Michael C Downer

List of Publications by Year in Descending Order

123 papers	2,921 citations	27 h-index	51 g-index
165 ext. papers	3,442 ext. citations	4.8 avg, IF	4.63 L-index

#	Paper	IF	Citations
123	Ion dynamics driven by a strongly nonlinear plasma wake. *Plasma Physics and Controlled Fusion*, **2022**, 64, 045003	2	0
122	Calorimeter with Bayesian unfolding of spectra of high-flux broadband x rays.. *Review of Scientific Instruments*, **2022**, 93, 043102	1.7	
121	Im{χ(3)} spectra of 110-cut GaAs, GaP, and Si near the two-photon absorption band edge. *Journal of Applied Physics*, **2021**, 129, 183109	2.5	1
120	Detection of Subsurface, Nanometer-Scale Crystallographic Defects by Nonlinear Light Scattering and Localization. *Advanced Optical Materials*, **2021**, 9, 2002252	8.1	0
119	Compact spectroscopy of keV to MeV X-rays from a laser wakefield accelerator. *Scientific Reports*, **2021**, 11, 14368	4.9	4
118	Charge Disproportionation and Complex Magnetism in a PbMnO3 Perovskite Synthesized under High Pressure. *Chemistry of Materials*, **2021**, 33, 92-101	9.6	0
117	Evolution of the self-injection process in long wavelength infrared laser driven LWFA. *Physics of Plasmas*, **2021**, 28, 013102	2.1	2
116	Stable Positron Acceleration in Thin, Warm, Hollow Plasma Channels. *Physical Review Letters*, **2021**, 127, 104801	7.4	2
115	Faraday rotation study of plasma bubbles in GeV wakefield accelerators. *Physics of Plasmas*, **2021**, 28, 123105	2.1	0
114	Coherent Optical Signatures of Electron Microbunching in Laser-Driven Plasma Accelerators. *Physical Review Letters*, **2020**, 125, 014801	7.4	5
113	Terawatt chirped pulse Raman amplified laser for two-color experiments. *Optical Engineering*, **2020**, 59, 1	1.1	
112	Dissipation of electron-beam-driven plasma wakes. *Nature Communications*, **2020**, 11, 4753	17.4	8
111	Real-time microscopic and rheometric observations of strain-driven cavitation instability underlying micro-crack formation in asphalt binders. *International Journal of Pavement Engineering*, **2020**, 21, 977-989	2.6	6
110	Strain-dependence of χ(2) in thin film barium strontium titanate. *AIP Advances*, **2019**, 9, 025312	1.5	3
109	Simulation study of CO2 laser-plasma interactions and self-modulated wakefield acceleration. *Physics of Plasmas*, **2019**, 26, 083106	2.1	10
108	Generation and acceleration of electron bunches from a plasma photocathode. *Nature Physics*, **2019**, 15, 1156-1160	16.2	27
107	Morphology and kinetics of asphalt binder microstructure at gas, liquid and solid interfaces. *Journal of Microscopy*, **2019**, 276, 109-117	1.9	16

106	In-line Spectral Interferometry in Shortwave-Infrared Laser Filaments in Air. *Physical Review Letters*, **2019**, 123, 223203	7.4	1
105	Polarization retention in ultra-thin barium titanate films on Ge(001). *Applied Physics Letters*, **2018**, 112, 162901	3.4	3
104	Measurement of Two-Photon Absorption of Silicon Nanocrystals in Colloidal Suspension for Bio-Imaging Applications. *Physica Status Solidi (B): Basic Research*, **2018**, 255, 1700501	1.3	9
103	New Mechanism for Ferroelectricity in the Perovskite CaMnTiO Synthesized by Spark Plasma Sintering. *Journal of the American Chemical Society*, **2018**, 140, 2214-2220	16.4	22
102	Spin freezing into a disordered state in CaFeTi2O6 synthesized under high pressure. *Physical Review B*, **2018**, 98,	3.3	2
101	Diagnostics for plasma-based electron accelerators. *Reviews of Modern Physics*, **2018**, 90,	40.5	68
100	Bulk microstructures in bitumen and its influence on rheology **2018**, 411-414		1
99	Spectral Analysis of 50–100 MeV Thomson Backscatter Gamma-rays from GeV Laser-Plasma Accelerator **2018**,		1
98	Piezoelectric modulation of nonlinear optical response in BaTiO3 thin film. *Applied Physics Letters*, **2018**, 113, 132902	3.4	7
97	Effects of laser polarization and wavelength on hybrid laser wakefield and direct acceleration. *Plasma Physics and Controlled Fusion*, **2018**, 60, 105002	2	4
96	Correlated time-variation of bulk microstructure and rheology in asphalt binders. *Journal of Microscopy*, **2018**, 271, 282-292	1.9	7
95	Self-aligning concave relativistic plasma mirror with adjustable focus. *Physics of Plasmas*, **2017**, 24, 013106	2.1	8
94	Mid-IR, CO2-Laser driven, Self-Modulated Wakes **2017**,		3
93	Out-of-Plane Piezoelectricity and Ferroelectricity in Layered □nSe Nanoflakes. *Nano Letters*, **2017**, 17, 5508-5513	11.5	317
92	Generation of tens-of-MeV photons by compton backscatter from laser-plasma-accelerated GeV electrons **2017**,		1
91	Analytic height correlation function of rough surfaces derived from light scattering. *Physical Review E*, **2016**, 94, 042809	2.4	6
90	Single-shot visualization of evolving plasma wakefields **2016**,		5
89	Compact tunable Compton x-ray source from laser wakefield accelerator and plasma mirror **2016**,		2

88	Surface second harmonic generation induced by 3D strain fields. *Physica Status Solidi (B): Basic Research*, **2016**, 253, 218-225	1.3	1
87	Betatron x-rays from GeV laser-plasma-accelerated electrons **2016**,		1
86	Second-harmonic microscopy of strain fields around through-silicon-vias. *Applied Physics Letters*, **2016**, 108, 151602	3.4	6
85	Optical characterization of temperature- and composition-dependent microstructure in asphalt binders. *Journal of Microscopy*, **2016**, 262, 216-25	1.9	30
84	Compact tunable Compton x-ray source from laser-plasma accelerator and plasma mirror. *Physics of Plasmas*, **2015**, 22, 023106	2.1	50
83	Single-shot tomographic movies of evolving light-velocity objects. *Nature Communications*, **2014**, 5, 3085	17.4	51
82	Single-shot visualization of evolving laser wakefields using an all-optical streak camera. *Physical Review Letters*, **2014**, 113, 085001	7.4	14
81	Global optimization of quasi-monoenergetic electron beams from laser wakefield accelerators **2013**,		2
80	Quasi-monoenergetic laser-plasma acceleration of electrons to 2 GeV. *Nature Communications*, **2013**, 4, 1988	17.4	419
79	Role of photo-assisted tunneling in time-dependent second-harmonic generation from Si surfaces with ultrathin oxides. *Applied Physics Letters*, **2013**, 102, 051602	3.4	8
78	Characterization of anti-phase boundaries in hetero-epitaxial polar-on-nonpolar semiconductor films by optical second-harmonic generation. *Applied Physics Letters*, **2013**, 102, 152103	3.4	6
77	Spatio-temporal profiling of cluster mass fraction in a pulsed supersonic gas jet by frequency-domain holography. *Journal of Applied Physics*, **2013**, 114, 034903	2.5	8
76	Two-color terawatt laser system for high-intensity laser-plasma experiments **2013**,		2
75	Self-injected petawatt laser-driven plasma electron acceleration in 1017 cm□ plasma. *Journal of Plasma Physics*, **2012**, 78, 413-419	2.7	5
74	Blue-shift of E2 critical point resonance in optical second-harmonic spectrum of Si nanocrystals. *Physica Status Solidi (B): Basic Research*, **2012**, 249, 1166-1172	1.3	3
73	Band offsets of atomic layer deposited Al2O3 and HfO2 on Si measured by linear and nonlinear internal photoemission. *Physica Status Solidi (B): Basic Research*, **2012**, 249, 1160-1165	1.3	9
72	Spectroscopic evaluation of band alignment of atomic layer deposited BeO on Si(100). *Applied Physics Letters*, **2012**, 100, 122906	3.4	17
71	Second-harmonic and linear optical spectroscopic study of silicon nanocrystals embedded in SiO2. *Physical Review B*, **2011**, 84,	3.3	13

70	Optical properties of La-incorporated HfO2 upon crystallization. *Applied Physics Letters*, **2011**, 98, 122904	3.4	11
69	Size-dependent optical properties of Si nanocrystals embedded in amorphous SiO2 measured by spectroscopic ellipsometry. *Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics*, **2011**, 29, 04D112	1.3	11
68	Charge trapping defects in Si/SiO2/Hf(1−x)SixO2 film stacks characterized by spectroscopic second-harmonic generation. *Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics*, **2011**, 29, 04D101	1.3	4
67	Electron self-injection into an evolving plasma bubble: Quasi-monoenergetic laser-plasma acceleration in the blowout regimea). *Physics of Plasmas*, **2011**, 18, 056704	2.1	72
66	Frequency-Domain Streak Camera and Tomography for Ultrafast Imaging of Evolving and Channeled Plasma Accelerator Structures **2010**,		1
65	Numerical modelling of a 10-cm-long multi-GeV laser wakefield accelerator driven by a self-guided petawatt pulse. *New Journal of Physics*, **2010**, 12, 045019	2.9	34
64	Frequency-domain streak camera for ultrafast imaging of evolving light-velocity objects. *Optics Letters*, **2010**, 35, 4087-9	3	17
63	Optical second-harmonic and reflectance-anisotropy spectroscopy of clean and hydrogen-terminated vicinal Si(001) surfaces. *Journal of the Optical Society of America B: Optical Physics*, **2010**, 27, 981	1.7	6
62	Hot carrier injection from nanometer-thick silicon-on-insulator films measured by optical second-harmonic generation. *Applied Physics Letters*, **2010**, 96, 241105	3.4	6
61	Electron Self-Injection into an Evolving Plasma Bubble: The Way to a Dark Current Free GeV-Scale Laser Accelerator **2010**,		7
60	Formation of optical bullets in laser-driven plasma bubble accelerators. *Physical Review Letters*, **2010**, 104, 134801	7.4	32
59	Laser wakefield electron acceleration on Texas petawatt facility: Towards multi-GeV electron energy in a single self-guided stage. *High Energy Density Physics*, **2010**, 6, 200-206	1.2	10
58	Picosecond time scale dynamics of short pulse laser-driven shocks in tin. *Journal of Applied Physics*, **2009**, 105, 093523	2.5	5
57	Resonant photoionization of defects in Si/SiO2/HfO2 film stacks observed by second-harmonic generation. *Applied Physics Letters*, **2009**, 95, 052906	3.4	9
56	Hot-wire chemical vapor deposition of silicon nanoparticles on fused silica. *Thin Solid Films*, **2009**, 517, 3481-3483	2.2	5
55	Surface energy transport following relativistic laser-solid interaction. *Physics of Plasmas*, **2009**, 16, 072702	2.1	8
54	Studies of laser wakefield structures and electron acceleration in underdense plasmasa). *Physics of Plasmas*, **2008**, 15, 056703	2.1	33
53	Optical second-harmonic generation study of charge trapping dynamics in HfO2/SiO2 films on Si(100). *Physica Status Solidi C: Current Topics in Solid State Physics*, **2008**, 5, 2667-2670		1

52	Optical second-harmonic and reflectance-anisotropy spectroscopy of molecular adsorption at Si(001) step-edges. *Physica Status Solidi C: Current Topics in Solid State Physics*, **2008**, 5, 2551-2555		2
51	Second-harmonic spectroscopy of Si nanocrystals embedded in silica. *Physica Status Solidi C: Current Topics in Solid State Physics*, **2008**, 5, 2662-2666		4
50	Observation of interfacial electrostatic field-induced changes in the silicon dielectric function using spectroscopic ellipsometry. *Physica Status Solidi (A) Applications and Materials Science*, **2008**, 205, 918-921	1.6	6
49	Absolute phase and amplitude of second-order nonlinear optical susceptibility components at Si(001) interfaces. *Physical Review B*, **2007**, 75,	3.3	25
48	Second-harmonic imaging of ZnO nanoparticles **2007**,		1
47	Phase-sensitive electric-field-induced second-harmonic microscopy of metal-semiconductor junctions. *Journal of the Optical Society of America B: Optical Physics*, **2007**, 24, 2736	1.7	2
46	Distinctive physical effects and applications approaching the relativistic lambda-cubed regime. *IEEE Journal of Selected Topics in Quantum Electronics*, **2006**, 12, 223-232	3.8	4
45	Snapshots of Laser-Generated Wakefields. *AIP Conference Proceedings*, **2006**,	0	1
44	Second-harmonic and reflectance-anisotropy spectroscopy of vicinal Si(001)/SiO2 interfaces: Experiment and simplified microscopic model. *Physical Review B*, **2006**, 73,	3.3	18
43	Snapshots of laser wakefields. *Nature Physics*, **2006**, 2, 749-753	16.2	147
42	Simplified bond model of spectroscopic SHG and RAS of oxidized and reconstructed vicinal Si(001). *Physica Status Solidi C: Current Topics in Solid State Physics*, **2005**, 2, 3973-3977		2
41	Second-harmonic spectroscopy of nano-interfaces. *Physica Status Solidi C: Current Topics in Solid State Physics*, **2005**, 2, 4067-4071		2
40	Frequency-domain measurement of second harmonic phase. *Physica Status Solidi (B): Basic Research* , **2005**, 242, 3001-3006	1.3	10
39	Single-beam and enhanced two-beam second-harmonic generation from silicon nanocrystals by use of spatially inhomogeneous femtosecond pulses. *Physical Review Letters*, **2005**, 94, 047401	7.4	55
38	Reflectance-difference and second-harmonic generation: a meeting of two surface spectroscopies. *Physica Status Solidi C: Current Topics in Solid State Physics*, **2003**, 3055-3059		2
37	Electric-field-induced second-harmonic microscopy. *Physica Status Solidi C: Current Topics in Solid State Physics*, **2003**, 3081-3085		5
36	Second-harmonic amplitude and phase spectroscopy by use of broad-bandwidth femtosecond pulses. *Journal of the Optical Society of America B: Optical Physics*, **2003**, 20, 2548	1.7	16
35	Optics. A new low for nonlinear optics. *Science*, **2002**, 298, 373-5	33.3	4

34	Optical second harmonic spectroscopy of semiconductor surfaces: advances in microscopic understanding. *Surface and Interface Analysis*, **2001**, 31, 966-986	1.5	59
33	Optical Second Harmonic Spectroscopy of Silicon Surfaces, Interfaces and Nanocrystals. *Physica Status Solidi A*, **2001**, 188, 1371-1381		4
32	Optical second-harmonic spectra of Si(001) with H and Ge adatoms: First-principles theory and experiment. *Physical Review B*, **2001**, 63,	3.3	18
31	Second-harmonic generation from silicon nanocrystals embedded in SiO2. *Applied Physics Letters*, **2001**, 78, 766-768	3.4	43
30	Optical Second Harmonic Spectroscopy of Silicon Surfaces, Interfaces and Nanocrystals **2001**, 188, 1371		3
29	Optical second harmonic spectroscopy of semiconductor surfaces: advances in microscopic understanding **2001**, 31, 966		1
28	Optical second harmonic spectra of silicon-adatom surfaces: theory and experiment. *Thin Solid Films*, **2000**, 364, 1-5	2.2	15
27	Reflected optical fourth harmonic generation at crystalline surfaces. *Thin Solid Films*, **2000**, 364, 80-85	2.2	8
26	In situ control and monitoring of doped and compositionally graded SiGe films using spectroscopic ellipsometry and second harmonic generation. *Applied Surface Science*, **2000**, 154-155, 229-237	6.7	12
25	Propagation of intense laser pulses through inhomogeneous ionizing gas profiles. *IEEE Transactions on Plasma Science*, **2000**, 28, 1218-1225	1.3	8
24	Optical second harmonic spectroscopy of boron-reconstructed Si(001). *Physical Review Letters*, **2000**, 84, 3406-9	7.4	40
23	Second-harmonic spectroscopy of bulk boron-doped Si(001). *Applied Physics Letters*, **2000**, 77, 181-183	3.4	13
22	Production and characterization of a fully ionized He plasma channel. *Applied Physics Letters*, **2000**, 77, 4112-4114	3.4	56
21	dc-electric-field-induced and low-frequency electromodulation second-harmonic generation spectroscopy of Si(001)SiO2 interfaces. *Physical Review B*, **1999**, 60, 8924-8938	3.3	62
20	Optical properties of cluster plasma. *Physics of Plasmas*, **1999**, 6, 3759-3764	2.1	72
19	Third and fourth harmonic generation at Si-SiO2 interfaces and in Si-SiO2-Cr MOS structures. *Applied Physics B: Lasers and Optics*, **1999**, 68, 325-332	1.9	15
18	Second-harmonic spectroscopy of Ge/Si(001) and Si1-xGex(001)/Si(001). *Applied Physics B: Lasers and Optics*, **1999**, 68, 641-648	1.9	13
17	Experimental Identification of Vacuum Heating at Femtosecond-Laser-Irradiated Metal Surfaces. *Physical Review Letters*, **1999**, 82, 4010-4013	7.4	66

16	Frequency-domain interferometric second-harmonic spectroscopy. *Optics Letters*, **1999**, 24, 496-8	3	53
15	Reflected fourth-harmonic radiation from a centrosymmetric crystal. *Optics Letters*, **1998**, 23, 918-20	3	14
14	Guiding characteristics of an acoustic standing wave in a piezoelectric tube. *Applied Physics Letters*, **1998**, 73, 2902-2904	3.4	3
13	Second-harmonic spectroscopy of a Si(001) surface during calibrated variations in temperature and hydrogen coverage. *Physical Review B*, **1997**, 56, 13367-13379	3.3	70
12	In situ optical second-harmonic-generation monitoring of disilane adsorption and hydrogen desorption during epitaxial growth on Si(001). *Applied Physics Letters*, **1997**, 71, 1376-1378	3.4	34
11	Femtosecond carrier-induced screening of dc electric-field-induced second-harmonic generation at the Si(001) SiO(2) interface. *Optics Letters*, **1997**, 22, 901-3	3	43
10	Fourth-harmonic generation at a crystalline GaAs(001) surface. *Optics Letters*, **1997**, 22, 973-5	3	14
9	Plasma-based accelerator diagnostics based upon longitudinal interferometry with ultrashort optical pulses. *IEEE Transactions on Plasma Science*, **1996**, 24, 301-315	1.3	22
8	Optical second-harmonic electroreflectance spectroscopy of a Si(001) metal-oxide-semiconductor structure. *Physical Review B*, **1996**, 53, R7607-R7609	3.3	82
7	Analysis of second-harmonic generation by unamplified, high-repetition-rate, ultrashort laser pulses at Si(001) interfaces. *IEEE Journal of Selected Topics in Quantum Electronics*, **1995**, 1, 1145-1155	3.8	31
6	Dielectric function and electrical resistivity of liquid carbon determined by femtosecond spectroscopy. *International Journal of Thermophysics*, **1993**, 14, 361-370	2.1	19
5	Real-Time Femtosecond Ellipsometry of SixGe1-x Epilayers. *Materials Research Society Symposia Proceedings*, **1992**, 263, 317		1
4	Measurement of femtosecond ionization dynamics of atmospheric density gases by spectral blueshifting. *Physical Review Letters*, **1991**, 67, 3523-3526	7.4	179
3	Two-photon spectroscopy of silicon using femtosecond pulses at above-gap frequencies. *Journal of the Optical Society of America B: Optical Physics*, **1990**, 7, 84	1.7	74
2	Femtosecond Laser Melting of Graphite and Diamond. *Materials Research Society Symposia Proceedings*, **1989**, 157, 425		
1	A Study of Second-Order Susceptibility in Digital Alloy-Grown InAs/AlSb Multiple Quantum Wells. *Advanced Optical Materials*,2102845	8.1	