Professional experience

10/17 –	Chair in Hybrid Nanosystems, Ludwig-Maximilians-Universität München
01/16 –	Lee-Lucas Chair in Experimental Physics, Imperial College London
07/16 – 07/18	Head of Experimental Solid State Physics, Imperial College London
09/14 – 12/17	Director of Postgraduate Studies, Imperial College London
10/08 – 12/15	Professor (Chair) of Nanophotonics, Department of Physics, Imperial College London
10/13 – 02/14	Visiting Professor, Universidad de Buenos Aires
06/09 –	Visiting Professor, Institute for Materials Research and Engineering A*Star, Singapore
11/07 – 09/08	Reader in Physics, Department of Physics, Imperial College London
06/04 – 10/07	Lecturer/Reader, Department of Physics, University of Bath

Education

03/03 – 05/04	Postdoctoral Scholar, Department of Applied Physics, Caltech Sponsor: Oskar Painter
06/03	PhD in Applied Physics, Caltech
06/00	MSc in Applied Physics, Caltech
09/99 – 02/03	Graduate Research Assistant, Department of Applied Physics, Caltech Sponsor: Harry A. Atwater
06/98	Vordiplom in Physics, Technische Universität München
09/96 – 06/99	Physics undergraduate study, Technische Universität München
07/95	Abitur, Klettgau-Gymnasium Tiengen, Baden-Württemberg

Honours and awards

10/11	Royal Society Wolfson Research Merit Award
06/11	Fellow of the Optical Society of America
06/10	Paterson Medal of the Institute of Physics
06/10	Fellow of the Institute of Physics
05/10	Sackler Prize in the Physical Sciences (Tel Aviv University)

Scientific publications, invited conference talks and metrics

» 294 archival publications (21 *Nature* series journals, three *Science*, 37 *Nano Letters*, 28 *ACS Nano*, one *Physical Review X*, eight *Physical Review Letters*, 17 *Advanced Materials* series)
» 180 invited/keynote/plenary talks at international conferences
» google scholar metrics: h-index 79, > 38'500 citations, 63 publications with > 100 citations
» web of science metrics: h-index 66, > 22'000 citations, 48 publications with > 100 citations

Research sponsors cumulative

» Engineering and Physical Sciences Research Council: £7'130k (PI), £8'970k (co-I)
» Leverhulme Trust: £5'898k (PI), £252 (co-I)
» Office of Naval Research: £845k (PI), £148k (co-I)
» US Air Force Office of Scientific Research: £625k (PI)
» European Commission: £500k (co-I)
» European Science Foundation: £470k (PI)
» dstl: £220k (PI)
» Royal Society: £196k (PI)
» European Space Agency: £70k (co-I)
» NG Next: £93k (PI)
» Total: £15'477k (PI), £9'940k (co-I)

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Departmental and administrative responsibilities

» Head of Experimental Solid State Physics Group (2016–2018, Imperial College London) line management duties for 16 academics, ~100 people total
» Director of Postgraduate Studies (2014–2017, Imperial College London) management of PhD and Masters programmes, 490 postgraduate students total
» Member of Departmental Strategy Board (2015–2016, Imperial College London)

Research group in hybrid nanosystems

» nanoplasmonics and nanophotonics: fundamentals of light/matter interactions on the nanoscale, nonlinear and ultrafast phenomena of hybrid nanomaterials, hot-electron science and technology, plasmon/phonon interactions, nanoscale chemistry, nanophotonic materials from the visible to the terahertz; energy conversion
» electromagnetic metamaterials: focus on mid-IR phononic cavities and metamaterials for light harvesting and sensing
» nanophotonics of two-dimensional materials: graphene and graphene-like materials
» quantum plasmonics: fundamentals of single surface plasmons
» applied nanophotonics: focus on biosensing, photovoltaics, defence applications, bioimaging

Notable external positions and synergistic activities

» Associate editor, *ACS Photonics,* Editor, *Optics Communications* (2009–2011)
» Editorial advisory board member, *Advanced Optical Materials*
» Organizer, Faraday Discussion on Hot Electrons 2019 (London)
» Meeting chair, MRS Spring Meeting 2017 (Phoenix)
» Organizer, Faraday Discussion on Plasmonics 2015 (London)
» Optical Society of America CLEO/EQEC steering committee member (2014–2017)
» Optical Society of America International Council member (2010–2012)
» Executive Committee Member of the European Materials Research Society (2010–2014)
» Chair of ESF network Plasmon-Bionanosense (2010–2015)
» Meeting chair, E-MRS Spring Meeting 2012 (Strasbourg)
» Organizer of DPG Summerschool 2011
» News and Views writer, *Spektrum der Wissenschaft* (25 articles 2005–2011)

Published and edited book volumes

» Plasmonics: Fundamentals and Applications (Springer 2007, >7800 citations google scholar)
» Active Plasmonics and Tunable Metamaterials (Ed, Maier and Zayats, Wiley 2013)
» Handbook of Metamaterials (Ed, World Scientific 2017)

External research funding

Engineering and Physical Sciences Research Council

» Nanoscale sculpturing of single photons with dielectrics (PI, 2017–2020, £410k)
» Reactive Plasmonics: Optical control of electronic processes at interfaces for nanoscale physics, chemistry, and metrology (PI, 2015–2021, £2400k)
» High temperature, high efficiency PV thermal solar system (co-I, 2015–2018, £1100k)
» Optical fabrication and imaging facility for three-dimensional sub-micron designer materials for bioengineering and photonics (PI, 2015–2017, £800k)
» Teracell: Integrated microwave-to-terahertz sensors for label-free circulating tumour cell detection (co-I, 2014–2017, £1300k)
» Mathematical fundamentals of metamaterials for multiscale physics and mechanics (co-I, 2014–2019, £2500k)
» Integrated graphene-based sensor devices via scalable microfabrication process developed based on graphene-metal multilayer deposition (co-I, 2013–2015, £1370k)
» Active Plasmonics: Electronic and all-optical control of photonic signals on sub-wavelength scales (PI, 2010–2015, £2600k)
» Nano-structured materials from nanoparticle- and block copolymer assemblies for nanophotonics and optoelectronics (PI, 2010–2014, £530k)

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- Silicon emission technologies based on nanocrystals (PI, 2010–2014, £370k)
- Interfacing carbon nanotubes with nanoantennas for simulataneous multifunctional spectroscopy and electrical nanocharacterization (PI, 2009–2013, £200k)
- Active plasmonics and perfect lenses with quantum metamaterials (co-I, 2009–2014, £1200k)
- Unravelling energy transport in plasmon waveguides using dual-probe near-field optical microscopy: A feasibility study (PI, 2009–2010, £100k)
- Aerogels in fibre optics (co-I, 2008–2012, £500k)
- Nanophotonics: From fundamentals to real life applications (co-I, 2007 – 2009, £170k)
- Photonic crystal fibres: Novel science and new applications (co-I, 2005–2007, £830k)
- Plasmonics and Near-Field Optics: Towards the limits of electromagnetic energy confinement (PI, 2005–2007, £120k)

Leverhulme Trust

- Topologically protected flexural waves in thin elastic plates (PI, 2017–2020, £271)
- Quantum plasmonics (co-I, 2017–2020, £252k)
- Dielectric nanoantennas: Exploration of a new, low-loss nanophotonics platform (PI, 2014–2017, £197k)
- Metamaterials and the control of electromagnetic fields (PI, 2010–2016, £4900k)
- Nanoparticle-assisted super-resolution microscopy for live cell imaging (PI, 2014–2016, £120k)
- Better than silver: a low-loss metal for 21st century photonics and computing (PI, 2009–2012, £140k)

Office of Naval Research

- Mid-infrared nanophotonic metamaterials — moving towards applications (co-I, 2016–2017, £76k)
- Development of an ultra-low-loss platform for molecular sensing based on dielectric nanoantennas (PI, 2016–2019, £500k)
- Localised phonon polariton resonances as highly efficient IR plasmon graphene launchers (co-I, 2015–2016, £72k)
- Beyond nanophotonics platform: Hybrid semiconductor/metallic nanoantennas for low-loss molecular sensing and light harvesting for photovoltaics (PI, 2014–2015, £75k)
- Multispectral nanophotonic sensing cavities (PI, 2011–2014, £270k)

US Air Force Office of Scientific Research

- Plasmon-enabled nanoscale sources of hot carriers and phonons (PI, 2017–2019, £115k)
- Quantum Plasmonics: Quantum information at the nanoscale (PI, 2012–2016, £240k)
- Plasmonics for stimulated emission depletion microscopy (PI, 2007–2008, £80k)
- Spoof surface-plasmon-polaritons for THz sensing (PI, 2005–2008, £190k)

dstl

- Hybrid nanocavities for molecular sensing (PI, 2017–2020, £110k)
- Generation, routing, and manipulation of single photons via surface plasmons for quantum nano metrology and sensing (PI, 2015–2018, £110k)

Royal Society

- Metasurfaces for photon management (joint award with China, PI, 2017–2019, £12k)
- Sunlight-enhanced catalysis (Overseas Aid award, PI, 2016–2017, £86k)
- Wolfson Research Merit Award (PI, 2011–2016, £53k)
- Nanophotonic force detection (PI, 2014–2016, £6k)
- Hybrid nanocavities (PI, 2013–2015, £12k)
- Electron energy loss spectroscopy for plasmonics (PI, 2009–2011, £6k)
- Spoof surface plasmons (PI, 2006–2009, £6k)
- Surface plasmon nanophotonics (PI, 2006–2007, £15k)

European Science Foundation

- Plasmon-Bionanosense network (PI, 2010–2015, £470k)

European Commission

- Plasmon resonance for improving the absorption of solar cells (co-I, 2009–2012, £500k)

European Space Agency

- High-radiation-tolerant multi-junction solar cells (co-I, 2014–2015, £70k)

NG Next

- Plasmonics for integrated hot carrier devices (PI, 2016–2018, £93k)

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Personal data

» citizenship: Germany, UK
» date of birth 22/09/1975, languages: English (fluent), German (fluent), Spanish (fluent), Italian (conversant)

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Archival journal publications

294 Gennaro, S.D., Li, Y., Maier, S.A., & Oulton, R.F., Double blind ultrafast pulse characterization by mixed frequency generation in a gold antenna, ACS Photonics (2018)

293 Wells, M.P., Bower, R., Kilmurray, R., Zou, B., Mihai, A.P., Bogalakrichenane, G., Alford, N.McN., Oulton, R.F.M., Cohen, L.F., Maier, S.A., Zayats, A.V., & Petrov, P.K., Temperature stability of thin film regractory plasmonic materials, Optics Express 26, 15726 (2018)

292 Wells, M.P., Zou, B., Mihai, A.P., Bower, R., Doiron, B., Regoutz, A., Fearn, S., Maier, S.A., Alford, N.McN., & Petrov, P.K., Multiphase strontium molybdate thin films for plasmonic local heating applications, Optics Materials Express 8, 1806 (2018)

291 Berte, R., Gubbin, C.R., Wheeler, V.D., Giles, A.J., Giannini, V., Maier, S.A., De Liberato, S., & Caldwell, J.D., Sub-nanometer thin oxide film sensing with localized surface phonon polaritons, ACS Photonics (2018)

290 Black, NCG, Rungger, I., Li, B., Maier, S.A., Cohen, L.F., Gallop, J.C., & Hao, L., Adsorption dynamics of CVD graphene investigated by a contactless microwave method, 2D Materials 5, 035024 (2018)

289 Simoncelli, S., Li, Y., Cortés, E., & Maier, S.A., Imaging plasmon hybridization of Fano resonances via hot-electron-mediated absorption mapping, Nano Letters (2018)

288 Morozov, S. Gaio, M, Maier, S.A., & Sapienza, R., Metal-dielectric parabolic antenna for directing single photons, Nano Letters 18, 3060 (2018)

287 Yang, Q., Zhang, C., Wu, S., Li, S., Bao, Q., Giannini, V., Maier, S.A., & Li, X., Photonic surface waves enabled perfect infrared absorption by monolayer graphene, Nano Energy 48, 161 (2018)

286 Gu, Y., Zhang, Y., Li, Y., Jin, X., Huang, C., Maier, S.A., & Ye, J., Raman photostability of off-resonant gap-enhanced Raman tags, RSC Advances 8, 14434 (2018)

285 Cambiasso, J., König, M., Cortés, E., Schlücker, S., & Maier, S.A., Surface-enhanced spectroscopies of a molecular monolayer in an all-dielectric nanoantenna, ACS Photonics 5, 1546 (2018)

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283 Matsui, T., Li, Y., Mark Hsu, M.-H., Merckling, C., Oulton, R.F., Cohen, L.F., & Maier, S.A., Highly stable plasmon induced hot hole transfer into silicon via a $SrTiO_3$ passivation interface, Advanced Functional Materials 28, 1705829 (2018)

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281 Ma, Z., Li, Y., Li. Y, Gong Y., Maier, S.A., & Hong, M., All-dielectric planar chiral metasurrface with gradient geometric phase, Optics Express 26, 6067 (2018)

280 Shibamuna, T. Maier, S.A., & Albella, P., Polarization control of high transmission/reflection switching by all-dielectric metasurfaces, Applied Physics Letters 112, 063103 (2018)

279 Simoncelli, S., Li, Y., Cortés, E., & Maier, S.A., Nanoscale control of molecular self-assembly by plasmonic hot-electron dynamics, ACS Nano 12, 2184 (2018)

278 Wang, Z., Dong, Z., Zhu, H., Jin, L., Chiu, M.-H., Li, L.-J., Xu, Q.-H., Goki, E., Maier, S.A., Wee, A.T.S., Qiu, C.-W., & Wang, J.K.W., Selectively plasmon-enhanced second-harmonic generation from monolayer tungsten diselenide on flexible substrates, ACS Nano 12, 1859 (2018)

277 Abelwahab, I., Grinblat, G., Leng, K., Yi, L., Chi, X., Rusydi, A., Maier, S.A., & Loh, K.P., Highly enhanced third-harmonic generation in 2D perovskites at excitonic resonances, ACS Nano 12, 644 (2018)

276 Bobrovska, N. Matuszewski, M., Daskalakis, K.S., Maier, S.A., & Kéna-Cohen, S., Dynamical instability of a nonequilibrium exciton-polariton condensate, ACS Photonics 5, 111 (2018)

275 Hasan, M., Khunsin, W., Mavrokefalos, C.K., Maier, S.A., Rohan, J.F., & Foord, J.S., Facile electrochemical synthesis of Pd nanoparticles with enhanced electrocatalytic properties from surfactant-free electrolyte, ChemElectroChem 4, 1 (2017)

274 Hu, H., Zhang, J., Maier, S.A., & Luo, Y., Enhancing third-harmonic generation with spatial nonlocality, ACS Photonics 5, 592 (2018)

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272 Nielsen, M.P., Shi, X., Dichtl, P., Maier, S.A., & Oulton, R.F., Giant noninear response at a plasmonic nanofocus drives efficient four-wave mixing , Science 358, 1179 (2017)

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269 Crick, C.R., Albella, P., Kim, H-J., Ivanov, A.P., Kim, K.-B., Maier, S.A. & Edel, J.B., Low-noise plasmonic nanopore biosensors for single molecule detection at elevated temperatures, ACS Photonics 4, 2835 (2017)

268 Roth, D.J., Krasavin. A.V., Wade, A., Dickson, W., Murphy, A., Kéna-Cohen, S., Pollard, R., Wurtz, G.A., Richards, D.R., Maier S.A., & Zayats, A.V., Spontaneous emission inside a hyperbolic metamaterials waveguide, ACS Photonics 4, 2513 (2017)

267 Braic, L., Vasilantonakis, N, Mihai, A., Villar-Garcia, I., Fearn, S., Zou, B., Alford, N., Doiron, B., Oulton, R.F., Maier, S.A., Zayats, A., Petrov, P..K., Titanium oxynitride thin films with tuneable double epsilon-near-zero behaviour for nanophotonic applications, ACS Applied Materials and Interfaces 9, 29857 (2017)

266 Gargiulo, J., Brick. T., Violi, I.L., Herrera, F.C. Shibamuna, T., Albella, P., Requejo, F.G., Cortés, E., Maier, S.A., & Stefani, F.D., Understanding and reducing photothermal forces for the fabrication of Au nanoparticle dimers by optical printing, Nano Letters 17, 5747 (2017)

265 Park, S.-G., Mun, C., Xiao, X., Braun, A., Kim, S., Giannini, V., Maier, S.A., & Kim, D.-H., Surface energy-controlled SERS substrates for molecular concentration at plasmonic nanogaps, Advanced Optical Materials 1703376 (2017)

264 Wells, M.P., Zou, B., Doiron B.G., Kilmurray, R., Mihai, A.P., Oulton, R.F., Gulbejak, P., Ormandy, K.L., Mallia, G., Harrison, N.M., Cohen, L.F., Maier, S.A., Alford, N.McN., & Petrov, P.K., Tunable, low optical loss strontium molybdate thin films for plasmonic applications, Advanced Optical Materials 1700622 (2017)

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262 Black, N.C.G., Liu, C.G., Pearce, R., Li, B., Maier, S.A., Cohen, L.F., Gallop, J.C., & Hao, L., Graphene gas sensing using a non-contact microwave method, Nanotechnology 28, 395501 (2017)

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260 Lauri, A., Velleman, L., Xiao, X., Cortés, E., Edel, J.B., Giannini, V., Rakovich, A., & Maier, S.A., 3D confocal Raman tomography to probe field enhancements inside supercluster metamaterials, ACS Photonics 4, 2070 (2017)

259 Li, K., Fitzgerald, J.M., Xiao, X., Caldwell, J.D., Zhang, C., Maier, S.A., Li, X., & Giannini, V., Graphene plasmon cavities made with silicon carbide, ACS Omega 2, 3640 (2017)

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257 Canet-Ferrer, J., Albella, P., Ribera, A., Usagre, J.V., & Maier, S.A., Hybrid magnetite-gold nanoparticles as bifunctional magnetic-plasmonic systems: three representative cases, Nanoscale Horizons 2, 205 (2017)

256 Shibamuna, T., Grinblat, G., P., Albella, P, & Maier, S.A., Efficient third harmonic generation from metal-dielectric hybrid nanoantennas, Nano Letters 17, 2647 (2017)

255 Shibamuna, T., Matsui, T., Roschuk, T., Wojcik, J, Mascher, P., Albella, P, & Maier, S.A., Experimental demonstration of tunable directional scattering of visible light from all-dielectric asymmetric dimers, ACS Photonics 4, 489 (2017)

254 Yu, H., Sidiropoulos, T.P.H., Liu, W., Ronning, C., Petrov, P.K., Oh, S.-H., Maier, S.A., Jing, P., & Oulton, R.F., Influence of silver film quality on the threshold of plasmonic nanowire lasers, Advanced Optical Materials 5, 1600856 (2017)

253 Huidobro, P.A., Maier, S.A., & Pendry, J.B., Tunable plasmonic metasurfaces for perfect absorption, EPJ Applied Metamaterials 4, 6 (2017)

252 Cortés, E., Xie, W., Cambiasso, J., Jermyn, A.S., Sundararaman, R., Narang, P., Schlücker, S., & Maier, S.A., Plasmonic hot electron driven site-specific surface chemistry with nanoscale special resolution, Nature Communications 8, 14880 (2017)

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250 Cambiasso, J., Grinblat, G., Li, Y., Rakovich, A., Cortés, E., & Maier, S.A., Bridging the gap between dielectric nanophotonics and the visible regime with effectively lossless GaP antennas, Nano Letters 17, 1219 (2017)

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247 Mack, D.L., Cortés, E., Giannini, V., Török, P., Roschuk, T., & Maier, S.A., Decoupling absorption and emission processes in super-resolution localization of emitters in a plasmonic hot spot, Nature Communications 8, 14513 (2017)

246 Grinblat, G., Li, Y., Nielsen, M.P., Oulton, R.F., & Maier, S.A., Efficient third harmonic generation and nonlinear subwavelength imaging at a higher-order anapole mode in a single Germanium nanodisk, ACS Nano 11, 953 (2017)

245 Nguyen, N., Maier, S.A., Hong, M., & Oulton, R.F., Recovering parity-time symmetry in highly dispersive optical waveguides, New Journal of Physics 18, 125012 (2016)

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243 Cortés, E., Huidobro, P.A., Sinclair, H.G., Guldbrand, S. Peveler, W.J., Davies, T., Parrinello, S., Görlitz, F., Dunsby, C., Neil, M.A.A., Sivan, Y., Parkin, I.P., French, P.M.W., & Maier, S.A., Plasmonic nanoprobes for stimulated emission depletion nanoscopy, ACS Nano 10, 10454 (2016)

242 Razdolski, I., Chen, Y., Giles, A.J., Gewinner, S., Schöllkopf, W., Hong, M., Wolf, M., Giannini, V., Caldwell, J.D., Maier, S.A., & Paarmann, A., Resonant enhancement of second-harmonic generation in the mid-infrared using localized surface phonon polaritons in subdiffractional nanostructures, Nano Letters 16, 6954 (2016)

241 Gubbin, C.R., Maier, S.A., & De Liberato, S., Real-space Hopfield diagonalization of inhomogeneous dispersive media, Physical Review B 94, 205301 (2016)

240 Mellor, A., Hylton, N.P., Maier, S.A, & Ekins-Daukes, N., Interstitial light-trapping design for multi-junciton solar cells, Solar Energy Materials & Solar Cells 159, 212 (2017)

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