Timo A Nieminen

List of Publications by Year in descending order

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	Optical alignment and spinning of laser-trapped microscopic particles. Nature, 1998, 394, 348-350.	13.7	977
2	Colloquium: Momentum of an electromagnetic wave in dielectric media. Reviews of Modern Physics, 2007, 79, 1197-1216.	16.4	360
3	Optical tweezers computational toolbox. Journal of Optics, 2007, 9, S196-S203.	1.5	317
4	Optical Microrheology Using Rotating Laser-Trapped Particles. Physical Review Letters, 2004, 92, 198104.	2.9	282
5	Forces in optical tweezers with radially and azimuthally polarized trapping beams. Optics Letters, 2008, 33, 122.	1.7	160
6	Optical application and measurement of torque on microparticles of isotropic nonabsorbing material. Physical Review A, 2003, 68, .	1.0	152
7	Orientation of biological cells using plane-polarized gaussian beam optical tweezers. Journal of Modern Optics, 2003, 50, 1581-1590.	0.6	143
8	Angular momentum of a strongly focused Gaussian beam. Journal of Optics, 2008, 10, 115005.	1.5	134
9	Optical torque controlled by elliptical polarization. Optics Letters, 1998, 23, 1.	1.7	125
10	A photon-driven micromotor can direct nerve fibre growth. Nature Photonics, 2012, 6, 62-67.	15.6	118
11	Optical measurement of microscopic torques. Journal of Modern Optics, 2001, 48, 405-413.	0.6	99
12	Multipole expansion of strongly focussed laser beams. Journal of Quantitative Spectroscopy and Radiative Transfer, 2003, 79-80, 1005-1017.	1.1	92
13	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
14	Discrete-dipole approximation with surface interaction: Computational toolbox for MATLAB. Journal of Quantitative Spectroscopy and Radiative Transfer, 2011, 112, 1711-1725.	1.1	87
15	Numerical modelling of optical trapping. Computer Physics Communications, 2001, 142, 468-471.	3.0	85
16	The effect of Mie resonances on trapping in optical tweezers. Optics Express, 2008, 16, 15039.	1.7	85
17	Optical tweezers: Theory and modelling. Journal of Quantitative Spectroscopy and Radiative Transfer, 2014, 146, 59-80.	1.1	83
18	Integrated optomechanical microelements. Optics Express, 2007, 15, 5521.	1.7	74

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19	Highly birefringent vaterite microspheres: production, characterization and applications for optical micromanipulation. Optics Express, 2009, 17, 21944.	1.7	74
20	T-matrix method for modelling optical tweezers. Journal of Modern Optics, 2011, 58, 528-544.	0.6	74
21	Physics of Optical Tweezers. Methods in Cell Biology, 2007, 82, 207-236.	0.5	69
22	-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
23	Optical Trapping of Absorbing Particles. Advances in Quantum Chemistry, 1998, 30, 469-492.	0.4	62
24	Picoliter viscometry using optically rotated particles. Physical Review E, 2007, 76, 041507.	0.8	58
25	Synthesis and Surface Modification of Birefringent Vaterite Microspheres. Langmuir, 2009, 25, 11672-11679.	1.6	53
26	Factors influencing the higher education of international students from Confucian East Asia. Higher Education Research and Development, 2013, 32, 161-173.	1.9	53
27	Optical angular momentum transfer to microrotors fabricated by two-photon photopolymerization. New Journal of Physics, 2009, 11, 093021.	1.2	52
28	Measurement of the total optical angular momentum transfer in optical tweezers. Optics Express, 2006, 14, 6963.	1.7	49
29	Measurement of the Index of Refraction of Single Microparticles. Physical Review Letters, 2006, 97, 157402.	2.9	48
30	Orientation of optically trapped nonspherical birefringent particles. Physical Review E, 2006, 73, 021911.	0.8	46
31	Symmetry and the generation and measurement of optical torque. Journal of Quantitative Spectroscopy and Radiative Transfer, 2009, 110, 1472-1482.	1.1	46
32	Equilibrium orientations and positions of non-spherical particles in optical traps. Optics Express, 2012, 20, 12987.	1.7	45
33	Theory and practice of simulation of optical tweezers. Journal of Quantitative Spectroscopy and Radiative Transfer, 2017, 195, 66-75.	1.1	43
34	Spatially-resolved rotational microrheology with an optically-trapped sphere. Scientific Reports, 2013, 3, .	1.6	40
35	Optically trapped and driven paddle-wheel. New Journal of Physics, 2013, 15, 063016.	1.2	34
36	Optical Torque on Microscopic Objects. Methods in Cell Biology, 2007, 82, 525-561.	0.5	33

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37	FDFD/T-matrix hybrid method. Journal of Quantitative Spectroscopy and Radiative Transfer, 2007, 106, 274-284.	1.1	33
38	Antireflection coating for improved optical trapping. Journal of Applied Physics, 2008, 103, 093119.	1.1	33
39	Collecting single molecules with conventional optical tweezers. Physical Review E, 2007, 75, 011916.	0.8	32
40	Comment on â€œGeometric absorption of electromagnetic angular momentumâ€, C. Konz, G. Benford. Optics Communications, 2004, 235, 227-229.	1.0	31
41	Constant power optical tweezers with controllable torque. Optics Letters, 2009, 34, 139.	1.7	30
42	Computational modeling of optical tweezers. , 2004, , .		29
43	Scattering of Sculpted Light in Intact Brain Tissue, with implications for Optogenetics. Scientific Reports, 2015, 5, 11501.	1.6	29
44	Mapping Organelle Motion Reveals a Vesicular Conveyor Belt Spatially Replenishing Secretory Vesicles in Stimulated Chromaffin Cells. PLoS ONE, 2014, 9, e87242.	1.1	29
45	Phase-Transition-like Properties of Double-Beam Optical Tweezers. Physical Review Letters, 2011, 107, 248101.	2.9	28
46	Controlled transfer of transverse orbital angular momentum to optically trapped birefringent microparticles. Nature Photonics, 2022, 16, 346-351.	15.6	28
47	Optical measurement of torque exerted on an elongated object by a noncircular laser beam. Physical Review A, 2004, 70, .	1.0	26
48	Calibration of force detection for arbitrarily shaped particles in optical tweezers. Scientific Reports, 2018, 8, 10798.	1.6	24
49	Optical torque and symmetry. , 2004, , .		22
50	Orientation of swimming cells with annular beam optical tweezers. Optics Communications, 2020, 459, 124864.	1.0	22
51	Ultrasensitive rotating photonic probes for complex biological systems. Optica, 2017, 4, 1103.	4.8	21
52	Fabrication of microstructures for optically driven micromachines using two-photon photopolymerization of UV curing resins. Journal of Optics, 2009, 11, 034001.	1.5	21
53	Swimming force and behavior of optically trapped micro-organisms. Optica, 2020, 7, 989.	4.8	21
54	Calibration of nonspherical particles in optical tweezers using only position measurement. Optics Letters, 2013, 38, 1244.	1.7	19

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55	Determination of motility forces on isolated chromosomes with laser tweezers. Scientific Reports, 2014, 4, 6866.	1.6	19
56	Constraining validity of the Minkowski energy-momentum tensor. Physical Review A, 2009, 79, .	1.0	17
57	Machine learning reveals complex behaviours in optically trapped particles. Machine Learning: Science and Technology, 2020, 1, 045009.	2.4	17
58	Rigorous analysis of extremely asymmetrical scattering of electromagnetic waves in slanted periodic gratings. Optics Communications, 2001, 189, 175-186.	1.0	15
59	Forces due to pulsed beams in optical tweezers: linear effects. Optics Express, 2015, 23, 7190.	1.7	15
60	Driving corrugated donut rotors with Laguerre-Gauss beams. Optics Express, 2014, 22, 19692.	1.7	14
61	Optical-trapping of particles in air using parabolic reflectors and a hollow laser beam. Optics Express, 2019, 27, 33061.	1.7	14
62	Comparison of T-matrix calculation methods for scattering by cylinders in optical tweezers. Optics Letters, 2014, 39, 4827.	1.7	13
63	Measuring local properties inside a cellâ€mimicking structure using rotating optical tweezers. Journal of Biophotonics, 2019, 12, e201900022.	1.1	13
64	OTSLM toolbox for Structured Light Methods. Computer Physics Communications, 2020, 253, 107199.	3.0	13
65	Optically driven micromachines: progress and prospects. , 2005, , .		12
66	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
67	Escape forces and trajectories in optical tweezers and their effect on calibration. Optics Express, 2015, 23, 24317.	1.7	12
68	Optical force field mapping in microdevices. Lab on A Chip, 2006, 6, 1545-1547.	3.1	11
69	Active rotational and translational microrheology beyond the linear spring regime. Physical Review E, 2017, 95, 042608.	0.8	11
70	Refractometry of organosilica microspheres. Applied Optics, 2007, 46, 1554.	2.1	10
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	Approximate and exact modeling of optical trapping. , 2010, , .		9

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73	High-speed transverse and axial optical force measurements using amplitude filter masks. Optics Express, 2019, 27, 10034.	1.7	9
74	Extremely asymmetrical scattering in gratings with varying mean structural parameters. Journal of Modern Optics, 2002, 49, 1567-1585.	0.6	8
75	Trapping ions. Nature Photonics, 2010, 4, 737-738.	15.6	8
76	Impact of complex surfaces on biomicrorheological measurements using optical tweezers. Lab on A Chip, 2018, 18, 315-322.	3.1	8
77	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
78	Optical tweezers and paradoxes in electromagnetism. Journal of Optics (United Kingdom), 2011, 13, 044017.	1.0	7
79	Optical Vortex Trapping and the Dynamics of Particle Rotation. , 2008, , 195-236.		6
80	Visual guide to optical tweezers. European Journal of Physics, 2017, 38, 034009.	0.3	6
81	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
82	Non-steady-state extremely asymmetrical scattering of waves in periodic gratings. Optics Express, 2002, 10, 268.	1.7	5
83	Rigorous analysis of grazing-angle scattering of electromagnetic waves in periodic gratings. Optics Communications, 2003, 219, 33-48.	1.0	5
84	Two controversies in classical electromagnetism. , 2006, 6326, 91.		5
85	Optical paddle-wheel. Proceedings of SPIE, 2009, , .	0.8	5
86	Factors influencing international PhD students to study physics in Australia. Innovations in Education and Teaching International, 2012, 49, 309-318.	1.5	5
87	Two-photon polymerization process for optically driven micromachines. , 2005, 6038, 208.		4
88	Calculation of optical trapping landscapes. , 2006, , .		4
89	Optical tweezers toolbox: full dynamics simulations for particles of all sizes. , 2018, , .		4
90	FOCUS ON PRACTICE: Naturalistic intervention for Asperger syndrome â€“ a case study. British Journal of Special Education, 2008, 35, 85-91.	0.2	3

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91	Optimization of optically-driven micromachines. , 2009, , .		3
92	The effect of Mie resonances on trapping in optical tweezers: reply. Optics Express, 2009, 17, 2661.	1.7	3
93	Vaterite twist: microrheology with AOM controlled optical tweezers. Proceedings of SPIE, 2009, , .	0.8	3
94	Use of shape induced birefringence for rotation in optical tweezers. , 2010, , .		3
95	Computational modelling of optical tweezers with many degrees of freedom using dynamic simulation: cylinders, nanowires, and multiple particles. , 2012, , .		3
96	Optical tweezers toolbox: better, faster, cheaper; choose all three. , 2012, , .		3
97	Optical tweezers escape forces. , 2014, , .		3
98	Machine learning wall effects of eccentric spheres for convenient computation. Physical Review E, 2019, 99, 043304.	0.8	3
99	Optical Force Measurements Illuminate Dynamics of Escherichia coli in Viscous Media. Frontiers in Physics, 2020, 8, .	1.0	3
100	Measurement of orbital angular momentum in optical tweezers. , 2004, , .		2
101	A constant torque micro-viscometer. , 2005, , .		2
102	Rotating optical tweezers. Proceedings of SPIE, 2005, , .	0.8	2
103	Torque transfer in optical tweezers due to orbital angular momentum. , 2006, , .		2
104	Modelling optical micromachines and birefringent particles. , 2006, , .		2
105	Visualization of ÄŒerenkov radiation and the fields of a moving charge. European Journal of Physics, 2006, 27, 521-529.	0.3	2
106	Microrheology of microlitre samples: probed with rotating optical tweezers. , 2007, , .		2
107	Engineering optically driven micromachines. , 2008, , .		2
108	Measurement of angular momentum flux in optical tweezers. Proceedings of SPIE, 2011, , .	0.8	2

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109	Design of Optically Driven Microrotors. , 2012, , 277-306.		2
110	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
111	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
112	Optical micromanipulation of synthetic macromolecules. , 2006, 6326, 313.		1
113	Visualisation of ÄŒerenkov radiation and the fields of a moving charge. European Journal of Physics, 2007, 28, 1043-1043.	0.3	1
114	Optical microrotors: theory, design and fabrication. Proceedings of SPIE, 2007, , .	0.8	1
115	Calibration of trap stiffness and viscoelasticity in polymer solutions. , 2008, , .		1
116	Rheological and Viscometric Methods. , 2008, , 249-270.		1
117	Directing growth cones of optic axons growing with laser scissors and laser tweezers. , 2012, , .		1
118	Optical trapping of isolated mammalian chromosomes. Proceedings of SPIE, 2014, , .	0.8	1
119	Microscope images of strongly scattering objects via vectorial transfer matrices: Modeling and an experimental verification. Physical Review A, 2019, 99, .	1.0	1
120	Far-Field Subwavelength Straight-Line Projection/Imaging by Means of a Novel Double-Near-Zero Index-Based Two-Layer Metamaterial. Materials, 2021, 14, 5484.	1.3	1
121	Predicting particle properties in optical traps with machine learning. , 2020, , .		1
122	How to SYN in seven easy steps. Computer Physics Communications, 2001, 142, 160-163.	3.0	0
123	Anomalous absorption of bulk shear sagittal acoustic waves in a layered structure with viscous fluid. Ultrasonics, 2003, 41, 197-205.	2.1	0
124	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
125	Optical microrheology of biopolymers. , 2005, , .		0
126	Towards crystallization using optical tweezers. , 2005, 6038, 62.		0

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127	Growth of crystals in optical tweezers. , 2005, , .		0
128	Binary keys for classification and taxonomy of behaviourâ€. International Journal of Research and Method in Education, 2008, 31, 31-44.	1.1	0
129	Improved optically driven microrotors. Proceedings of SPIE, 2008, , .	0.8	0
130	Can Optically Driven Micromachines be Useful in Biomedicine? Optical Tweezers at Work. , 2008, , .		0
131	Using a birefringent probe particle in variable polarisation optical tweezers to probe properties of biological materials.. , 2009, , .		0
132	Publisher's Note: Constraining validity of the Minkowski energy-momentum tensor [Phys. Rev. A79, 023813 (2009)]. Physical Review A, 2009, 79, .	1.0	0
133	Thermodynamics of optical tweezers. , 2011, , .		0
134	Research applications of theoretical and computational modelling of optical tweezers. , 2011, , .		0
135	High-speed camera system for biological applications in optical tweezing. , 2011, , .		0
136	‘Wiggler-Waggler’ — Optical measurements of complex viscoelastic moduli. , 2011, , .		0
137	'Wiggler-Waggler': towards optical measurements of the complex shear modulus. Proceedings of SPIE, 2011, , .	0.8	0
138	Shack-Hartmann measurement of OAM in highly focused light beams. , 2011, , .		0
139	Stability, scaling and temperature in double-well optical tweezers. , 2011, , .		0
140	Viscoelasticity measurements inside liposomes. , 2014, , .		0
141	Computational Modeling of Scattering of a Focused Beam in Zebrafish Brain Tissue. , 2015, , .		0
142	Theory and Practice of Computational Modeling and Simulation of Optical Tweezers. , 2015, , .		0
143	Measurements of particle-wall interaction forces using simultaneous position and force detection (Conference Presentation). , 2016, , .		0
144	Optically driven rotating micromachines. , 2017, , 99-128.		0

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145	Ultrasensitive rotating photonic probes for complex biological systems: erratum. Optica, 2017, 4, 1372.	4.8	0
146	Measuring the motility and drag forces acting on biological particles using optical tweezers. , 2018, , .		0
147	Understanding particle trajectories by mapping optical force vortices. , 2020, , .		0