

David G Grier

List of Publications by Year in descending order

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172
papers

22,536
citations

20759

60
h-index

8138

148
g-index

175
all docs

175
docs citations

175
times ranked

14721
citing authors

#	ARTICLE	IF	CITATIONS
1	A revolution in optical manipulation. <i>Nature</i> , 2003, 424, 810-816.	13.7	4,611
2	Methods of Digital Video Microscopy for Colloidal Studies. <i>Journal of Colloid and Interface Science</i> , 1996, 179, 298-310.	5.0	3,190
3	Dynamic holographic optical tweezers. <i>Optics Communications</i> , 2002, 207, 169-175.	1.0	1,484
4	The charge of glass and silica surfaces. <i>Journal of Chemical Physics</i> , 2001, 115, 6716-6721.	1.2	790
5	Structure of Optical Vortices. <i>Physical Review Letters</i> , 2003, 90, 133901.	2.9	578
6	Like-charge attractions in metastable colloidal crystallites. <i>Nature</i> , 1997, 385, 230-233.	13.7	564
7	Optical tweezer arrays and optical substrates created with diffractive optics. <i>Review of Scientific Instruments</i> , 1998, 69, 1974-1977.	0.6	505
8	Morphology and Microstructure in Electrochemical Deposition of Zinc. <i>Physical Review Letters</i> , 1986, 56, 1264-1267.	2.9	499
9	Microscopic measurement of the pair interaction potential of charge-stabilized colloid. <i>Physical Review Letters</i> , 1994, 73, 352-355.	2.9	460
10	When Like Charges Attract: The Effects of Geometrical Confinement on Long-Range Colloidal Interactions. <i>Physical Review Letters</i> , 1996, 77, 1897-1900.	2.9	428
11	Microoptomechanical pumps assembled and driven by holographic optical vortex arrays. <i>Optics Express</i> , 2004, 12, 1144.	1.7	401
12	Computer-generated holographic optical tweezer arrays. <i>Review of Scientific Instruments</i> , 2001, 72, 1810.	0.6	390
13	Kinetically Locked-In Colloidal Transport in an Array of Optical Tweezers. <i>Physical Review Letters</i> , 2002, 89, 128301.	2.9	308
14	Characterizing and tracking single colloidal particles with video holographic microscopy. <i>Optics Express</i> , 2007, 15, 18275.	1.7	272
15	Manipulation and assembly of nanowires with holographic optical traps. <i>Optics Express</i> , 2005, 13, 8906.	1.7	267
16	Observation of a commensurate array of flux chains in tilted flux lattices in Bi-Sr-Ca-Cu-O single crystals. <i>Physical Review Letters</i> , 1991, 66, 112-115.	2.9	223
17	Optical Forces Arising from Phase Gradients. <i>Physical Review Letters</i> , 2008, 100, 013602.	2.9	222
18	Hydrodynamic Coupling of Two Brownian Spheres to a Planar Surface. <i>Physical Review Letters</i> , 2000, 85, 3317-3320.	2.9	211

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19	Optical Conveyors: A Class of Active Tractor Beams. <i>Physical Review Letters</i> , 2012, 109, 163903.	2.9	204
20	Holographic optical trapping. <i>Applied Optics</i> , 2006, 45, 880.	2.1	200
21	Optimized holographic optical traps. <i>Optics Express</i> , 2005, 13, 5831.	1.7	196
22	Strategies for three-dimensional particle tracking with holographic video microscopy. <i>Optics Express</i> , 2010, 18, 13563.	1.7	194
23	Optical tweezers in colloid and interface science. <i>Current Opinion in Colloid and Interface Science</i> , 1997, 2, 264-270.	3.4	191
24	Vortex rings in a constant electric field. <i>Nature</i> , 2003, 424, 267-268.	13.7	187
25	Modulated optical vortices. <i>Optics Letters</i> , 2003, 28, 872.	1.7	187
26	Optical solenoid beams. <i>Optics Express</i> , 2010, 18, 6988.	1.7	178
27	Holographic microscopy of holographically trapped three-dimensional structures. <i>Optics Express</i> , 2007, 15, 1505.	1.7	169
28	Switchable self-protected attractions in DNA-functionalized colloids. <i>Nature Materials</i> , 2009, 8, 590-595.	13.3	134
29	Flow visualization and flow cytometry with holographic video microscopy. <i>Optics Express</i> , 2009, 17, 13071.	1.7	134
30	Holographic assembly of quasicrystalline photonic heterostructures. <i>Optics Express</i> , 2005, 13, 5434.	1.7	128
31	Influence of Nonconservative Optical Forces on the Dynamics of Optically Trapped Colloidal Spheres: The Fountain of Probability. <i>Physical Review Letters</i> , 2008, 101, 128301.	2.9	125
32	VIDEO MICROSCOPY OF MONODISPERSE COLLOIDAL SYSTEMS. <i>Annual Review of Physical Chemistry</i> , 1996, 47, 421-462.	4.8	123
33	The microscopic dynamics of freezing in supercooled colloidal fluids. <i>Journal of Chemical Physics</i> , 1994, 100, 9088-9095.	1.2	122
34	Pair interaction of charged colloidal spheres near a charged wall. <i>Physical Review E</i> , 2001, 64, 050401.	0.8	120
35	Melting of Metastable Crystallites in Charge-Stabilized Colloidal Suspensions. <i>Physical Review Letters</i> , 1996, 76, 3862-3865.	2.9	119
36	Translational and bond-orientational order in the vortex lattice of the high-Tc superconductor $\text{Bi}_2.1\text{Sr}_{1.9}\text{Ca}_{0.9}\text{Cu}_2\text{O}_{8+\delta}$. <i>Physical Review Letters</i> , 1991, 66, 2270-2273.	2.9	115

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37	Brownian dynamics of a sphere between parallel walls. <i>Europhysics Letters</i> , 2001, 53, 264-270.	0.7	115
38	Characterizing quantum-dot blinking using noise power spectra. <i>Applied Physics Letters</i> , 2004, 85, 819-821.	1.5	114
39	Processing carbon nanotubes with holographic optical tweezers. <i>Optics Express</i> , 2004, 12, 1978.	1.7	106
40	Stability of the dense radial morphology in diffusive pattern formation. <i>Physical Review Letters</i> , 1987, 59, 2315-2318.	2.9	104
41	A surprisingly attractive couple. <i>Nature</i> , 1998, 393, 621-623.	13.7	104
42	Confinement-Induced Colloidal Attractions in Equilibrium. <i>Physical Review Letters</i> , 2003, 91, 038302.	2.9	103
43	Giant Colloidal Diffusivity on Corrugated Optical Vortices. <i>Physical Review Letters</i> , 2006, 96, 190601.	2.9	103
44	Observation of Flux Reversal in a Symmetric Optical Thermal Ratchet. <i>Physical Review Letters</i> , 2005, 94, 110601.	2.9	99
45	Characterization of morphology transitions in diffusion-controlled systems. <i>Physical Review A</i> , 1988, 38, 1370-1380.	1.0	97
46	Transport and fractionation in periodic potential-energy landscapes. <i>Physical Review E</i> , 2004, 70, 031108.	0.8	95
47	Evolution of a colloidal critical state in an optical pinning potential landscape. <i>Physical Review B</i> , 2002, 66, .	1.1	92
48	Optical Forces and Torques in Nonuniform Beams of Light. <i>Physical Review Letters</i> , 2012, 108, 173602.	2.9	90
49	Optical traps with geometric aberrations. <i>Applied Optics</i> , 2006, 45, 3425.	2.1	82
50	Holographic deconvolution microscopy for high-resolution particle tracking. <i>Optics Express</i> , 2011, 19, 16410.	1.7	80
51	Martensitic transition in a confined colloidal suspension. <i>Journal of Chemical Physics</i> , 1995, 103, 1180-1190.	1.2	79
52	Rotational and translational diffusion of copper oxide nanorods measured with holographic video microscopy. <i>Optics Express</i> , 2010, 18, 6555.	1.7	72
53	Growth of fractal crystals in amorphousGeSe2films. <i>Physical Review A</i> , 1987, 35, 4012-4015.	1.0	70
54	Multidimensional Optical Fractionation of Colloidal Particles with Holographic Verification. <i>Physical Review Letters</i> , 2010, 104, 028302.	2.9	69

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55	Anomalous Vibrational Dispersion in Holographically Trapped Colloidal Arrays. <i>Physical Review Letters</i> , 2006, 96, 088101.	2.9	68
56	Theory of holographic optical trapping. <i>Optics Express</i> , 2008, 16, 15765.	1.7	68
57	Projecting extended optical traps with shape-phase holography. <i>Optics Letters</i> , 2006, 31, 1675.	1.7	67
58	Faithful Representation of Separable Distributions. <i>Neural Computation</i> , 1997, 9, 1305-1320.	1.3	64
59	Interactions and Dynamics in Charge-Stabilized Colloids. <i>MRS Bulletin</i> , 1998, 23, 24-31.	1.7	64
60	Extended and knotted optical traps in three dimensions. <i>Optics Express</i> , 2011, 19, 5833.	1.7	64
61	Statistically Locked-In Transport through Periodic Potential Landscapes. <i>Physical Review Letters</i> , 2004, 92, 130602.	2.9	63
62	Colloidal electrostatic interactions near a conducting surface. <i>Physical Review E</i> , 2007, 76, 041406.	0.8	63
63	Nanofabrication with holographic optical tweezers. <i>Review of Scientific Instruments</i> , 2002, 73, 1956-1957.	0.6	61
64	Dislocation reactions, grain boundaries, and irreversibility in two-dimensional lattices using topological tweezers. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2013, 110, 15544-15548.	3.3	57
65	Structure and scaling of helical modes of light. <i>Optics Letters</i> , 2005, 30, 477.	1.7	56
66	Colloidal transport through optical tweezer arrays. <i>Physical Review E</i> , 2007, 75, 011407.	0.8	54
67	Holographic Characterization of Protein Aggregates. <i>Journal of Pharmaceutical Sciences</i> , 2016, 105, 1074-1085.	1.6	52
68	Solute-mediated interactions between active droplets. <i>Physical Review E</i> , 2017, 96, 032607.	0.8	52
69	Machine-learning approach to holographic particle characterization. <i>Optics Express</i> , 2014, 22, 26884.	1.7	51
70	Interactions, dynamics, and elasticity in charge-stabilized colloidal crystals. <i>Journal of Chemical Physics</i> , 1998, 109, 8659-8666.	1.2	50
71	Hydrodynamic Pair Attractions between Driven Colloidal Particles. <i>Physical Review Letters</i> , 2011, 107, 158302.	2.9	50
72	Digital colloids: reconfigurable clusters as high information density elements. <i>Soft Matter</i> , 2014, 10, 7468-7479.	1.2	50

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73	Machine-learning techniques for fast and accurate feature localization in holograms of colloidal particles. <i>Optics Express</i> , 2018, 26, 15221.	1.7	50
74	Holographic microrheology of polysaccharides from <i>Streptococcus mutans</i> biofilms. <i>Rheologica Acta</i> , 2009, 48, 109-115.	1.1	48
75	Optical peristalsis. <i>Applied Physics Letters</i> , 2003, 82, 3985-3987.	1.5	46
76	Measuring Boltzmann's constant through holographic video microscopy of a single colloidal sphere. <i>American Journal of Physics</i> , 2014, 82, 23-31.	0.3	46
77	Brownian vortexes. <i>Physical Review E</i> , 2009, 80, 010401.	0.8	45
78	Holographic characterization of individual colloidal spheres' porosities. <i>Soft Matter</i> , 2011, 7, 6816.	1.2	44
79	From Dynamics to Devices: Directed Self-Assembly of Colloidal Materials. <i>MRS Bulletin</i> , 1998, 23, 21-23.	1.7	43
80	Volumetric imaging of holographic optical traps. <i>Optics Express</i> , 2006, 14, 10907.	1.7	43
81	When like charges attract: interactions and dynamics in charge-stabilized colloidal suspensions. <i>Journal of Physics Condensed Matter</i> , 2000, 12, A85-A94.	0.7	41
82	Anomalous collective dynamics in optically driven colloidal rings. <i>Physical Review E</i> , 2007, 75, 020401.	0.8	40
83	Comment on "Scattering Forces from the Curl of the Spin Angular Momentum of a Light Field". <i>Physical Review Letters</i> , 2013, 111, 059301.	2.9	39
84	Trochoidal trajectories of self-propelled Janus particles in a diverging laser beam. <i>Soft Matter</i> , 2016, 12, 6357-6364.	1.2	39
85	Sorting colloidal particles into multiple channels with optical forces: Prismatic optical fractionation. <i>Physical Review E</i> , 2010, 82, 051407.	0.8	36
86	Measurement of the Vortex Pair Interaction Potential in a Type-II Superconductor. <i>Physical Review Letters</i> , 1998, 80, 2693-2696.	2.9	35
87	Annealing thin colloidal crystals with optical gradient forces. <i>Journal of Chemical Physics</i> , 2001, 114, 7570-7573.	1.2	35
88	Charged hydrophobic colloids at an oil-aqueous phase interface. <i>Physical Review E</i> , 2015, 92, 062306.	0.8	33
89	Origin of Stratification in Creaming Emulsions. <i>Physical Review Letters</i> , 1996, 77, 578-581.	2.9	31
90	Robustness of holographic optical traps against phase scaling errors. <i>Optics Express</i> , 2005, 13, 7458.	1.7	30

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91	One-dimensional optical thermal ratchets. <i>Journal of Physics Condensed Matter</i> , 2005, 17, S3685-S3695.	0.7	30
92	Holographic characterization of contaminants in water: Differentiation of suspended particles in heterogeneous dispersions. <i>Water Research</i> , 2017, 122, 431-439.	5.3	30
93	Configurational Temperature of Charge-Stabilized Colloidal Monolayers. <i>Physical Review Letters</i> , 2004, 92, 148301.	2.9	27
94	Holographic particle-streak velocimetry. <i>Optics Express</i> , 2011, 19, 4393.	1.7	27
95	Holographic characterization of colloidal fractal aggregates. <i>Soft Matter</i> , 2016, 12, 8774-8780.	1.2	27
96	Holographic characterization of colloidal particles in turbid media. <i>Applied Physics Letters</i> , 2017, 111, .	1.5	27
97	Holographic microrefractometer. <i>Applied Physics Letters</i> , 2012, 101, 091102.	1.5	26
98	Autocalibrated colloidal interaction measurements with extended optical traps. <i>Physical Review E</i> , 2008, 77, 051401.	0.8	25
99	Tractor beams in the Rayleigh limit. <i>Physical Review A</i> , 2016, 93, .	1.0	25
100	Comment on "Monte Carlo study of structural ordering in charged colloids using a long-range attractive interaction". <i>Physical Review E</i> , 2000, 61, 980-982.	0.8	24
101	Three-dimensional holographic ring traps. , 2007, , .		24
102	Fast feature identification for holographic tracking: the orientation alignment transform. <i>Optics Express</i> , 2014, 22, 12773.	1.7	23
103	CATCH: Characterizing and Tracking Colloids Holographically Using Deep Neural Networks. <i>Journal of Physical Chemistry B</i> , 2020, 124, 1602-1610.	1.2	23
104	The role of the medium in the effective-sphere interpretation of holographic particle characterization data. <i>Soft Matter</i> , 2020, 16, 891-898.	1.2	21
105	Flux reversal in a two-state symmetric optical thermal ratchet. <i>Physical Review E</i> , 2005, 71, 060102.	0.8	20
106	Double layer relaxation at rough electrodes. <i>Physical Review E</i> , 1995, 52, R2161-R2164.	0.8	19
107	Configurational temperatures and interactions in charge-stabilized colloid. <i>Journal of Chemical Physics</i> , 2005, 122, 064907.	1.2	19
108	Colloidal electroconvection in a thin horizontal cell. I. Microscopic cooperative patterns at low voltage. <i>Journal of Chemical Physics</i> , 2005, 122, 164701.	1.2	19

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109	Universal, strong and long-ranged trapping by optical conveyors. <i>Optics Express</i> , 2014, 22, 26834.	1.7	19
110	Acoustokinetics: Crafting force landscapes from sound waves. <i>Physical Review Research</i> , 2020, 2, .	1.3	19
111	Superlattices and long-range order in electrodeposited dendrites. <i>Physical Review Letters</i> , 1990, 64, 2152-2155.	2.9	18
112	Holographic characterization of imperfect colloidal spheres. <i>Applied Physics Letters</i> , 2015, 107, .	1.5	18
113	Quantitative Differentiation of Protein Aggregates From Other Subvisible Particles in Viscous Mixtures Through Holographic Characterization. <i>Journal of Pharmaceutical Sciences</i> , 2020, 109, 2405-2412.	1.6	18
114	Celebrating Soft Matter's 10th Anniversary: Monitoring colloidal growth with holographic microscopy. <i>Soft Matter</i> , 2015, 11, 1062-1066.	1.2	17
115	Dissipation, geometry, and the stability of the dense radial morphology. <i>Physical Review E</i> , 1993, 48, 3841-3848.	0.8	16
116	Light-driven three-dimensional rotational motion of dandelion-shaped microparticles. <i>Applied Physics Letters</i> , 2013, 102, .	1.5	16
117	Robustness of Lorenz-Mie microscopy against defects in illumination. <i>Optics Express</i> , 2013, 21, 5968.	1.7	16
118	Topological disorder and conductance fluctuations in thin films. <i>Physical Review B</i> , 1996, 54, 2723-2727.	1.1	14
119	Minimal model for Brownian vortexes. <i>Physical Review E</i> , 2010, 82, 021123.	0.8	14
120	Photokinetic analysis of the forces and torques exerted by optical tweezers carrying angular momentum. <i>Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences</i> , 2017, 375, 20150432.	1.6	14
121	Optimizing the Synthesis of Monodisperse Colloidal Spheres Using Holographic Particle Characterization. <i>Langmuir</i> , 2019, 35, 6602-6609.	1.6	14
122	Microchemomechanical devices using DNA hybridization. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2021, 118, .	3.3	14
123	Colloidal electroconvection in a thin horizontal cell. II. Bulk electroconvection of water during parallel-plate electrolysis. <i>Journal of Chemical Physics</i> , 2006, 125, 144707.	1.2	13
124	Stability of densely branched growth in dissipative diffusion-controlled systems. <i>Physical Review E</i> , 1996, 54, 2690-2695.	0.8	11
125	Perturbative theory for Brownian vortexes. <i>Physical Review E</i> , 2015, 91, 062144.	0.8	11
126	Stimulus-responsive colloidal sensors with fast holographic readout. <i>Applied Physics Letters</i> , 2015, 107, 051903.	1.5	11

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127	Above and beyond: holographic tracking of axial displacements in holographic optical tweezers. <i>Optics Express</i> , 2019, 27, 25375.	1.7	11
128	Weak long-ranged Casimir attraction in colloidal crystals. <i>Europhysics Letters</i> , 2002, 57, 451-457.	0.7	10
129	Two-dimensional optical thermal ratchets based on Fibonacci spirals. <i>Physical Review E</i> , 2011, 84, 011131.	0.8	10
130	Holographic molecular binding assays. <i>Scientific Reports</i> , 2020, 10, 1932.	1.6	10
131	Holographic characterization and tracking of colloidal dimers in the effective-sphere approximation. <i>Soft Matter</i> , 2021, 17, 2695-2703.	1.2	10
132	Projecting non-diffracting waves with intermediate-plane holography. <i>Optics Express</i> , 2018, 26, 3926.	1.7	9
133	Holographic immunoassays: direct detection of antibodies binding to colloidal spheres. <i>Soft Matter</i> , 2020, 16, 10180-10186.	1.2	7
134	Interactions in Colloidal Suspensions. , 2001, , 87-116.		7
135	Interpreting holographic molecular binding assays with effective medium theory. <i>Biomedical Optics Express</i> , 2020, 11, 5225.	1.5	7
136	Colloidal electroconvection in a thin horizontal cell. III. Interfacial and transient patterns on electrodes. <i>Journal of Chemical Physics</i> , 2012, 137, 014504.	1.2	6
137	Dynamics of an acoustically trapped sphere in beating sound waves. <i>Physical Review Research</i> , 2021, 3, .	1.3	6
138	An Interlaboratory Comparison on the Characterization of a Sub-micrometer Polydisperse Particle Dispersion. <i>Journal of Pharmaceutical Sciences</i> , 2022, 111, 699-709.	1.6	6
139	The effect of Mie resonances on trapping in optical tweezers: comment. <i>Optics Express</i> , 2009, 17, 2658.	1.7	5
140	Classically accelerating solenoidal wave packets in two dimensions. <i>Physical Review A</i> , 2018, 98, .	1.0	5
141	Dexterous holographic trapping of dark-seeking particles with Zernike holograms. <i>Optics Express</i> , 2022, 30, 23568.	1.7	5
142	Sensors New age crystals. <i>Nature</i> , 1997, 389, 784-785.	13.7	4
143	Determining pair interactions from structural correlations. <i>Physical Review B</i> , 1998, 58, 14588-14593.	1.1	4
144	Ultrasonic chaining of emulsion droplets. <i>Physical Review Research</i> , 2021, 3, .	1.3	4

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145	Charge renormalization in nominally apolar colloidal dispersions. Physical Review E, 2016, 93, 042612.	0.8	3
146	SCALING IN THE FREQUENCY-DEPENDENT ADMITTANCE OF ELECTRODEPOSITED FRACTAL ELECTRODES. Fractals, 1994, 02, 191-199.	1.8	2
147	On the points of melting. Nature, 1996, 379, 773-775.	13.7	2
148	Assembling mesoscopic systems with holographic optical traps. , 2007, 6483, 113.		2
149	Flexible wide-field high-resolution scanning camera for continuous-wave acoustic holography. Review of Scientific Instruments, 2018, 89, 114901.	0.6	2
150	Optical forces arising from phase gradients. Proceedings of SPIE, 2009, , .	0.8	1
151	Three-dimensional Nanorod Tracking with Holographic Video Microscopy. , 2011, , .		1
152	Tractor beams for optical micromanipulation. , 2016, , .		1
153	Fractals and Patterns in Electrodeposition. , 1989, , 229-237.		1
154	Topological Disorder and Conductance Fluctuations in Granular Thin Films. Materials Research Society Symposia Proceedings, 1995, 407, 271.	0.1	0
155	The Guiding Light: Holographic Manipulation of Mesoscopic Systems. , 2007, , .		0
156	Vectorial Theory of Holographic Optical Trapping. , 2008, , .		0
157	Holographic Video Microscopy for Biology. , 2008, , .		0
158	Brownian Vortex Induced by Optical Tweezers. , 2009, , .		0
159	Flow visualization and flow cytometry with holographic video microscopy. , 2010, , .		0
160	Non-conservative forces in optical tweezers and Brownian vortexes. Proceedings of SPIE, 2010, , .	0.8	0
161	Single frame holographic particle image velocimetry. , 2010, , .		0
162	Multidimensional Optical Fractionation with Holographic Verification. , 2010, , .		0

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163	Integrated instrument for holographic optical trapping and multicolor holographic video microscopy. , 2011, , .		0
164	Dynamic Holographic Optical Tweezers: Transforming Mesoscopic Matter with Light. , 2003, , .		0
165	Transforming mesoscopic matter with holographic optical traps. , 2004, , .		0
166	Colloidal statistical mechanics in optical vortices. , 2007, , .		0
167	Colloidal Statistical Mechanics in Optical Vortices. , 2009, , .		0
168	Automated Particle Characterization using Holographic Video Microscopy. , 2009, , .		0
169	Non-conservative forces in optical tweezers. , 2010, , .		0
170	Optical Manipulation with Counter Propagating Helical Beams. , 2010, , .		0
171	Label-free molecular binding assays using holographic video microscopy. , 2011, , .		0
172	Tractor beams and related topological tweezers. , 2019, , .		0