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Dr Alan R.T. Spencer
BSc PhD DIC FLS

4 Woodberry Close
Chiddingfold
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Surrey GU8 4SF

Curriculum vitae

Summary

I'm a PhD graduate of Imperial College London with 7 years teaching experience within the field of geoscience. My research has focused on non-destructive methodologies, employing novel techniques (e.g. synchrotron radiation), to elucidate the anatomical detail within fossil flora—leading to a better understanding of the evolutionary developments and past ecosystems while maximising recoverable data.

Education

PhD & DIC | 2010–2016 | Imperial College London

- Thesis Title: "Multiple Approaches in Tomography of Palaeobotanical Specimens" specializing in non-destructive sampling techniques and 3D modeling of acquired dataset for the advancement of palaeobotanical taxonomy.
- Supervisor: Dr. Mark D. Sutton (Imperial College London); Additional supervisor: Dr. Jason Hilton (University of Birmingham)

BSc (Hons) | 2003–2006 | University of Birmingham

- Degree: Geology & Archaeology JH
- Class: 2:1

A-Levels/GCSEs | 1997–2002

- 4 x A-levels (Mathematics, Physics, Chemistry, General Studies), 2x AS-level (Latin, French)
- 11 x GCSEs

Previous Employment

Lecturer (external) | Imperial College London | Oct 2014–Jul 2017

- Lecture on the *Graphics and Statistics for Geoscientists* course with responsibility for designing, delivering, and examining the Graphics portion.
- Staff member on both the 1st Year and 2nd Year geology field courses to Spain.

Trustee and Council Member | The Palaeontological Association | Dec 2013–Present

- Internet Officer on Council for The Palaeontological Association and international charity based in the UK promoting the advanced of palaeontological research and allied sciences.

Graduate Teaching Assistant (GTA) | Imperial College London | Oct 2009–Sep 2014

- GTA for a variety of courses at undergraduate level. These included: Structural Geology 1, Field geology 1, Life and Earth History, Stratigraphy and Life, Palaeontology, Introduction to Field Geology, Graphics and Statistics for Geoscientists, Pyrenees field course, Southern Spain field course.

Consultant | Self-Employed | Sep 2006–Jul 2017

- Designer/maintainer of the custom departmental VLE and administrative student/staff database (ESESIS) for the Department of Earth Science and Engineering at Imperial College London.

Deputy manager (Dairy) | Secrets Ltd. | Sep 2002–Sep 2003

- Food retailer at the Secrets Farm Shop, Milford, in charge of the dairy counters. Roles included day-to-day sales, stock ordering, producer and wholesale relationship coordination, and staff allocation.

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Owner (Partner) | RT Web Design | Aug 1997–Mar 2006

- Small company specialising is internet website design, digitalisation of records, online databases. Clients included parish councils, estate agents, and local organisations.

Teaching Summary

Lecturing and teaching undertaken in the Department of Earth and Engineering at Imperial College London (2010-2017):

- 2014-present: Graphics and Statistics for Geoscientists (Lecturer)
- 2012-present: Year 2 Pyrenees field course (GTA/Lecturer)
- 2010-present: Year 1 Southern Spain field course (GTA/Lecturer)
- 2010-2014: Graduate Teaching Assistant (GTA) for the following geology courses:
  Structural Geology 1, Field geology 1, Life and Earth History, Stratigraphy and Life, Palaeontology, Introduction to Field Geology, Graphics and Statistics for Geoscientists

Professional Bodies

- The Palaeontological Association—Member (2005-present) and Internet Officer and Charitable Trustee (2013-present)
- The International Organisation of Palaeobotany—Member (2006-present), Internet Officer (2006-2016)
- The Linnaean Society of London—Fellow (2010–present)
- Botanical Society of America—Member (2014–present)
- Remote Sensing & Photogrammetry Society—Member (2017–present)

Scientific Publications, Posters and Presentations

Publications

- Strullu-Derrien C, Dernard S, **Spencer ART**, Remussat L, Kenrick P, Derrien D. In preparation. Structural and geochemical characterization of the earliest woody plant. *Geology*.
- **Spencer ART**, Strullu-Derrien, Ducassou C. In preparation. Photogrammetry: preserving for future generations an important fossil site situated in Maine-et-Loire (France). *Comptes rendus*.
- Bertini M, Ball AD, Mellish C, Burgio L, Shah B, Pretzel B, Blagoderov V, Goral T, Sykes D, Summerfield R, Steart DC, Garwood RJ, **Spencer ART**, Ross A, Penney D. Submitted. Is amber altered by microCT or confocal microscopy studies? A risk assessment using optical microscopy, FTIR and Raman spectroscopy. *Studies in Conservation*.
- Strullu-Derrien C, **Spencer ART**, Goral T, Dee J, Honegger R, Kenrick P, Longcore J, Berbee M. Accepted. New insights into the evolutionary history of Fungi from a 407 million year old Blastocladiomycota-like fossil showing a complex hyphal thallus. *Philosophical Transactions of the Royal Society B: Biological Science.*
- **Spencer ART**, Garwood RJ, Rees AR, Raine, RJ, Rothwell GW, Hollingworth NTJ, Hilton J. 2017. New insights into Mesozoic cycad evolution: an exploration of anatomically preserved Cycadaceae seeds from the Jurassic Oxford Clay biota. *PeerJ* 5:e3723. http://dx.doi.org/10.7717/peerj.3723
- Wang S-J, Bateman RM, **Spencer ART**, Shao L, Wang J, Hilton J. 2017. Anatomically preserved "strobili" and leaves from the Permian of China (Dorsalistachyaceae, fam. nov.) broaden knowledge of Noeggerathiales and constrain their possible taxonomic affinities. *American Journal of Botany*, **104**, 127–149. http://dx.doi.org/10.3732/ajb.1600371.
- Garwood RJ, Dunlop JA, Selden PA, **Spencer ART**, Atwood RC, Vo NT, Drakopoulous M. 2016. Almost a spider: a 305-million-year-old fossil arachnid and spider origins. *Proceedings of the Royal Society of London B: Biological Sciences*, **283**, 20160125. http://dx.doi.org/10.1098/rspb.2016.0125.
- **Spencer ART**, Mapes G, Bateman RM, Hilton J, Rothwell GW. 2015. Middle Jurassic evidence for the origin of Cupressaceae: A paleobotanical context for the roles of regulatory genetics and development in the evolution of conifer seed cones. *American Journal of Botany*, **102**, 942-961, http://dx.doi.org/10.3732/ajb.1500121.

- Steart DC, **Spencer ART**, Garwood RJ, Hilton J, Munt MC, Needham J, Kenrick P. 2014. X-ray Synchrotron Microtomography of a silicified Jurassic Cheirolepidiaceae cone: revealing and reconstructing the internal structure of an extinct conifer. *PeerJ*. http://dx.doi.org/10.7717/peerj.624.
- **Spencer ART**, Wang S-J, Dunn MT, Hilton J. 2013. Species of the medullosan ovule *Stephanospermum* from the Lopingian (late Permian) floras of China, *Journal of Asian Earth Sciences*, **76**, 59-69. https://doi.org/10.1016/j.jseaes.2013.07.030
- **Spencer ART**, Hilton J, Sutton MD. 2013. Combined methodologies for three-dimensional reconstruction of fossil plants preserved in siderite nodules: *Stephanospermum braidwoodensis* nov. sp. (Medullosales) from the Mazon Creek lagerstätte, *Review of Palaeobotany and Palynology*, **188**, 1-17. https://doi.org/10.1016/j.revpalbo.2012.09.001
- Garwood RJ, **Spencer ART.** 2011. The geology and terrestrial life of the Carboniferous, *Deposits Magazine*, **28**, 38-47. [not peer-reviewed]

Posters

- Bell RE, Brooke S, Genge MJ, Gorman G, Mason PJ, Mitchell H, Passmore E, Roda-Boluda DC, Rood D, **Spencer ART**, Watkins S., Whittaker AC. 2017. Enhancing the student experience: using UAV imagery and DEMs for virtual field analysis and visualisation. *RSPSoc Annual Meeting*, London.
- **Spencer ART**, Stullu-Derrien C. 2017. Photogrammetry: preserving for future generations an important fossil site situated in Maine-et-Loire (France). *RSPSoc Annual Meeting*, London.
- Strullu-Derrien C, Le Héisse A, Goral T, **Spencer ARTS**, Kenrick P, Trewin N. 2017. New microfossil from the Lower Devonian Windyfield Chert hot-spring influenced setting, Aberdeenshire, Scotland. *The Rhynie Chert: our earliest terrestrial ecosystem revisited, Royal Society Discussion Meeting*.
- Bertini M, Ball AD, Mellish C, Burgio L, Shah B, Pretzel B, Troalen L, Blagoderov V, Goral T, Sykes D, Summerfield R, Steart DC, Garwood RJ, **Spencer ART**, Ross A, Penney D. 2016. Conservation vs investigation of amber: A risk assessment to determine whether amber is altered by micro-CT or confocal microscopy studies. *The International Conference on Fossil Insects, Arthropods and Amber (Fossils x3), Edinburgh*.
- **Spencer ART**, Stullu-Derrien C. 2016. Photogrammetry: preserving for future generations an important fossil site situated in Maine-et-Loire (France). *The Palaeontological Association Annual Meeting*, Lyon, France.
- Bertini M, Ball AD, Mellish C, Burgio L, Shah B, Pretzel B, Blagoderov V, Goral T, Sykes D, Summerfield R, Steart DC, Garwood RJ, **Spencer ART**, Ross A, Penney D. 2014. Conservation vs investigation of amber: A risk assessment to determine whether amber is altered by micro-CT or confocal microscopy studies. *Society for the Preservation of Natural History Collections (SPNHC) Cardiff*.
- **Spencer ART**, Hilton J, Sutton MD. 2011. Anatomical 3D X-Ray Micro Tomography reconstructions: Maximising palaeobotanical data capture through preliminary non-destructive techniques. *GSEP2011, Imperial College London.*
- **Spencer ART**, Hilton J, Sutton MD. 2010. Anatomical 3D X-Ray Micro Tomography reconstructions: Maximising palaeobotanical data capture through preliminary non-destructive techniques. *The Palaeontological Association Annual Meeting.*
- **Spencer ART**, Sutton MD, 2010. 3D X-Ray Microtomography reconstructions: an important preliminary tool for palaeobotanists. *IPC3, London*.

Presentations

- Garwood R, Sutton MD, Knight C, Gomez G, **Spencer ART**. 2017 (accepted). Simulating evolution in space and time. *The Palaeontological Association Annual Meeting (Imperial College London, UK)*.
- Strullu-Derrien C, Bernard S, **Spencer ART**, Remusat L, Kenrick P, Derrien D. 2017. New results on the fine structure and chemical composition of the tracheids of the earliest woody plant *Armoricaphyton chateaupannense* using synchrotron-based scanning transmission X-ray. *XIX International Botanical Congress, Schengen.*
- **Spencer ART**, Kenrick P, Steart DC, Garwood RJ, Hilton J, Munt MC, and Needham J. 2014. An exceptional three-dimensionally preserved *Pararaucaria* (Cheirolepidiaceae) ovuliferous cone from the late Jurassic of Southern England: non-destructive recovery of full anatomical and histological detail using Diamond Light Source synchrotron. *The Palaeontological Association Annual Meeting* (Leeds University, UK)

- Steart DC, **Spencer ART**, Garwood RJ, Hilton J, Munt MC, Needham J, and Kenrick P. 2014. X-ray Synchrotron Microtomography of a silicified Jurassic Cheirolepidiaceae (Conifer) cone: histology and morphology of *Pararaucaria collinsonae* sp. nov. *Palaeonbotany Specialist Group (Linnean Society, UK)*.
- **Spencer ART**, Kenrick P, Steart DC, Garwood RJ, Hilton J, Munt MC, and Needham J. 2014. An exceptional three-dimensionally preserved *Pararaucaria* (Cheirolepidiaceae) ovuliferous cone from the late Jurassic of Southern England: non-destructive recovery of full anatomical and histological detail using Diamond Light Source synchrotron. *EPPC 2014 (Padua, Italy)*.
- Wickens ZJ, **Spencer ART**, Hilton J, Sutton MD. 2012. Tomography old and new: comparison of 3D reconstruction techniques for fossil plants. *IPC XIII / IOPC IX (Tokyo, Japan)*.
- **Spencer ART**, Hilton J, Suttton MD. 2011. A novel Carboniferous ovule elucidated through a combined methodology for three-dimensional reconstruction. *The Palaeontological Association Annual Meeting.*
- **Spencer ART**, Sutton MD. 2010. 3D X-Ray Microtomography Reconstructions: an Important Preliminary Tool for Palaeobotanists. *The Linnean Society of London: Palaeobotany Specialist Group Meeting*.

Grants/Funding

- 2017 – Swiss Light Source, TOMCAT experiment 20161489, for "*Comparative anatomy of early fossil woods: helping to resolve the origin of fungal decay*", Strullu-Derrien C, **Spencer ART**, Badel Eric, Cochard H, Garwood RG. This project focused on multiscale synchrotron X-ray tomographic microscopy (SRXMT) of fossil woods of varying ages. Allowing the anatomical study of early wood cell-walls, which is a prerequisite to further studies on fungal decay in wood. (8 shifts | Value: £50K*)
- 2016 – Research grant from Fondation Mécène & Loire, for "*Quand les plantes poussaient en climat tropical en Anjou. Valorisation du patrimoine paléobotanique*", C. Strullu-Derrien, Cochard H, Badel E, **Spencer ART**, Derrien D, Remusat L, Bernard S, Kenrick P, Cleal CJ, Mellier B. Project looking at three floral time periods—Devonian, Carboniferous, and Eocene—within the geological setting of Angers, France, involving 3D reconstruction of fossils and whole sites from UVA aerial surveys. (Value: 10.4K EUR)
- 2013 - Diamond Light Source, I12 Beamtime experiment EE9244, for "*Unravelling angiosperm origins through tomography of historically important Bennettitalean fossils*", Hilton J, **Spencer ART**, Garwood R. Project using synchrotron imaging of historically important holotype museum specimens from the Hugh Miller fossil collection in Edinburgh, figured in his pioneering 1857 book 'Testimony of the Rocks'. (9 shifts | Value: £57.5K*)
- 2012 - Diamond Light Source, I12 Beamtime experiment EE7697. Sutton MD, Rahman I, Garwood RG, **Spencer ART**. (8 shifts | Value: £51K*)
- 2010 - The Paleontological Association grant. **Spencer ART**. Funded the following during PhD: CT scanning of exceptionally preserved fossil seeds, travel to China to work with colleagues, plus travel to conferences to disseminate the results. (Amount: £5k)

*values based REF data provided by Diamond Light Source/PSI Swiss Light Source.

Scientific/Educational Outreach

- The Palaeontological Association Annual Meeting 2017—Co-organizer of the 2017 meeting, center piece of the Association's year, to be held at Imperial College London in December.
- European Coalfields Conservation Opportunies (ECCO)—Founding member of a new initiative to link up the growing number of geo-heritage projects in Europe, aiming to provide a network to represent individual projects when seeking funding from regional, national, and EU bodies. http://www.coalfields.eu (2017–present)
- Palaeontology[online]—founding editor and webmaster. Palaeontology[online] is an outreach website aimed at the general public show casing a wide range of palaeontological subject areas written by leading figures with the field. To date we have published 72 monthly articles, covering a wide range of topics from 'The history of dinosaur palaeoart' to 'Patterns in Palaeontology: Environments of the Cambrian explosion'. http://www.palaeontologyonline.com (2010–Present)
- Imperial Festival—annual festival show-casing the best of the university. Representative for the Department of Earth Science & Engineering with an interactive stand demonstrating 3D reconstruction of fossilized material through a variety of techniques.

- Lyme Regis and Yorkshire Fossil Festivals—providing live demonstrations and presentations as part of The Palaeontological Association outreach events (2015–present).

Other

Coding Languages and Framework Competencies

- Internet related: PHP (OOP and non-OOP), JavaScript, MySQL, HTML, CSS, SASS.
- Computational/data related: Python, C, C++, R, QT.
- Frameworks and CMS: Drupal 7/8, WordPress, jQuery/UI, Bootstrap.

Hobbies and Interests

- Outdoor: Rock Climbing, Hiking/trekking (lowland and mountains), Fossil/rock collecting.
- Sports: Badminton, Squash, Canoeing, Scuba Diving, Skiing.
- Other: Photography (artistic and scientific), Computer programming/coding (apps, websites), History & historical sites (National Trust member), Horticulture (RHS member), Theatre production (backstage lighting/sound/set design).