4	61
45	Ultra-low friction between boundary layers of hyaluronan-phosphatidylcholine complexes. Acta Biomaterialia, 2017, 59, 283-292.	8.3	56
46	Normal and shear forces between a polyelectrolyte brush and a solid surface. Journal of Polymer Science, Part B: Polymer Physics, 2005, 43, 193-204.	2.1	50
47	Long-Ranged Attraction between Disordered Heterogeneous Surfaces. Physical Review Letters, 2012, 109, 168305.	7.8	47
48	Polymers in living systems: from biological lubrication to tissue engineering and biomedical devices. Polymers for Advanced Technologies, 2012, 23, 729-735.	3.2	46
49	Hydration lubrication and shear-induced self-healing of lipid bilayer boundary lubricants in phosphatidylcholine dispersions. Soft Matter, 2016, 12, 2773-2784.	2.7	46
50	Liposomes as lubricants: beyond drug delivery. Chemistry and Physics of Lipids, 2012, 165, 374-381.	3.2	44
51	Control of surface forces through hydrated boundary layers. Current Opinion in Colloid and Interface Science, 2019, 44, 94-106.	7.4	44
52	Selective Adsorption of Poly(ethylene oxide) onto a Charged Surface Mediated by Alkali Metal Ions. Langmuir, 2008, 24, 1570-1576.	3.5	43
53	Long-ranged surface forces: The structure and dynamics of polymers at interfaces. Pure and Applied Chemistry, 1992, 64, 1577-1584.	1.9	41
54	Frictional Dissipation Pathways Mediated by Hydrated Alkali Metal Ions. Langmuir, 2016, 32, 4755-4764.	3.5	40

#	Article	IF	Citations
55	Lipid-hyaluronan synergy strongly reduces intrasynovial tissue boundary friction. Acta Biomaterialia, 2019, 83, 314-321.	8.3	40
56	Direct Measurement of Sub-Debye-Length Attraction between Oppositely Charged Surfaces. Physical Review Letters, 2009, 103, 118304.	7.8	39
57	Cross-Linking Highly Lubricious Phosphocholinated Polymer Brushes: Effect on Surface Interactions and Frictional Behavior. Macromolecules, 2017, 50, 7361-7371.	4.8	39
58	Charging dynamics of an individual nanopore. Nature Communications, 2018, 9, 4203.	12.8	39
59	Mechanical Stability and Lubrication by Phosphatidylcholine Boundary Layers in the Vesicular and in the Extended Lamellar Phases. Langmuir, 2014, 30, 5005-5014.	3.5	38
60	Lubrication of articular cartilage. Physics Today, 2018, 71, 48-54.	0.3	38
61	Role of Ion Ligands in the Attachment of Poly(ethylene oxide) to a Charged Surface. Journal of the American Chemical Society, 2005, 127, 1104-1105.	13.7	36
62	Friction and Adhesion Hysteresis between Surfactant Monolayers in Water. Journal of Adhesion, 2007, 83, 705-722.	3.0	36
63	Frictional Dissipation in Stick-Slip Sliding. Physical Review Letters, 2007, 98, 056101.	7.8	35
64	On the question of whether lubricants fluidize in stickâ€"slip friction. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 7117-7122.	7.1	35
65	Poly-phosphocholinated Liposomes Form Stable Superlubrication Vectors. Langmuir, 2019, 35, 6048-6054.	3.5	34
66	Breakdown of hydration repulsion between charged surfaces in aqueous Cs+ solutions. Physical Chemistry Chemical Physics, 2008, 10, 4939.	2.8	33
67	Hydration Lubrication in Biomedical Applications: From Cartilage to Hydrogels. Accounts of Materials Research, 2022, 3, 213-223.	11.7	33
68	Interactions between Molecularly Smooth Gold and Mica Surfaces across Aqueous Solutions. Langmuir, 2009, 25, 11533-11540.	3.5	30
69	Normal and Frictional Interactions between Liposome-Bearing Biomacromolecular Bilayers. Biomacromolecules, 2016, 17, 2591-2602.	5.4	30
70	Effects of Hyaluronan Molecular Weight on the Lubrication of Cartilage-Emulating Boundary Layers. Biomacromolecules, 2020, 21, 4345-4354.	5.4	30
71	Normal and Shear Forces between Charged Solid Surfaces Immersed in Cationic Surfactant Solution: The Role of the Alkyl Chain Length. Langmuir, 2014, 30, 5097-5104.	3.5	27
72	A Trimeric Surfactant: Surface Micelles, Hydrationâ€"Lubrication, and Formation of a Stable, Charged Hydrophobic Monolayer. Langmuir, 2016, 32, 11754-11762.	3.5	26

#	Article	IF	Citations
73	Trapped Aqueous Films Lubricate Highly Hydrophobic Surfaces. ACS Nano, 2018, 12, 10075-10083.	14.6	26
74	Direct Observation of Confinement-Induced Charge Inversion at a Metal Surface. Langmuir, 2015, 31, 12845-12849.	3.5	21
75	Boundary lubrication by macromolecular layers and its relevance to synovial joints. Polymers for Advanced Technologies, 2014, 25, 468-477.	3.2	20
76	Designer Nanoparticles as Robust Superlubrication Vectors. ACS Nano, 2020, 14, 7008-7017.	14.6	20
77	Interactions Between Polymer Brushes: Varying the Number of End-Attaching Groups. Macromolecular Chemistry and Physics, 2004, 205, 2443-2450.	2.2	18
78	Probing the Surface Properties of Gold at Low Electrolyte Concentration. Langmuir, 2016, 32, 7346-7355.	3.5	18
79	Poly-phosphocholination of liposomes leads to highly-extended retention time in mice joints. Journal of Materials Chemistry B, 2022, 10, 2820-2827.	5.8	17
80	Effect of Cholesterol on the Stability and Lubrication Efficiency of Phosphatidylcholine Surface Layers. Langmuir, 2017, 33, 7459-7467.	3.5	14
81	Boundary Lubrication, Hemifusion, and Self-Healing of Binary Saturated and Monounsaturated Phosphatidylcholine Mixtures. Langmuir, 2019, 35, 15459-15468.	3.5	14
82	Shear Behavior of Adsorbed Poly(ethylene Oxide) Layers in Aqueous Media. Macromolecules, 2008, 41, 1831-1838.	4.8	13
83	Modification of interfacial forces by hydrophobin HFBI. Soft Matter, 2013, 9, 10627.	2.7	13
84	Normal and shear forces between boundary sphingomyelin layers under aqueous conditions. Soft Matter, 2020, 16, 3973-3980.	2.7	12
85	Interactions Between Bilayers of Phospholipids Extracted from Human Osteoarthritic Synovial Fluid. Biotribology, 2021, 25, 100157.	1.9	11
86	Modifying surface forces through control of surface potentials. Faraday Discussions, 2017, 199, 261-277.	3.2	9
87	Surface Interactions between Boundary Layers of Poly(ethylene oxide)â€"Liposome Complexes: Lubrication, Bridging, and Selective Ligation. Langmuir, 2019, 35, 15469-15480.	3.5	8
88	Modulating Interfacial Energy Dissipation via Potential-Controlled Ion Trapping. Journal of Physical Chemistry C, 2021, 125, 3616-3622.	3.1	7
89	Direct measurement of surface forces: Recent advances and insights. Applied Physics Reviews, 2021, 8, .	11.3	6
90	Lipids and lipid mixtures in boundary layers: From hydration lubrication to osteoarthritis. Current Opinion in Colloid and Interface Science, 2022, 58, 101559.	7.4	6

#	Article	IF	Citations
91	Direct measurement of forces between cell-coating polymers and chiral crystal surfaces: the enantioselectivity of hyaluronan. Soft Matter, 2008, 4, 1521.	2.7	5
92	Normal and shear forces between surfaces bearing phosphocholinated polystyrene nanoparticles. Polymers for Advanced Technologies, 2017, 28, 600-605.	3.2	4
93	Lipid-Bilayer Assemblies on Polymer-Bearing Surfaces: The Nature of the Slip Plane in Asymmetric Boundary Lubrication. Langmuir, 2020, 36, 15583-15591.	3.5	4
94	Direct measurement of the viscoelectric effect in water. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, .	7.1	4
95	Healing of adsorbed polymer layers in a narrow gap following removal by shear. Polymers for Advanced Technologies, 2002, 13, 1032-1038.	3.2	3
96	Modes of energy loss on shearing of thin confined films. Tribology Letters, 2007, 26, 229-233.	2.6	3
97	Origins of the long-ranged attraction between surfaces that were rendered hydrophobic by surfactant layers. Advances in Colloid and Interface Science, 2019, 270, 261-262.	14.7	2
98	Neutral polyphosphocholine-modified liposomes as boundary superlubricants. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2022, , 129218.	4.7	2
99	The Implication of "Jump-In" for the Shear Viscosity of Ultra Thin Liquid Films. ACS Symposium Series, 2004, , 131-138.	0.5	1