PERSONAL DETAILS

Name: David Ryan Glowacki **Date of birth:** 9 July 1981
URL: www.glow-wacky.com **Nationality:** dual US/UK

PROFESSIONAL APPOINTMENTS

2021 – now Distinguished Research Fellow
CiTIUS | Intelligent Technology Research Institute (Santiago de Compostela, Spain)
Founder & Director of the "Intangible Realities Laboratory" (IRL)

2018 – 2021 Senior Research Fellow
Dept. of Computer Science & School of Chemistry (University of Bristol, UK)

2013 – 2018 Visiting Scholar
Department of Chemistry & Mechanical Engineering (Stanford, USA)

2014 – 2015 Adjunct Faculty
California College of Contemporary Art (San Francisco, USA)

2013 – 2021 Royal Society University Research Fellow
Dept. of Computer Science & School of Chemistry (University of Bristol, UK)

2009 – 2013 Postdoctoral Research Associate (University of Bristol, UK)
Advisor: Professor Jeremy Harvey

2008 – 2009 Postdoctoral Research Associate at the (University of Leeds, UK)
Advisor: Professor Michael Pilling

EDUCATION

2004 – 2008 PhD in Computational Chemical Physics, University of Leeds, UK
Advisor: Professor Michael Pilling

2003 – 2004 Master Of Arts in Cultural Theory at the University of Manchester, UK
Advisor: Professor Graham Ward

1999 – 2003 BS in Chemistry (*summa cum laude*) at the University of Pennsylvania, (Philadelphia, USA)

MAJOR AWARDS

2017 Silver Jubilee Award (Molecular Graphics and Modelling Society) *recognises contributions in the field of molecular modelling and related areas of computational chemistry*

2016 PCCP Emerging Investigator Lectureship (*Royal Soc Chem*) *recognises an emerging scientist working in physical chem, chem phys or biophysical chem, who is making an outstanding contribution to their field at an early stage of their career.*

2016 Philip Leverhulme Award (Leverhulme Trust) *recognizes early career researchers whose work has already attracted international recognition and whose future career is exceptionally promising. Up to 30 awards/year, across all academic disciplines.*

2014 Named as a Fellow of the Royal Society of Chemistry (FRSC)

2014 Harrison-Meldola Memorial Prize (*Royal Soc Chem*) for "theoretical work on energy transfer process in chemical reaction dynamics." *Recognizes UK-based scientists aged 32 or under for "the most meritorious and promising original investigations in chemistry and published results of those investigations." Each year, no more than one of these awards goes to a chemist working in the area of physical or theoretical chemistry*

2013 Royal Society University Research Fellow (URF). *The URF award is extremely competitive, with ~30 awarded each year across all fields of science. The application success rate is typically 5 – 7%, with very few going to chemists. The URF pays my salary & expenses for five years, affording a tremendous amount of intellectual freedom.*

SCHOLARSHIPS AND ACADEMIC AWARDS

2008 J.B. Cohen Award for best PhD thesis, University of Leeds, School of Chemistry (UK)

2004 – 2008 Overseas Research Studentship (£12k/yr) and Tetley/Lupton PhD Scholarship (£3k/yr) to support PhD research at the University of Leeds School of Chemistry (UK)

2004 Arts, Histories, and Culture Award for best MA dissertation (University of Manchester)

2003 Fulbright Scholarship finalist for MA study at the University of Manchester (UK)

OTHER AWARDS

2011 – now New Talent Award (£6k/year) at Bristol Pervasive Media Studio (digital research lab)

2014 UK National Science Engagement Award (230 entries; ~3% selection rate)

2013	UK award for *Outstanding Contribution to Innovation* (over 50 entries, ~2% sel. rate)
2013	Prix Ars Electronica (Austria) award in Digital Aesthetics (3500 entries; ~2% sel. rate)
2013	Attendee at the Lindau Nobel Laureate Meeting (~2% sel. rate)
2013	University of Bristol Science Engagement Award
2018	University of Bristol Teaching Innovation Award for developing a new VR paradigm for teaching in the nanosciences

GRANT INCOME

2021 – 2026	Oportunius Research Fellowship, Xunta de Galicia, €1m
2021 – 2026	NANOVR (Nanoscale design using VR), ERC Consolidator Grant 2019, €2m
2019 – 2020	Exploring next-generation simulation & visualization, Collaborative Research Grant, Hyundai Corporation
2019 – 2020	Exploring next-generation simulation & visualization Collaborative Research Grant, BP Corporation, joint with Prof Adrian Mulholland and Dr. Simon Bennie
2018 – 2021	APEX Interdisciplinary Award "Exploring Molecular Data with Immersive Technology: Interactive Sonification in Virtual Reality", joint with Dr. Tom Mitchell (UWE Bristol) & Prof. Joseph Hyde (Bath Spa University) [£98.7k, The Royal Society]
2018 – 2021	"Accelerating biomolecular free energy surface mapping using virtual reality" [£200k, The Royal Society]
2018 – 2021	Royal Society URF Extension "Adaptive Sampling Strategies for Exploring Biomolecular Conformational Dynamics", [£350k, The Royal Society]
2018 – 2021	Responsive mode award, "Rational Computational protein design using ISAMBARD and VR" joint with Prof. Dek Woolfson [£880k, BBSRC]
2017 – 2023	Programme Grant "Chemistry & Mathematics in Phase Space", joint with Profs Steve Wiggins (Bristol), Barry Carpenter (Bristol/Cardiff), Dmitry Shalashilin (Leeds), and Darryl Holm (Imperial) [£4m, EPSRC]
2016 – 2017	Development & installation of a collaborative virtual reality laboratory [£80k, EPSRC]
2016 – 2019	Philip Leverhulme Award (£100k, Leverhulme Trust)
2016 – 2019	Drug docking kinetic studies using virtual reality-enabled interactive molecular dynamics [£70k, EPSRC]
2016 – 2019	Developing efficient reactive potentials using Machine Learning & Rare Event Sampling [£70k, EPSRC]
2016 – 2019	Reaction Networks and Mechanisms: Discovery and Application in Combustion [$240k to support Dr. Robin Shannon, Air Force Office of Scientific Research]
2016 – 2020	Reactive Scattering Dynamics at the Gas-Liquid Interface: Bridging the gap between the Gas-Phase and Solution (£300k, EPSRC)
2015 – 2016	Scientific Software for Chemical Education, (£50k, UFI Charitable Trust)
2015 – 2016	Immersive Scientific Software Frameworks, phase 2 (£250k, InnovateUK)
2014 – 2015	Immersive Scientific Software Frameworks, phase 1 (£80k, InnovateUK)
2014 – 2018	Coupled Reaction Dynamics and Conformational Sampling on Multidimensional Enzyme Energy Landscapes (£135k, The Royal Society of London)
2014 – 2018	Integrated Hardware-Software Frameworks for Peta and Exascale simulation of quantum dynamics in biomolecular systems (£70k, EPSRC)
2013 – 2018	Beyond Equilibrium: ultrafast solution phase dynamics and Enzyme Catalysis (£500k, The Royal Society of London)
2013 – 2014	Sculpting Molecular Dynamics with Human Energy Fields: research & development (£120k, Arts Council England)
2013	*GPU-accelerated interactive molecular dynamics* (£10k, NVIDIA)
2011 – 2013	*Sculpting Dynamics Using Human Energy Fields* (£70k, EPSRC; £25k, Watershed Digital Media Centre; £20k, Royal Society of Chemistry)

RESEARCH SUPERVISION

Creating an environment for students, post-docs, and research fellows to access cutting edge research forms a critical aspect of my practice, and I have been actively working with colleagues across a range of university departments to explore how new technologies like virtual reality may be adapted for communicating difficult scientific concepts at the cutting edge of research across a range of areas. My research group comprises students from computer science, chemistry, psychology, & arts, to enable researchers and students in my lab to learn from other disciplines.

Supervision of PhD students

2019 – now Primary supervisor of PhD student Rhoslyn Roebuck Williams
2018 – now Primary supervisor of PhD student Alexander Jamieson-Binnie; Co-supervisor of PhD student Rebecca Walters (joint with Adrian Mulholland)
2017 – now Primary supervisor of PhD student Darya Schepanovska
2016 – now primary Supervisor of Silvia Amabilino (Chemistry); Co-supervisor of PhD student Alex Jones, joint with Dr. Oussama Metatla (Computer Science)
2015 – now Primary supervisor of PhD student Helen Deeks, joint with Prof Adrian Mulholland (Chemistry), Dr. Anne Roudaut (Comp Sci), and Dr. Ousama Metatla (Comp Sci)
2014 – now Primary supervisor of PhD student Rob Arbon (Chemistry)
2014 – 2019 co-supervisor of Stephen Ingram (joint with Prof Jonathan Reid (Chemistry)
2014 – 2019 Primary supervisor of PhD student Michael O'Connor, joint with Prof Simon McIntosh-Smith (Comp Sci)

Supervision of PDRAs

2019 – now Primary supervisor of Dr. Mike O'Connor (BBSRC funded), Dr Jonathan Barnoud (EPSRC funded), Dr Ella Gale (EPSRC funded), Mark Wonnacott (Royal Society Funded)
2018 – now Co-supervisor of Dr. Stephanie Hare (EPSRC funded)
2017 – now Primary supervisor of Dr. Lars Bratholm (EPSRC funded)
2015 – now Primary supervisor of Dr. Simon Bennie (EPSRC) & Dr. Robin Shannon (AFOSR/EPSRC)
2015 – 2017 Primary supervisor of Dr. Basile Curchod (Marie-Sklodowska Curie fellow)

Mentorship & Hosting of Research Fellows

2020 – now Dr. Simon Bennie, Royal Society of Edinburgh Fellowship [£100k, Royal Society of Edinburgh]
2016 – 2018 Dr. Basile Curchod, Marie Sklodowska Curie Fellowship, NAMDIA: Non-Adiabatic Molecular Dynamics of Transient Intermediates in Atmospheric Chemistry [€183k, European Commission]

TEACHING ACTIVITIES

2016 – now VR teaching laboratory for biophysics

Primary coordinator and technical lead on a pilot aimed at exploring the introduction of interactive VR technologies for teaching chemistry content. This is being undertaken in collaboration with Prof. Craig Butts, Prof. Adrian Mulholland, Dr. Simon Bennie, and Dr. Chris Adams. To date, we have developed a computational modelling lab, and are in the process of carrying out analysis to evaluate the success of this technology in communicating chemical concepts to undergraduate and graduate students, with a recent paper featured on the cover of J. of Chemical Education. On several occasions, I have run demos of this tech at School of Chem. and Comp. Sci. Open Days. This work, which we have developed into a 3rd year computational enzymology award, was recognized by in 2018 by Bristol University 'Educational initiative award'

2015 – 2019 Lecturer to TMCS (Theory and Modelling in the Chemical Sciences) PhD students

Coordinator and Designer of the 'Software Training' module of the EPSRC-funded TMCS (Theory and Modelling in the Chemical Sciences) Centre for Doctoral Training (CDT). This is an intensive 4-day software training course, in which the students attend a series of lectures, and work through exercises and tutorials (all written by me) aimed to teach them the basics of writing scientific software. The first two days of the module are focussed on getting the students to write a simple physics-based game; in the last two days of the module, the students split into groups, and are given specific projects to accomplish with their team. On the final day, each of the groups presents their project. To date, this course has been attended by ~15 students per year. It involved ~40 hours of prep time in the first year, and 20 hours thereafter. It is assessed on a pass-fail basis. The course was extremely successful, and received very good student feedback

2015 – now Lecturer to University of Bristol undergraduates

Lecturer of the Biophysical Chemistry Portion of 4th year module 'Special Topics in Physical Chemistry', ~40 students/year, 7 lectures per year (1 hour each). I designed the lecture content for this course, and wrote the exam question. Prep hours are on the order of ~50 hours, and ~10 hours for student office hours.

2015 – now Guest lecturer, digital aesthetics, California College of Contemporary Art (San Francisco)

Supervised Master of Fine Art Students during their independent projects, exploring

the interface between aesthetic practice, scientific practice, and technology.

2009 – now Guest lecturer, photochemical dynamics, University Centre in Svalbard (Norway)
This involved 10 one hour lectures over the course of a week to masters and final year undergraduate students studying environmental science in a Norwegian Research Centre in Svalbard (~10 students per year), in collaboration with colleague Dr. Mark Hermanson, head of the environmental science section at UNIS. I designed all of the lecture content myself, along with three exam questions on which students were assessed. Prep time in the first year was approximately 40 hours, with ~10 hours of prep time per year thereafter

2009 – 2013 Tutorial Leader, Physical chemistry, School of Chemistry, University of Bristol
This involves running 16 one-hour tutorial sessions per year, with a group of 4 – 6 first-year chemistry students, where we work through problems associated with lectures given by my colleagues.

ORGANISATION OF SCIENTIFIC MEETINGS

2015 International Workshop on the OpenCL Parallel Compute Language, Stanford University
200 international participants, co-organized with Simon McIntosh-Smith

MEMBERSHIPS OF SCIENTIFIC SOCIETIES & NETWORKS

2015 – now Member, American Society of Computing Machinery
2009 – now Member, Royal Society of Chemistry & American Chemical Society
2013 – now Academic Faculty member of a £5m Doctoral Training Centre Consortium between the Universities of Bristol, Oxford, and Southampton (www.tmcs.ac.uk)

COMISSIONS OF TRUST

2018 – now Advisor for the Royal Society Policy Committee
2018 – now Member of the University of Bristol senior ethics panel, University of Bristol
2016 – now Editorial Board member, International Journal of Chemical Kinetics
2015 – now Scientific Consultant, Interactive Scientific Ltd. (UK)
2015 – now Grant referee for EPSRC (UK), BBSRC (UK), the Swedish Research Council, & the Croatian Science Foundation
2013 – now Referee for >10 well-known journals, including *PNAS*, *Nature Chemistry, J Chem Phys, J Phys Chem, J Amer. Chem. Soc., Phys Chem Chem Phys, Nano Letters*, *Nature, Nature Chem, Nature Comms,* etc.

MAJOR CROSS-INSTITUTIONAL COLLABORATIONS

2014 – now Profs Ken McKendrick & Matt Costen, Chemistry, Heriot Watt University, Edinburgh
Reactive Scattering Dynamics at the Gas-Liquid Interface
2014 – now Prof Hai Wang, Mechanical Engineering, Stanford University
Reaction Networks and Mechanisms: Discovery and Application in Combustion
2013 – now Prof Todd Martinez, Chemistry, Stanford University
Non-adiabatic dynamics in high dimensional systems
2008 – now Dr. Struan Robertson, Biovia Inc., Cambridge
maintenance of MESMER, an open-source, cross-platform master equation solver

HIGH-PROFILE BRISTOL COLLABORATIONS

I have maintained a range of productive collaborations in the Bristol area, with colleagues at the University of Bristol (UoB) and beyond. These have led to high-profile publications in the following areas: (1) *Interactive High-Performance Computing* [with Prof. Simon McIntosh-Smith, UoB Computer Science]; (2) *conformational sampling and efficient algorithms for modelling enzyme catalysis* [with Prof. Adrian Mulholland, UoB Chemistry]; (3) *non-statistical dynamics in condensed phases* [with Prof. Barry Carpenter, UoB Chemistry]; (4) *ultrafast solution phase reaction dynamics* [with Prof. Andrew Orr-Ewing, UoB Chemistry]; and (5) *interactive molecular dynamics frameworks* [with Dr. Tom Mitchell (University of the West of England), Prof. Joseph Hyde (Bath Spa University), and Philip Tew (Bristol Pervasive Media Studio)].

OTHER NOTES

- Myself & my group have made major contributions to several well-known scientific software packages, including CHARMM (Martin Karplus, Harvard), TINKER (Jay Ponder, Washington-St. Louis), OpenMM (Vijay Pande, Stanford), and TeraChem (Todd Martinez, Stanford).
- MESMER, an open-source cross-platform code for solving non-equilibrium Markov-state models, to which I have made major contributions, has had over 4000 downloads since its release in 2012
- My group's open-source multi-person VR software package 'Narupa' (https://gitlab.com/intangiblerealities)

has enabled a number of high-profile publications (with coverage from the New York Times, BBC, and Nature). It has been adopted by a number of researchers across both academia and industry, with more than 1000 downloads to date.

- I am internationally recognized for my contributions to interactive computing, scientific visualization, and digital aesthetics. Since 2010, this work has received major investment over €400k from a range of partners, (NVIDIA, Hoffman-LaRoche, The Royal Society, EPSRC, the Royal Society of Chemistry, UK Technology Strategy Board, and Arts Council England). Experienced by over 200,000 people across Europe-USA-Asia, it has been installed at some of the world's best-known cultural venues/museums (e.g., London 2012 Olympics, the ZKM | Centre for Art and Media Technology in Karlsruhe, London's Barbican, Austria's Ars Electronica, the Salzburg festival, Berlin's Transmediale festival, Stanford's art gallery, etc.)
- I regularly receive invitations to deliver high-profile lectures, and have delivered >50 in the last five years.
- The VR-enabled real-time software developed in my group, which enables researchers to reach out and manipulate real-time simulations has been adopted by a number of universities across the world [e.g., Denmark Technical University (Copenhagen), ETH Zurich, the University of Basel, the University of Tromso (Norway), and the University of Vermont (USA)]. Industrially, both BP and Hyundia are in the process of replicating the Bristol multi-person VR laboratory at their research facilities in Naperville, IL, and Seoul, Korea, respectively.
- My research work has resulted in the formation of a software company called Interactive Scientific Ltd., which I co-founded to develop interactive software for scientific research and education, which has raised more than £1.5m over the last four years.

PUBLICATIONS:

More than 90 publications including journals, books, and conference volumes. >3900 total citations, h-index=35. I have published across a range of disciplines including chemical physics, computer science, digital aesthetics, and arts & humanities. My publications include 3 in *Science*, 2 in *Nature Chemistry*, 1 in *Science Advances*, and 1 in *Proc. National Academy of the USA*.

See https://glow-wacky.com/publications/ for a full publication list.

INVITED SEMINARS (SELECTED)

Since 2007, I have given over 60 invited and contributed seminars for my scientific work. This includes conferences, companies, and academic departments across Europe, the USA, and Asia

2021 VCBM Eurographics Conference, Paris (invited keynote)
2021 Insight Conference (accepted submission)
2020 Max Plank Institute for molecular cell biology, Dresden, Germany (invited)
2020 Machine Learning and Visualization in the Materials Sciences, Kanazawa, Japan (invited)
2019 Cambridge ChemoInformatics Network Meeting, Cambridge, UK (invited)
2019 XR Developer's Conference, Fort Mason, San Francisco, USA (accepted submission)
2019 BP scientific seminar Program, BP Corporation, Naperville, USA (invited)
2019 Invited seminar, 'Big Ideas for Big data in Drug discovery', UCL, UK
2019 Plenary Lecture, "Physics Days", University of Helsinki, Helsinki, Finland
2019 Invited lecture, 'Moving and Sensing', Royal Society, London, UK
2019 Invited seminar, University of Manchester Departmental Seminar, UK (host Andrew Almond)
2018 invited seminar, 'Pint of Science' science festival, Red Lion pub, Bristol, UK
2018 invited seminar, Bristol Scientific Cloud computing symposium, Bristol, UK (Hosted by Oracle UK)
2018 invited seminar, University of Edinburgh Chemical Society meeting
2018 invited seminar, Copenhagen Cloud computing symposium, Denmark, Copenhagen (Hosted by Oracle Denmark)
2018 invited Departmental Seminar, University of Santiago de Compostela (host Prof Saulo Vasquez)
2018 invited seminar, International Meeting on the Philosophy of Chemistry, Bristol, UK
2018 invited seminar, 'Platform for Advanced Scientific Computing' meeting, Basel, Switzerland
2018 invited seminar, MGMS Silver Jubilee Award Lecture, Oxford
2018 invited seminar, C4 meeting, IBM Research, Zurich
2018 MACCCR meeting, Sandia National Laboratories, invited seminar, Livermore, California, USA
2018 Virtual Reality Winterschool, invited seminar, Engelberg, Switzerland
2018 Introductory Lecture, CHAMPS Programme Grant

2018 Departmental Seminar, University of Basel (host Prof. Anatole von Lilienfield)
2017 Oracle Open World, invited seminar, San Francisco, USA
2017 Royal Society 'Meeting of the minds' conference, contributed seminar, Royal Society (London)
2017 Annual Postgraduate Research Conference, plenary seminar, University of Leeds
2017 Faraday Society Joint Interest Meeting, invited seminar, University of Warwick
2017 Departmental Seminar, ETH Zurich (host Prof Markus Reiher)
2017 American Physical Society annual meeting, invited lecture at the "Spectroscopy & Dynamics of Multi-chromophore systems" session, New Orleans
2017 'atMath' conference, plenary lecture, Levi, Finland
2017 Departmental Seminar, University of Chemistry & Technology, Prague, Czech (host Petr Slavicek)
2017 'Dynamics of Molecular Collisions' conference, invited seminar, Lake Tahoe, USA
2017 MACUMB conference, invited seminar, University Autonoma de Madrid
2017 Princeton University, Chemistry Seminar (host Prof. Greg Scholes)
2017 Harvard University, Woodward Colloquium (host Prof. Eric Heller)
2017 University of Pennsylvania, Chemistry Seminar (host Prof. Marsha Lester)
2017 Cambridge University Chemical Society, Invited Lecture (Cambridge, UK)
2016 Queen Mary University London, Departmental Seminar (London, UK)
2016 Advanced Methods for de novo Discovery of New Reactions and prediction of chemical reaction networks (Telluride, CO, USA)
2016 Advancing the Frontiers of (Bio)Chemistry with Valence Bond Approaches (Uppsala, Sweden)
2016 Plenary Lecture at the International Symposium on Gas Kinetics (York, UK)
2016 CECAM meeting on "Theoretical and Computational Studies of Non-Equilibrium and Non-Statistical Dynamics" (Paris, France)
2016 Invited Seminar @Royal Society Symposium on Public Engagement (Chichley Hall, UK)
2016 Virtual Winterschool on Computational Chemistry (Int'l Teleconference with 400 participants)
2015 *Reactive Intermediates in Atmospheric Chemistry & Combustion*, Pacifichem International Conference 2015 (Honolulu, Hawaii)
2015 Joint Indonesia-UK Symposium on Theoretical Chemistry, sponsored by the Royal Society of Chemistry (Bandung, Indonesia)
2015 Joint Thailand-UK Symposium on Theoretical Chemistry, sponsored by the Royal Society of Chemistry (Bangkok, Thailand)
2015 Physical Chemistry Seminar (Oxford University)
2015 International conference on molecular energy transfer 2015 (Chengdu, China)
2015 D-School Seminar (Stanford University, USA)
2015 Chemistry Seminar (Birmingham University, Birmingham)
2015 Chemistry Seminar (Heriot Watt, Edinburgh)
2015 Chemistry Seminar (Imperial College, London)
2015 Chemistry Seminar (Trinity College, Dublin)
2014 Physics Colloquium (University of Bristol, UK; host Prof. Michael Berry)
2014 Human-Computer-Interaction Seminar (Stanford University, USA; host Prof. Michael Bernstein)
2014 International Photonics Research Conference (Stanford University, USA)
2014 Keynote speaker at Roche Continents (Salzburg, Austria; hosted by Hoffmann-LaRoche Ltd.)
2014 Physical Chemistry Seminar (Caltech, USA; host Prof. Thomas Miller III)
2014 Faraday Discussion on Molecular Simulation and Visualization (University of Nottingham, UK)
2014 Centre for Computer Research in Music and Acoustics (Stanford University, USA)
2014 Curiosity^3 Science & Aesthetics lecture series (Columbia University, USA)
2013 Chemistry Dept. Seminar (Cardiff University, UK; host Prof. Peter Knowles)
2013 International Transatlantic Frontiers in Chemistry (Kloster Seeon, Bayern, Germany)
2013 International workshop on "The Role of Enzyme Dynamics and Catalysis" (Telluride, CO, USA)
2012 UK Many core Development Conference (Bristol, UK)
2012 Chemistry Dept Seminar (University of Santiago de Compostela, Spain; host Prof Saulo Vazquez)
2012 Combustion Institute Seminar (Sandia National Labs, Livermore, USA; host Dr. David Chandler)
2011 Physical chemistry seminar (UW-Madison, USA; host Prof. Fleming Crim)
2011 Chemical Dynamics group meeting (Argonne National Labs, USA; host Dr. Stephen Pratt)
2011 CHARMM developer conference, (UW-Madison, USA; host Prof. Martin Karplus)
2010 NSF Partnerships in International Research and Education meeting (University of Santiago de Compostela, Spain; Host Prof. Bill Hase)
2010 International Multiscale Molecular Modeling Conference (University of Edinburgh, UK)

2009 Kinetics Seminar at Accelrys Inc. (Cambridge, UK)

SELECTED ARTISTIC/CULTURAL EXPOSURE

2018 (Sept)	University of Bristol Arts Faculty, *Figuring*, (Bristol, UK)
2017 (Jun)	Modern Art Oxford, *Sculpting the Invisible World*, (Oxford, UK)
2017 (Mar)	London Science Museum, *Multi-person VR & Molecular Aesthetics* (London, UK)
2017 (Mar)	Arnolfini Contemporary Art Installation, *Molecular Aesthetics* (Bristol, UK)
2017 (Jan)	Transmediale Digital Arts Festival, Elusive Identities @Art-Science Node Berlin, *Multi-person VR & Molecular Aesthetics* (Berlin, Germany)
2017 (Jan)	Barbican Open Lab Residency, *Multi-person VR & Molecular Aesthetics* (London, UK)
2015 (Jun)	Gordon Craig Theatre, *Hidden Fields*, Stevenage (UK)
2015 (Mar)	Z-Space, *Hidden Fields*, San Francisco (CA, USA)
2015 (Mar)	Stanford Art Gallery, *Hidden Fields*, Stanford University (CA, USA)
2015 (Feb)	Bhutan International festival, *danceroom Spectroscopy* public installation on the invitation of the Bhutanese Royal Family, Thimphu (Bhutan)
2014 (Sept)	Stanford Art Gallery, *danceroom Spectroscopy* public art installation, Stanford University (USA)
2014 (Aug)	Salzburg International Festival, *Hidden Fields* (invited as part of the Roche Continents Art-Science Programme), Salzburg (Austria)
2014 (Jul)	Bristol Proms, *Hidden Fields*, Bristol Old Vic Theatre, Bristol (UK)
2014 (Apr)	Digital Dance Festival, *Hidden Fields public workshop*, University of Bedford (UK)
2014 (May)	Leonardo Arts & Science festival, *danceroom Spectroscopy* public installation, San Jose (CA, USA)
2014 (Mar)	Barbican Arts Centre; *danceroom Spectroscopy* public installation and *Hidden Fields* performance, London (UK)
2014 (Jan)	SoundImageSound festival, University of the Pacific, *Molecular Music*, Stockton (CA, USA)
2014 (Jan)	ZKM | Centre for Art and Media Technology, *danceroom Spectroscopy* public installation and *Hidden Fields* performance, Karlsruhe (Germany)
2013 (Nov)	Waterman's Theatre, *Hidden Fields* performance, London (UK)
2013 (Nov)	Bath Spa University, 'Seeing Sound Festival', *Hidden Fields* performance, Bath (UK)
2013 (Oct)	Passenger shed, 'dSFest 360' *danceroom Spectroscopy* public installation and *Hidden Fields* performance, Bristol (UK)
2013 (Jul)	Bristol Proms, The Old Vic Theatre, *danceroom Spectroscopy* installation in collaboration with violinst Nicola Bendetti, Bristol (UK)
2013 (Jun)	World Science Festival, *danceroom Spectroscopy* installation, New York City (NY, USA)
2013 (Mar)	Big Bang Fair, *danceroom Spectroscopy* installation, London (UK)
2013 (Feb)	Kinetica Art Fair, *danceroom Spectroscopy* installation, London (UK)
2012 (Nov)	Barbican Arts Centre, *danceroom Spectroscopy* public installation and *Hidden Fields* performance, London (UK)
2012 (Aug)	London 2012 Olympics, *danceroom Spectroscopy* public installation and *Hidden Fields* performance, London (UK)
2012 (Jul)	Arnolfini Art Gallery, *danceroom Spectroscopy* public installation and *Hidden Fields* performance, (Bristol) UK
2012 (Jun)	Arnolfini Art Gallery, residency to develop the *Hidden Fields* performance, Bristol (UK)
2011 (Aug)	Shambala Arts Festival, *danceroom Spectroscopy* installation, Northhamptonshire (UK)
2011 (Aug)	Arnolfini Art Gallery, *danceroom Spectroscopy* public installation, Bristol (UK)
2011 (Jun)	Arnolfini Art Gallery, residency to develop *danceroom Spectroscopy*, Bristol (UK)
2011 (May)	Sonar Digital Arts Festival, *danceroom Spectroscopy* public installation, Barcelona (Spain)
2011 (Mar)	Changing Perspectives Arts/Science Festival, *danceroom Spectroscopy* installation, Bristol (UK)