

Timo A Nieminen

List of Publications by Year in descending order

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147
papers

5,293
citations

117571

34
h-index

85498

71
g-index

151
all docs

151
docs citations

151
times ranked

3158
citing authors

#	ARTICLE	IF	CITATIONS
1	Controlled transfer of transverse orbital angular momentum to optically trapped birefringent microparticles. <i>Nature Photonics</i> , 2022, 16, 346-351.	15.6	28
2	Far-Field Subwavelength Straight-Line Projection/Imaging by Means of a Novel Double-Near-Zero Index-Based Two-Layer Metamaterial. <i>Materials</i> , 2021, 14, 5484.	1.3	1
3	Orientation of swimming cells with annular beam optical tweezers. <i>Optics Communications</i> , 2020, 459, 124864.	1.0	22
4	Optical Force Measurements Illuminate Dynamics of Escherichia coli in Viscous Media. <i>Frontiers in Physics</i> , 2020, 8, .	1.0	3
5	OTSLM toolbox for Structured Light Methods. <i>Computer Physics Communications</i> , 2020, 253, 107199.	3.0	13
6	Machine learning reveals complex behaviours in optically trapped particles. <i>Machine Learning: Science and Technology</i> , 2020, 1, 045009.	2.4	17
7	Swimming force and behavior of optically trapped micro-organisms. <i>Optica</i> , 2020, 7, 989.	4.8	21
8	Predicting particle properties in optical traps with machine learning. , 2020, , .		1
9	Understanding particle trajectories by mapping optical force vortices. , 2020, , .		0
10	Microscope images of strongly scattering objects via vectorial transfer matrices: Modeling and an experimental verification. <i>Physical Review A</i> , 2019, 99, .	1.0	1
11	Machine learning wall effects of eccentric spheres for convenient computation. <i>Physical Review E</i> , 2019, 99, 043304.	0.8	3
12	Measuring local properties inside a cellâ€mimicking structure using rotating optical tweezers. <i>Journal of Biophotonics</i> , 2019, 12, e201900022.	1.1	13
13	High-speed transverse and axial optical force measurements using amplitude filter masks. <i>Optics Express</i> , 2019, 27, 10034.	1.7	9
14	Optical-trapping of particles in air using parabolic reflectors and a hollow laser beam. <i>Optics Express</i> , 2019, 27, 33061.	1.7	14
15	Impact of complex surfaces on biomicro-rheological measurements using optical tweezers. <i>Lab on A Chip</i> , 2018, 18, 315-322.	3.1	8
16	Calibration of force detection for arbitrarily shaped particles in optical tweezers. <i>Scientific Reports</i> , 2018, 8, 10798.	1.6	24
17	Measuring the motility and drag forces acting on biological particles using optical tweezers. , 2018, , .		0
18	Optical tweezers toolbox: full dynamics simulations for particles of all sizes. , 2018, , .		4

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19	Visual guide to optical tweezers. European Journal of Physics, 2017, 38, 034009.	0.3	6
20	Theory and practice of simulation of optical tweezers. Journal of Quantitative Spectroscopy and Radiative Transfer, 2017, 195, 66-75.	1.1	43
21	Active rotational and translational microrheology beyond the linear spring regime. Physical Review E, 2017, 95, 042608.	0.8	11
22	Ultrasensitive rotating photonic probes for complex biological systems. Optica, 2017, 4, 1103.	4.8	21
23	Optically driven rotating micromachines. , 2017, , 99-128.		0
24	Ultrasensitive rotating photonic probes for complex biological systems: erratum. Optica, 2017, 4, 1372.	4.8	0
25	Measurements of particle-wall interaction forces using simultaneous position and force detection (Conference Presentation). , 2016, , .		0
26	Scattering of Sculpted Light in Intact Brain Tissue, with implications for Optogenetics. Scientific Reports, 2015, 5, 11501.	1.6	29
27	Energy, momentum and propagation of non-paraxial high-order Gaussian beams in the presence of an aperture. Journal of Optics (United Kingdom), 2015, 17, 125601.	1.0	12
28	Forces due to pulsed beams in optical tweezers: linear effects. Optics Express, 2015, 23, 7190.	1.7	15
29	Escape forces and trajectories in optical tweezers and their effect on calibration. Optics Express, 2015, 23, 24317.	1.7	12
30	Computational Modeling of Scattering of a Focused Beam in Zebrafish Brain Tissue. , 2015, , .		0
31	Theory and Practice of Computational Modeling and Simulation of Optical Tweezers. , 2015, , .		0
32	Optical tweezers escape forces. , 2014, , .		3
33	Viscoelasticity measurements inside liposomes. , 2014, , .		0
34	Optical trapping of isolated mammalian chromosomes. Proceedings of SPIE, 2014, , .	0.8	1
35	Driving corrugated donut rotors with Laguerre-Gauss beams. Optics Express, 2014, 22, 19692.	1.7	14
36	Optical tweezers: Theory and modelling. Journal of Quantitative Spectroscopy and Radiative Transfer, 2014, 146, 59-80.	1.1	83

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37	Comparison of T-matrix calculation methods for scattering by cylinders in optical tweezers. Optics Letters, 2014, 39, 4827.	1.7	13
38	Determination of motility forces on isolated chromosomes with laser tweezers. Scientific Reports, 2014, 4, 6866.	1.6	19
39	Mapping Organelle Motion Reveals a Vesicular Conveyor Belt Spatially Replenishing Secretory Vesicles in Stimulated Chromaffin Cells. PLoS ONE, 2014, 9, e87242.	1.1	29
40	Optically trapped and driven paddle-wheel. New Journal of Physics, 2013, 15, 063016.	1.2	34
41	Calibration of nonspherical particles in optical tweezers using only position measurement. Optics Letters, 2013, 38, 1244.	1.7	19
42	Factors influencing the higher education of international students from Confucian East Asia. Higher Education Research and Development, 2013, 32, 161-173.	1.9	53
43	Spatially-resolved rotational microrheology with an optically-trapped sphere. Scientific Reports, 2013, 3, .	1.6	40
44	Computational modelling of optical tweezers with many degrees of freedom using dynamic simulation: cylinders, nanowires, and multiple particles. , 2012, , .		3
45	Equilibrium orientations and positions of non-spherical particles in optical traps. Optics Express, 2012, 20, 12987.	1.7	45
46	Factors influencing international PhD students to study physics in Australia. Innovations in Education and Teaching International, 2012, 49, 309-318.	1.5	5
47	Directing growth cones of optic axons growing with laser scissors and laser tweezers. , 2012, , .		1
48	A photon-driven micromotor can direct nerve fibre growth. Nature Photonics, 2012, 6, 62-67.	15.6	118
49	Optical tweezers toolbox: better, faster, cheaper; choose all three. , 2012, , .		3
50	Design of Optically Driven Microrotors. , 2012, , 277-306.		2
51	Thermodynamics of optical tweezers. , 2011, , .		0
52	T-matrix method for modelling optical tweezers. Journal of Modern Optics, 2011, 58, 528-544.	0.6	74
53	Optical tweezers and paradoxes in electromagnetism. Journal of Optics (United Kingdom), 2011, 13, 044017.	1.0	7
54	Phase-Transition-like Properties of Double-Beam Optical Tweezers. Physical Review Letters, 2011, 107, 248101.	2.9	28

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55	Discrete-dipole approximation with surface interaction: Computational toolbox for MATLAB. Journal of Quantitative Spectroscopy and Radiative Transfer, 2011, 112, 1711-1725.	1.1	87
56	Research applications of theoretical and computational modelling of optical tweezers. , 2011, , .		0
57	High-speed camera system for biological applications in optical tweezing. , 2011, , .		0
58	‘Wiggler-Waggler’ — Optical measurements of complex viscoelastic moduli. , 2011, , .		0
59	'Wiggler-Waggler': towards optical measurements of the complex shear modulus. Proceedings of SPIE, 2011, , .	0.8	0
60	Measurement of angular momentum flux in optical tweezers. Proceedings of SPIE, 2011, , .	0.8	2
61	Shack-Hartmann measurement of OAM in highly focused light beams. , 2011, , .		0
62	Stability, scaling and temperature in double-well optical tweezers. , 2011, , .		0
63	Trapping ions. Nature Photonics, 2010, 4, 737-738.	15.6	8
64	Use of shape induced birefringence for rotation in optical tweezers. , 2010, , .		3
65	Approximate and exact modeling of optical trapping. , 2010, , .		9
66	Constraining validity of the Minkowski energy-momentum tensor. Physical Review A, 2009, 79, .	1.0	17
67	Using a birefringent probe particle in variable polarisation optical tweezers to probe properties of biological materials.. , 2009, , .		0
68	Publisher's Note: Constraining validity of the Minkowski energy-momentum tensor [Phys. Rev. A79, 023813 (2009)]. Physical Review A, 2009, 79, .	1.0	0
69	Optimization of optically-driven micromachines. , 2009, , .		3
70	Optical paddle-wheel. Proceedings of SPIE, 2009, , .	0.8	5
71	Refractometry of melanocyte cell nuclei using optical scatter images recorded by digital Fourier microscopy. Journal of Biomedical Optics, 2009, 14, 044031.	1.4	9
72	-matrix calculation via discrete dipole approximation, point matching and exploiting symmetry. Journal of Quantitative Spectroscopy and Radiative Transfer, 2009, 110, 1460-1471.	1.1	64

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73	Symmetry and the generation and measurement of optical torque. Journal of Quantitative Spectroscopy and Radiative Transfer, 2009, 110, 1472-1482.	1.1	46
74	Synthesis and Surface Modification of Birefringent Vaterite Microspheres. Langmuir, 2009, 25, 11672-11679.	1.6	53
75	Constant power optical tweezers with controllable torque. Optics Letters, 2009, 34, 139.	1.7	30
76	The effect of Mie resonances on trapping in optical tweezers: reply. Optics Express, 2009, 17, 2661.	1.7	3
77	Highly birefringent vaterite microspheres: production, characterization and applications for optical micromanipulation. Optics Express, 2009, 17, 21944.	1.7	74
78	Optical angular momentum transfer to microrotors fabricated by two-photon photopolymerization. New Journal of Physics, 2009, 11, 093021.	1.2	52
79	Vaterite twist: microrheology with AOM controlled optical tweezers. Proceedings of SPIE, 2009, , .	0.8	3
80	Fabrication of microstructures for optically driven micromachines using two-photon photopolymerization of UV curing resins. Journal of Optics, 2009, 11, 034001.	1.5	21
81	FOCUS ON PRACTICE: Naturalistic intervention for Asperger syndrome – a case study. British Journal of Special Education, 2008, 35, 85-91.	0.2	3
82	Angular momentum of a strongly focused Gaussian beam. Journal of Optics, 2008, 10, 115005.	1.5	134
83	Antireflection coating for improved optical trapping. Journal of Applied Physics, 2008, 103, 093119.	1.1	33
84	Forces in optical tweezers with radially and azimuthally polarized trapping beams. Optics Letters, 2008, 33, 122.	1.7	160
85	The effect of Mie resonances on trapping in optical tweezers. Optics Express, 2008, 16, 15039.	1.7	85
86	Binary keys for classification and taxonomy of behaviour. International Journal of Research and Method in Education, 2008, 31, 31-44.	1.1	0
87	Improved optically driven microrotors. Proceedings of SPIE, 2008, , .	0.8	0
88	Engineering optically driven micromachines. , 2008, , .		2
89	Calibration of trap stiffness and viscoelasticity in polymer solutions. , 2008, , .		1
90	Optical Vortex Trapping and the Dynamics of Particle Rotation. , 2008, , 195-236.		6

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91	Rheological and Viscometric Methods. , 2008, , 249-270.		1
92	Can Optically Driven Micromachines be Useful in Biomedicine? Optical Tweezers at Work. , 2008, , .		0
93	Tailoring Particles for Optical Trapping and Micromanipulation: An Overview. Progress in Electromagnetics Research Symposium: [proceedings] Progress in Electromagnetics Research Symposium, 2008, 4, 381-385.	0.4	2
94	Collecting single molecules with conventional optical tweezers. Physical Review E, 2007, 75, 011916.	0.8	32
95	Visualisation of ÅEerenkov radiation and the fields of a moving charge. European Journal of Physics, 2007, 28, 1043-1043.	0.3	1
96	Microrheology of microlitre samples: probed with rotating optical tweezers. , 2007, , .		2
97	Optical microrotors: theory, design and fabrication. Proceedings of SPIE, 2007, , .	0.8	1
98	Integrated optomechanical microelements. Optics Express, 2007, 15, 5521.	1.7	74
99	Refractometry of organosilica microspheres. Applied Optics, 2007, 46, 1554.	2.1	10
100	Physics of Optical Tweezers. Methods in Cell Biology, 2007, 82, 207-236.	0.5	69
101	Optical Torque on Microscopic Objects. Methods in Cell Biology, 2007, 82, 525-561.	0.5	33
102	Optical tweezers computational toolbox. Journal of Optics, 2007, 9, S196-S203.	1.5	317
103	Picoliter viscometry using optically rotated particles. Physical Review E, 2007, 76, 041507.	0.8	58
104	FDFD/T-matrix hybrid method. Journal of Quantitative Spectroscopy and Radiative Transfer, 2007, 106, 274-284.	1.1	33
105	<i>Colloquium</i>: Momentum of an electromagnetic wave in dielectric media. Reviews of Modern Physics, 2007, 79, 1197-1216.	16.4	360
106	Toolbox for Calculation of Optical Forces and Torques. Progress in Electromagnetics Research Symposium: [proceedings] Progress in Electromagnetics Research Symposium, 2007, 3, 338-342.	0.4	8
107	Optical force field mapping in microdevices. Lab on A Chip, 2006, 6, 1545-1547.	3.1	11
108	Measurement of the total optical angular momentum transfer in optical tweezers. Optics Express, 2006, 14, 6963.	1.7	49

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109	Torque transfer in optical tweezers due to orbital angular momentum. , 2006, , .		2
110	Calculation of optical trapping landscapes. , 2006, , .		4
111	Optical micromanipulation of synthetic macromolecules. , 2006, 6326, 313.		1
112	Modelling optical micromachines and birefringent particles. , 2006, , .		2
113	Visualization of ÅEerenkov radiation and the fields of a moving charge. European Journal of Physics, 2006, 27, 521-529.	0.3	2
114	Two controversies in classical electromagnetism. , 2006, 6326, 91.		5
115	Orientation of optically trapped nonspherical birefringent particles. Physical Review E, 2006, 73, 021911.	0.8	46
116	Measurement of the Index of Refraction of Single Microparticles. Physical Review Letters, 2006, 97, 157402.	2.9	48
117	Towards Efficient Modelling of Optical Micromanipulation of Complex Structures. Progress in Electromagnetics Research Symposium: [proceedings] Progress in Electromagnetics Research Symposium, 2006, 2, 442-446.	0.4	6
118	Optical microrheology of biopolymers. , 2005, , .		0
119	Towards crystallization using optical tweezers. , 2005, 6038, 62.		0
120	Two-photon polymerization process for optically driven micromachines. , 2005, 6038, 208.		4
121	Growth of crystals in optical tweezers. , 2005, , .		0
122	Optically driven micromachines: progress and prospects. , 2005, , .		12
123	A constant torque micro-viscometer. , 2005, , .		2
124	Rotating optical tweezers. Proceedings of SPIE, 2005, , .	0.8	2
125	Optical measurement of torque exerted on an elongated object by a noncircular laser beam. Physical Review A, 2004, 70, .	1.0	26
126	Comment on "Geometric absorption of electromagnetic angular momentum"; C. Konz, G. Benford. Optics Communications, 2004, 235, 227-229.	1.0	31

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127	Grazing-angle scattering of electromagnetic waves in gratings with varying mean parameters: Grating eigenmodes. Journal of Modern Optics, 2004, 51, 379-397.	0.6	1
128	Optical Microrheology Using Rotating Laser-Trapped Particles. Physical Review Letters, 2004, 92, 198104.	2.9	282
129	Computational modeling of optical tweezers. , 2004, , .		29
130	Measurement of orbital angular momentum in optical tweezers. , 2004, , .		2
131	Optical torque and symmetry. , 2004, , .		22
132	Multipole expansion of strongly focussed laser beams. Journal of Quantitative Spectroscopy and Radiative Transfer, 2003, 79-80, 1005-1017.	1.1	92
133	Rigorous analysis of grazing-angle scattering of electromagnetic waves in periodic gratings. Optics Communications, 2003, 219, 33-48.	1.0	5
134	Anomalous absorption of bulk shear sagittal acoustic waves in a layered structure with viscous fluid. Ultrasonics, 2003, 41, 197-205.	2.1	0
135	Non-steady-state double-resonant extremely asymmetrical scattering of waves in periodic gratings. Physics Letters, Section A: General, Atomic and Solid State Physics, 2003, 310, 214-222.	0.9	0
136	Orientation of biological cells using plane-polarized gaussian beam optical tweezers. Journal of Modern Optics, 2003, 50, 1581-1590.	0.6	143
137	Optical application and measurement of torque on microparticles of isotropic nonabsorbing material. Physical Review A, 2003, 68, .	1.0	152
138	Extremely asymmetrical scattering in gratings with varying mean structural parameters. Journal of Modern Optics, 2002, 49, 1567-1585.	0.6	8
139	Non-steady-state extremely asymmetrical scattering of waves in periodic gratings. Optics Express, 2002, 10, 268.	1.7	5
140	Optical measurement of microscopic torques. Journal of Modern Optics, 2001, 48, 405-413.	0.6	99
141	Calculation and optical measurement of laser trapping forces on non-spherical particles. Journal of Quantitative Spectroscopy and Radiative Transfer, 2001, 70, 627-637.	1.1	87
142	Rigorous analysis of extremely asymmetrical scattering of electromagnetic waves in slanted periodic gratings. Optics Communications, 2001, 189, 175-186.	1.0	15
143	How to SYN in seven easy steps. Computer Physics Communications, 2001, 142, 160-163.	3.0	0
144	Numerical modelling of optical trapping. Computer Physics Communications, 2001, 142, 468-471.	3.0	85

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145	Optical alignment and spinning of laser-trapped microscopic particles. Nature, 1998, 394, 348-350.	13.7	977
146	Optical torque controlled by elliptical polarization. Optics Letters, 1998, 23, 1.	1.7	125
147	Optical Trapping of Absorbing Particles. Advances in Quantum Chemistry, 1998, 30, 469-492.	0.4	62