David G Grier

List of Publications by Citations

146 papers	18,076 citations	56 h-index	134 g-index
175 ext. papers	21,089 ext. citations	6.1 avg, IF	7.19 L-index

#	Paper	IF	Citations
146	A revolution in optical manipulation. *Nature*, **2003**, 424, 810-6	50.4	3478
145	Methods of Digital Video Microscopy for Colloidal Studies. *Journal of Colloid and Interface Science*, **1996**, 179, 298-310	9.3	2598
144	Dynamic holographic optical tweezers. *Optics Communications*, **2002**, 207, 169-175	2	1083
143	The charge of glass and silica surfaces. *Journal of Chemical Physics*, **2001**, 115, 6716-6721	3.9	670
142	Like-charge attractions in metastable colloidal crystallites. *Nature*, **1997**, 385, 230-233	50.4	512
141	Morphology and microstructure in electrochemical deposition of zinc. *Physical Review Letters*, **1986**, 56, 1264-1267	7.4	471
140	Structure of optical vortices. *Physical Review Letters*, **2003**, 90, 133901	7.4	461
139	Microscopic measurement of the pair interaction potential of charge-stabilized colloid. *Physical Review Letters*, **1994**, 73, 352-355	7.4	428
138	When Like Charges Attract: The Effects of Geometrical Confinement on Long-Range Colloidal Interactions. *Physical Review Letters*, **1996**, 77, 1897-1900	7.4	387
137	Optical tweezer arrays and optical substrates created with diffractive optics. *Review of Scientific Instruments*, **1998**, 69, 1974-1977	1.7	376
136	Computer-generated holographic optical tweezer arrays. *Review of Scientific Instruments*, **2001**, 72, 1810	1.7	313
135	Microoptomechanical pumps assembled and driven by holographic optical vortex arrays. *Optics Express*, **2004**, 12, 1144-9	3.3	281
134	Kinetically locked-in colloidal transport in an array of optical tweezers. *Physical Review Letters*, **2002**, 89, 128301	7.4	257
133	Characterizing and tracking single colloidal particles with video holographic microscopy. *Optics Express*, **2007**, 15, 18275-82	3.3	216
132	Manipulation and assembly of nanowires with holographic optical traps. *Optics Express*, **2005**, 13, 8906-12	3.3	211
131	Observation of a commensurate array of flux chains in tilted flux lattices in Bi-Sr-Ca-Cu-O single crystals. *Physical Review Letters*, **1991**, 66, 112-115	7.4	211
130	Hydrodynamic coupling of two brownian spheres to a planar surface. *Physical Review Letters*, **2000**, 85, 3317-20	7.4	188

129	Optical conveyors: a class of active tractor beams. *Physical Review Letters*, **2012**, 109, 163903	7.4	165
128	Optical forces arising from phase gradients. *Physical Review Letters*, **2008**, 100, 013602	7.4	160
127	Holographic optical trapping. *Applied Optics*, **2006**, 45, 880-7	1.7	155
126	Optical tweezers in colloid and interface science. *Current Opinion in Colloid and Interface Science*, **1997**, 2, 264-270	7.6	150
125	Optimized holographic optical traps. *Optics Express*, **2005**, 13, 5831-45	3.3	147
124	Strategies for three-dimensional particle tracking with holographic video microscopy. *Optics Express*, **2010**, 18, 13563-73	3.3	145
123	Modulated optical vortices. *Optics Letters*, **2003**, 28, 872-4	3	140
122	Optical solenoid beams. *Optics Express*, **2010**, 18, 6988-93	3.3	132
121	Switchable self-protected attractions in DNA-functionalized colloids. *Nature Materials*, **2009**, 8, 590-5	27	128
120	Holographic microscopy of holographically trapped three-dimensional structures. *Optics Express*, **2007**, 15, 1505-12	3.3	128
119	Fluid dynamics: Vortex rings in a constant electric field. *Nature*, **2003**, 424, 267-8	50.4	125
118	The microscopic dynamics of freezing in supercooled colloidal fluids. *Journal of Chemical Physics*, **1994**, 100, 9088-9095	3.9	116
117	Pair interaction of charged colloidal spheres near a charged wall. *Physical Review E*, **2001**, 64, 050401	2.4	111
116	Translational and bond-orientational order in the vortex lattice of the high-Tc superconductor Bi2.1Sr1.9Ca0.9Cu2O8+ delta. *Physical Review Letters*, **1991**, 66, 2270-2273	7.4	110
115	Flow visualization and flow cytometry with holographic video microscopy. *Optics Express*, **2009**, 17, 13071-9	3.3	108
114	Melting of metastable crystallites in charge-stabilized colloidal suspensions. *Physical Review Letters* , **1996**, 76, 3862-3865	7.4	108
113	VIDEO MICROSCOPY OF MONODISPERSE COLLOIDAL SYSTEMS. *Annual Review of Physical Chemistry*, **1996**, 47, 421-462	15.7	106
112	Brownian dynamics of a sphere between parallel walls. *Europhysics Letters*, **2001**, 53, 264-270	1.6	105

111	Influence of nonconservative optical forces on the dynamics of optically trapped colloidal spheres: the fountain of probability. *Physical Review Letters*, **2008**, 101, 128301	7.4	103
110	Stability of the dense radial morphology in diffusive pattern formation. *Physical Review Letters*, **1987**, 59, 2315-2318	7.4	101
109	Characterizing quantum-dot blinking using noise power spectra. *Applied Physics Letters*, **2004**, 85, 819-821	3.4	100
108	Characterization of morphology transitions in diffusion-controlled systems. *Physical Review A*, **1988**, 38, 1370-1380	2.6	95
107	Confinement-induced colloidal attractions in equilibrium. *Physical Review Letters*, **2003**, 91, 038302	7.4	92
106	Holographic assembly of quasicrystalline photonic heterostructures. *Optics Express*, **2005**, 13, 5434-9	3.3	89
105	Giant colloidal diffusivity on corrugated optical vortices. *Physical Review Letters*, **2006**, 96, 190601	7.4	89
104	Processing carbon nanotubes with holographic optical tweezers. *Optics Express*, **2004**, 12, 1978-81	3.3	85
103	Observation of flux reversal in a symmetric optical thermal ratchet. *Physical Review Letters*, **2005**, 94, 110601	7.4	82
102	Transport and fractionation in periodic potential-energy landscapes. *Physical Review E*, **2004**, 70, 031108	2.4	78
101	Martensitic transition in a confined colloidal suspension. *Journal of Chemical Physics*, **1995**, 103, 1180-1190	3.9	75
100	Evolution of a colloidal critical state in an optical pinning potential landscape. *Physical Review B*, **2002**, 66,	3.3	72
99	Optical forces and torques in nonuniform beams of light. *Physical Review Letters*, **2012**, 108, 173602	7.4	71
98	Optical traps with geometric aberrations. *Applied Optics*, **2006**, 45, 3425-9	1.7	68
97	Growth of fractal crystals in amorphous GeSe2 films. *Physical Review A*, **1987**, 35, 4012-4015	2.6	67
96	Rotational and translational diffusion of copper oxide nanorods measured with holographic video microscopy. *Optics Express*, **2010**, 18, 6555-62	3.3	60
95	Anomalous vibrational dispersion in holographically trapped colloidal arrays. *Physical Review Letters*, **2006**, 96, 088101	7.4	60
94	Interactions and Dynamics in Charge-Stabilized Colloids. *MRS Bulletin*, **1998**, 23, 24-31	3.2	59

93	Holographic deconvolution microscopy for high-resolution particle tracking. *Optics Express*, **2011**, 19, 16410-7	3.3	57
92	Statistically locked-in transport through periodic potential landscapes. *Physical Review Letters*, **2004**, 92, 130602	7.4	56
91	Colloidal electrostatic interactions near a conducting surface. *Physical Review E*, **2007**, 76, 041406	2.4	55
90	Faithful Representation of Separable Distributions. *Neural Computation*, **1997**, 9, 1305-1320	2.9	54
89	Multidimensional optical fractionation of colloidal particles with holographic verification. *Physical Review Letters*, **2010**, 104, 028302	7.4	51
88	Nanofabrication with holographic optical tweezers. *Review of Scientific Instruments*, **2002**, 73, 1956-1957	1.7	50
87	Extended and knotted optical traps in three dimensions. *Optics Express*, **2011**, 19, 5833-8	3.3	49
86	Theory of holographic optical trapping. *Optics Express*, **2008**, 16, 15765-76	3.3	48
85	Interactions, dynamics, and elasticity in charge-stabilized colloidal crystals. *Journal of Chemical Physics*, **1998**, 109, 8659-8666	3.9	47
84	Projecting extended optical traps with shape-phase holography. *Optics Letters*, **2006**, 31, 1675-7	3	46
83	Colloidal transport through optical tweezer arrays. *Physical Review E*, **2007**, 75, 011407	2.4	45
82	Digital colloids: reconfigurable clusters as high information density elements. *Soft Matter*, **2014**, 10, 7468-79	3.7	43
81	Machine-learning approach to holographic particle characterization. *Optics Express*, **2014**, 22, 26884-90	3.3	41
80	Dislocation reactions, grain boundaries, and irreversibility in two-dimensional lattices using topological tweezers. *Proceedings of the National Academy of Sciences of the United States of America*, **2013**, 110, 15544-8	11.5	40
79	Holographic microrheology of polysaccharides from Streptococcus mutans biofilms. *Rheologica Acta*, **2009**, 48, 109-115	2.3	40
78	Brownian vortexes. *Physical Review E*, **2009**, 80, 010401	2.4	40
77	Structure and scaling of helical modes of light. *Optics Letters*, **2005**, 30, 477-9	3	40
76	When like charges attract: interactions and dynamics in charge-stabilized colloidal suspensions. *Journal of Physics Condensed Matter*, **2000**, 12, A85-A94	1.8	39

75	Hydrodynamic pair attractions between driven colloidal particles. *Physical Review Letters*, **2011**, 107, 158302	7.4	38
74	Machine-learning techniques for fast and accurate feature localization in holograms of colloidal particles. *Optics Express*, **2018**, 26, 15221-15231	3.3	37
73	Optical peristalsis. *Applied Physics Letters*, **2003**, 82, 3985-3987	3.4	37
72	Holographic Characterization of Protein Aggregates. *Journal of Pharmaceutical Sciences*, **2016**, 105, 1074-85	3.6	36
71	Holographic characterization of individual colloidal spheresTporosities. *Soft Matter*, **2011**, 7, 6816	3.6	34
70	Anomalous collective dynamics in optically driven colloidal rings. *Physical Review E*, **2007**, 75, 020401	2.4	34
69	Trochoidal trajectories of self-propelled Janus particles in a diverging laser beam. *Soft Matter*, **2016** , 12, 6357-64	3.6	33
68	Measuring Boltzmann's constant through holographic video microscopy of a single colloidal sphere. *American Journal of Physics*, **2014**, 82, 23-31	0.7	33
67	Solute-mediated interactions between active droplets. *Physical Review E*, **2017**, 96, 032607	2.4	32
66	Charged hydrophobic colloids at an oil-aqueous phase interface. *Physical Review E*, **2015**, 92, 062306	2.4	32
65	Sorting colloidal particles into multiple channels with optical forces: prismatic optical fractionation. *Physical Review E*, **2010**, 82, 051407	2.4	32
64	Measurement of the Vortex Pair Interaction Potential in a Type-II Superconductor. *Physical Review Letters*, **1998**, 80, 2693-2696	7.4	32
63	Comment on "Scattering forces from the curl of the spin angular momentum of a light field". *Physical Review Letters*, **2013**, 111, 059301	7.4	31
62	Annealing thin colloidal crystals with optical gradient forces. *Journal of Chemical Physics*, **2001**, 114, 7570-7573	3.6	31
61	Volumetric imaging of holographic optical traps. *Optics Express*, **2006**, 14, 10907-12	3.3	29
60	Origin of Stratification in Creaming Emulsions. *Physical Review Letters*, **1996**, 77, 578-581	7.4	28
59	Configurational temperature of charge-stabilized colloidal monolayers. *Physical Review Letters*, **2004**, 92, 148301	7.4	27
58	Holographic microrefractometer. *Applied Physics Letters*, **2012**, 101, 091102	3.4	24

57	Robustness of holographic optical traps against phase scaling errors. *Optics Express*, **2005**, 13, 7458-65	3.3	23
56	Autocalibrated colloidal interaction measurements with extended optical traps. *Physical Review E*, **2008**, 77, 051401	2.4	22
55	Three-dimensional holographic ring traps **2007**,		22
54	Comment on "Monte carlo study of structural ordering in charged colloids using a long-range attractive interaction". *Physical Review E*, **2000**, 61, 980-2	2.4	22
53	Holographic characterization of colloidal fractal aggregates. *Soft Matter*, **2016**, 12, 8774-8780	3.6	22
52	Holographic characterization of contaminants in water: Differentiation of suspended particles in heterogeneous dispersions. *Water Research*, **2017**, 122, 431-439	12.5	21
51	Holographic particle-streak velocimetry. *Optics Express*, **2011**, 19, 4393-8	3.3	21
50	One-dimensional optical thermal ratchets. *Journal of Physics Condensed Matter*, **2005**, 17, S3685-95	1.8	21
49	Flux reversal in a two-state symmetric optical thermal ratchet. *Physical Review E*, **2005**, 71, 060102	2.4	20
48	Fast feature identification for holographic tracking: the orientation alignment transform. *Optics Express*, **2014**, 22, 12773-8	3.3	19
47	Double layer relaxation at rough electrodes. *Physical Review E*, **1995**, 52, R2161-R2164	2.4	19
46	Holographic characterization of colloidal particles in turbid media. *Applied Physics Letters*, **2017**, 111, 153702	3.4	18
45	Configurational temperatures and interactions in charge-stabilized colloid. *Journal of Chemical Physics*, **2005**, 122, 064907	3.9	18
44	Universal, strong and long-ranged trapping by optical conveyors. *Optics Express*, **2014**, 22, 26834-43	3.3	17
43	Colloidal electroconvection in a thin horizontal cell. I. Microscopic cooperative patterns at low voltage. *Journal of Chemical Physics*, **2005**, 122, 164701	3.9	17
42	Holographic characterization of imperfect colloidal spheres. *Applied Physics Letters*, **2015**, 107, 141905	3.4	16
41	Dissipation, geometry, and the stability of the dense radial morphology. *Physical Review E*, **1993**, 48, 3841-3848	2.4	16
40	CATCH: Characterizing and Tracking Colloids Holographically Using Deep Neural Networks. *Journal of Physical Chemistry B*, **2020**, 124, 1602-1610	3.4	15

39	Tractor beams in the Rayleigh limit. *Physical Review A*, **2016**, 93,	2.6	14
38	Superlattices and long-range order in electrodeposited dendrites. *Physical Review Letters*, **1990**, 64, 2152-2155	7.4	14
37	Celebrating Soft Matter's 10th Anniversary: monitoring colloidal growth with holographic microscopy. *Soft Matter*, **2015**, 11, 1062-6	3.6	13
36	Robustness of Lorenz-Mie microscopy against defects in illumination. *Optics Express*, **2013**, 21, 5968-73	3.3	13
35	Topological disorder and conductance fluctuations in thin films. *Physical Review B*, **1996**, 54, 2723-2727	3.3	13
34	Light-driven three-dimensional rotational motion of dandelion-shaped microparticles. *Applied Physics Letters*, **2013**, 102, 071103	3.4	12
33	Minimal model for Brownian vortexes. *Physical Review E*, **2010**, 82, 021123	2.4	12
32	Perturbative theory for Brownian vortexes. *Physical Review E*, **2015**, 91, 062144	2.4	11
31	Stability of densely branched growth in dissipative diffusion-controlled systems. *Physical Review E*, **1996**, 54, 2690-2695	2.4	11
30	Colloidal electroconvection in a thin horizontal cell. II. Bulk electroconvection of water during parallel-plate electrolysis. *Journal of Chemical Physics*, **2006**, 125, 144707	3.9	10
29	Weak long-ranged Casimir attraction in colloidal crystals. *Europhysics Letters*, **2002**, 57, 451-457	1.6	10
28	Photokinetic analysis of the forces and torques exerted by optical tweezers carrying angular momentum. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2017**, 375,	3	9
27	Stimulus-responsive colloidal sensors with fast holographic readout. *Applied Physics Letters*, **2015**, 107, 051903	3.4	8
26	Two-dimensional optical thermal ratchets based on Fibonacci spirals. *Physical Review E*, **2011**, 84, 011131	2.4	8
25	Optimizing the Synthesis of Monodisperse Colloidal Spheres Using Holographic Particle Characterization. *Langmuir*, **2019**, 35, 6602-6609	4	7
24	The role of the medium in the effective-sphere interpretation of holographic particle characterization data. *Soft Matter*, **2020**, 16, 891-898	3.6	7
23	Holographic molecular binding assays. *Scientific Reports*, **2020**, 10, 1932	4.9	6
22	Acoustokinetics: Crafting force landscapes from sound waves. *Physical Review Research*, **2020**, 2,	3.9	6

21	Projecting non-diffracting waves with intermediate-plane holography. *Optics Express*, **2018**, 26, 3926-3931	3.3	5
20	Above and beyond: holographic tracking of axial displacements in holographic optical tweezers. *Optics Express*, **2019**, 27, 25375-25383	3.3	5
19	The effect of Mie resonances on trapping in optical tweezers: comment. *Optics Express*, **2009**, 17, 2658-60; discussion 2661-2	3.3	4
18	Interactions in Colloidal Suspensions **2001**, 87-116		4
17	Microchemomechanical devices using DNA hybridization. *Proceedings of the National Academy of Sciences of the United States of America*, **2021**, 118,	11.5	4
16	Quantitative Differentiation of Protein Aggregates From Other Subvisible Particles in Viscous Mixtures Through Holographic Characterization. *Journal of Pharmaceutical Sciences*, **2020**, 109, 2405-2412	3.9	3
15	Charge renormalization in nominally apolar colloidal dispersions. *Physical Review E*, **2016**, 93, 042612	2.4	3
14	Colloidal electroconvection in a thin horizontal cell. III. Interfacial and transient patterns on electrodes. *Journal of Chemical Physics*, **2012**, 137, 014504	3.9	3
13	Determining pair interactions from structural correlations. *Physical Review B*, **1998**, 58, 14588-14593	3.3	3
12	Interpreting holographic molecular binding assays with effective medium theory. *Biomedical Optics Express*, **2020**, 11, 5225-5236	3.5	3
11	Holographic characterization and tracking of colloidal dimers in the effective-sphere approximation. *Soft Matter*, **2021**, 17, 2695-2703	3.6	3
10	SCALING IN THE FREQUENCY-DEPENDENT ADMITTANCE OF ELECTRODEPOSITED FRACTAL ELECTRODES. *Fractals*, **1994**, 02, 191-199	3.2	2
9	Classically accelerating solenoidal wave packets in two dimensions. *Physical Review A*, **2018**, 98,	2.6	2
8	Tractor beams for optical micromanipulation **2016**,		1
7	Optical forces arising from phase gradients **2009**,		1
6	Three-dimensional Nanorod Tracking with Holographic Video Microscopy **2011**,		1
5	Assembling mesoscopic systems with holographic optical traps **2007**, 6483, 113		1
4	Fractals and Patterns in Electrodepostion **1989**, 229-237		1

3	Holographic immunoassays: direct detection of antibodies binding to colloidal spheres. *Soft Matter*, **2020**, 16, 10180-10186	3.6	1
2	Flexible wide-field high-resolution scanning camera for continuous-wave acoustic holography. *Review of Scientific Instruments*, **2018**, 89, 114901	1.7	1
1	Topological Disorder and Conductance Fluctuations in Granular Thin Films. *Materials Research Society Symposia Proceedings*, **1995**, 407, 271		