

CURRICULUM VITAE 11TH JUNE 2014

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Degrees

1973 Ph.D. Geochemistry/Ore Geology – University of Durham, England
1963 B.Sc. Geology/Petrology (with 2 years chemistry, 1 year physics) University of London

Positions held

2013- Supervisor, Planetary Chemistry and Astrobiology Group, JPL
2011- Research Scientist V, JPL/California Institute of Technology, USA
2006-2009 NASA Senior Research Fellow, JPL/California Institute of Technology, USA
2005-2011 Distinguished Visiting Scientist, JPL/California Institute of Technology, USA
2004-2005 CNRS Professor, University of Grenoble, France
1999-2004 Dixon Chair of Research, Scottish Universities Environmental Research Centre
1990-1999 Professor of Applied Geology, Glasgow University, Glasgow, Scotland
1983-1989 Departmental Chair & Professor, Applied Geology Department Strathclyde University
1969-1983 Lecturer, Reader, Applied Geology Department, Strathclyde University, Glasgow
1965-1965 Geologist (party chief), Falconbridge Nickel Mines, Canada
1963-1965 British United Nations Association Geologist, Geological Survey, Solomon Islands
1958-1959 Works Chemist Improver, Howards of Ilford Limited, London, England

Secondments and Sabbaticals

University of Ghana, Legon, 1971; Ethiopian Government, carbonate assessment, 1973;
University of Minnesota, Minneapolis, 1976; University of Tasmania, Hobart, 1980;
Washington University, St Louis and Oregon State University, Corvallis, 1992; Waikato
University, Hamilton, New Zealand, 1993)

Awards and Honours

2009 William Smith Medal, Geological Society of London, Contributions to Applied Geology
1986 Visiting Lecturer Tour to North America, Society for Economic Geology
1984 Distinguished Lecturer for 1984; Institution of Mining and Metallurgy
1984 Distinguished Lecturer for 1984; Society of Applied Geologists
1980 Arthur Claudet Prize, Institution of Mining and Metallurgy, Paper: N-S Geofractures

h-index 40; i10-index 83 google scholar

Recent evidence of esteem

2014 NASA Nationwide with Dr Mike Russell, <http://solarsystem.nasa.gov/nnw/home.cfm>
2014 Linus Pauling Memorial Lecture, Portland
2013 The Search for the Origin of Life, Montana PBS Film

- 2012-4 National Academies Standing Committee on Astrobiology and Planetary Sciences
 2012 Opening Lecture, Royal Society of London, Energy Transduction and Genome Function
 2012 NASA Astrobiology Educator Workshop: Exploring the Origin of Life, Georgia Tech
 2012 NASA funded film "Life Quickens" by Danny Shmidt, <http://vimeo.com/39608408>
 2012 Lars G. Ljungdahl lecture, Beating the Wood-Ljungdahl Pathway to the Origin of Life, University of Georgia
 2011 Foundational Questions Institute (FQXi) "Setting Time Aright", Bergen, Norway
 2011 Royal Swedish Academy, "Origin of Life and Molecular Evolution", Stockholm, Sweden
 2011-2 Convener, NAI's Thermodynamics, Disequilibrium and Evolution
 2010 Plenary speaker at the IEEE annual meeting, Montana
 2009 TEDx Art & Science LA – Dynamic emergent structures in Art and Science
 2010 Panel member, *World Science Festival*, "Search for Life in the Universe", New York
 2009 *Nature*, research feature in 459, 316-319 (Whitfield; Nascence Man)
 2009 *Der Spiegel* 11th June, 122-124 (Motor des Lebens)
 2007 *PNAS*, 104, 9105, (Koonin; An RNA-making reactor for the origin of life)
 2000 *BBC HORIZON* (Life on Mars)

Publications

- Russell, M.J., Barge, L.M., Bhartia, R., Bocanegra, D., Bracher, P.J., Branscomb, E., Kidd, R., McGlynn, S.E., Meier, D.H., Nitschke, W., Shibuya, T., Vance, S., White, L., & Kanik, I. (2014) The drive to life on wet and icy worlds. *Astrobiology* 14, 308-343. <http://online.liebertpub.com/doi/full/10.1089/ast.2013.1110>
- Ducluzeau, A-L., Schoepp-Cothenet, B., Baymann, F., Russell, M.J. & Nitschke, W. 2014, Free energy conversion in the LUCA: Quo vadis? *Biochim. Biophys. Acta, Bioenergetics*, <http://dx.doi.org/10.1016/j.bbabi.2013.12.005>
- Barge, L.M., Doloboff, I.J., Russell, M.J., VanderVelde, D., White, L.M., Stucky, G.D., Baum, M.M., Zeytounian, J., Kidd, R., & Kanik, I. 2014, Pyrophosphate synthesis in iron mineral films and membranes simulating prebiotic submarine hydrothermal precipitates. *Geochim. Cosmochim. Acta*, <http://dx.doi.org/10.1016/j.gca.2013.12.006>
- Shibuya, T., Tahata, M., Ueno, Y., Komiya, T., Takai, K., Yoshida, N., Maruyama, S., & Russell, M. J. (2013). Decrease of seawater CO₂ concentration in the Late Archean: An implication from 2.6 Ga seafloor hydrothermal alteration. *Precambrian Research*, 236, 59-64.
- Shibuya, T., Yoshizaki, M., Masaki, Y., Suzuki, K., Takai, K., & Russell, M. J. (2013). Reactions between basalt and CO₂-rich seawater at 250 and 350° C, 500bars: Implications for the CO₂ sequestration into the modern oceanic crust and the composition of hydrothermal vent fluid in the CO₂-rich early ocean. *Chemical Geology*, 359, 1-9.
- Russell, M.J., Nitschke, W. & Branscomb, E. 2013, The inevitable journey to being. *Phil. Trans. R. Soc. Lond. B. Biol. Sci.*, 368, 20120254. <http://dx.doi.org/10.1098/rstb.2012.0254>
- Nitschke, W. & Russell, M.J. 2013, Beating the acetyl coenzyme-A pathway to the origin of life. *Phil. Trans. R. Soc. Lond. B. Biol. Sci.* 368, 20120, <http://dx.doi.org/10.1098/rstb.2012.0258>.
- Nitschke, W., McGlynn, S.E., Milner-White, E.J., & Russell, M.J., 2013, On the antiquity of metalloenzymes and their substrates in bioenergetics. *Biochim. Biophys. Acta, Bioenergetics*, 1827, 871-881.
- Branscomb, E. & Russell, M.J. 2013, Turnstiles and bifurcators: the disequilibrium converting engines that put metabolism on the road. *Biochim. Biophys. Acta, Bioenergetics* 1827, 62-78.

- Schoepp-Cothenet, B., van Lis, R., Atteia, A., Baymann, F., Capowicz, L., Ducluzeau, A-L., Duval, S., ten Brink, F., Russell, M.J. & Nitschke, W. 2013 On the universal core of bioenergetics. *Biochim. Biophys. Acta, Bioenergetics*, 1827, 79-93.
- Shibuya, T., Yoshizaki, M., Masaki, Y., Suzuki, K., Takai, K., & Russell, M.J. 2013, Reactions between basalt and CO₂-rich seawater at 250 and 350° C, 500 bars: Implications for the CO₂ sequestration into the modern oceanic crust and the composition of hydrothermal vent fluid in the CO₂-rich early ocean. *Chemical Geology*, 359, 1-9.
- Barge, L.M., Doloboff, I.J., White, L.M., Russell, M.J., Kanik, I. 2012, Characterization of Iron-Phosphate-Silicate Chemical Garden Structures. *Langmuir*, 28, 3714–3721.
- McGlynn, S.E., Kanik, I., Russell, M.J. 2012, Modification of simulated hydrothermal iron sulfide chimneys by RNA and peptides. *Philos. Trans. R. Soc. Lond. A Phys. Sci.* 370, 3007-3022.
- Schoepp-Cothenet, B., van Lis, R., Philippot, P., Magalon, A., Russell, M.J. and Nitschke, W. (2012). The ineluctable requirement for the trans-iron elements molybdenum and/or tungsten in the origin of life. *Nature Scientific Reports*, 2 :263 DOI :10.1038.
- Nitschke, W., Russell, M.J. 2011, Redox bifurcations; how they work and what they mean to extant life and (potentially) to its inorganic roots. *BioEssays*, 34, 106–109.
- Simoncini, E., Russell, M.J., Kleidon, A. 2011, Modeling free energy availability from Hadean Hydrothermal Systems to the first metabolism. *Origins Life Evol. Bios.*, 41, 529-532.
- Milner-White, E.J., Russell, M.J. 2011, A peptide era heralding the emergence of life. *Genes* 2, 671-688
- Mielke, R.E., Robinson, K.J., White, L.M., McGlynn, S.E., McEachern, K., Bhartia, R., Kanik, I., Russell, M.J. 2011, Iron-sulfide-bearing chimneys as potential catalytic energy traps at life's emergence. *Astrobiology*, 11, 933-950.
- Schoepp-Cothenet, B., Nitschke, W., Barge, L.M., Ponce, A., Russell, M.J. and Tsapin, A.I. 2011, A Bacterium That Can Grow by Using Arsenic Instead of Phosphorus. *Science*, 332, 1149, DOI: 10.1126/science.1201438
- Russell, M.J. 2011, The origin of life. In *Encyclopaedia of Geobiology*, Reitner, J and Thiel, V. Singer, Dordrecht, The Netherlands, 701-716.
- Russell, M.J. (editor) 2011, Origins, Abiogenesis and the search for Life. *Cosmology Science Publishers*, Cambridge, MA, pp. 487.
- Mielke, R.E., Russell, M.J., Wilson, P.R., McGlynn, S., Coleman, M., Kidd, R. & Kanik, I. 2010, Design, Fabrication and Test of a Hydrothermal Reactor for Origin- Of- Life Experiments, *Astrobiology*, 10, 799-810.
- Russell, M.J., Hall, A.J. and Martin, W. 2010, Serpentinization and its contribution to the energy for the emergence of life. *Geobiology*, 8, 355-371.
- Russell, M.J. 2010 The hazy details of early Earth's atmosphere. *Science*, 330, 754.
- Milner-White, E.J. and Russell, M.J. 2010, Polyphosphate-Peptide Synergy and the Organic Takeover at the Emergence of Life. *Journal of Cosmology*, 10, 3217-3229.
- Nitschke, W. and Russell, M.J. (2010). Just Like the Universe the Emergence of Life had High Enthalpy and Low Entropy Beginnings. *Journal of Cosmology*, 10, 3200-3216.
- Yung, Y.L., Russell M.J., Parkinson, C.D. 2010, The search for life on Mars. *Journal of Cosmology*, 5, 1121-1130.
- Russell, M.J., Kanik, I. 2010, Why Does Life Start, What Does It Do, Where Will It Be, And How Might We Find It? *Journal of Cosmology*, 5, 1008-1039.
- Russell, M.J. and Hall, A.J. 2009, A hydrothermal source of energy and materials at the origin of life. In "Chemical Evolution II: From Origins of Life to Modern Society". *American Chemical Society*, pp. 45-62.

- Nitschke, W. and Russell, M.J. 2009, Hydrothermal focusing of chemical and chemiosmotic energy, supported by delivery of catalytic Fe, Ni, Mo/W, Co, S and Se, forced life to emerge. *Journal Molecular Evolution* 69, 481-496.
- Ducluzeau, A-L, van Lis R., Duval S., Schoepp-Cothenet B., Russell, M.J., Nitschke W. 2009, Was nitric oxide the first strongly oxidizing terminal electron sink. *Trends in Biochemical Sciences* 34, 9-15.
- Martin, W., Baross, J., Kelley, D., Russell M.J. 2008, Hydrothermal vents and the origin of life. *Nature Reviews, Microbiology* 6, 806-814.
- Russell, M.J. 2008, On the emergence and early evolution of life. *Nova Acta Leopoldina*, 96, 45-52.
- Russell, M.J., Allen, J.F., Milner-White, E.J. 2008, Inorganic complexes enabled the onset of life and oxygenic photosynthesis. In *Energy from the Sun: 14th International Congress on Photosynthesis*, J.F. Allen, E. Gantt, J.H. Golbeck, B. Osmond (editors). Springer. 1193-1198.
- Milner-White, E.J., Russell, M.J. 2008, Predicting peptide and protein conformations in early evolution. *Biology Direct* 3, 3: doi:10.1186/1745-6150-3-3
- Russell, M.J. 2007, The alkaline solution to the emergence of life: Energy, entropy and early evolution. *Acta Biotheoretica*, 55, 133-179, Erratum at:- DOI 10.1007/s10441-007-9018-5
- Martin, W., Russell M.J. 2007, On the origin of biochemistry at an alkaline hydrothermal vent. *Philosophical Transactions, Royal Society of London (Ser.B)* 362, 1887-1925
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- Russell, M.J. 2007, Der heiße Ursprung des Lebens. *Spektrum der Wissenschaft*, January 2007, 73-81.
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- Russell, M.J., 1996. The generation at hot springs of ores, microbialites and life. *Ore Geology Reviews*, **10**, 199-214.
- Russell, M.J. 1996. Life from the depths. *Science Spectra*, **1**, no. 4, 26-31.
- Russell, M.J. 1995. Hot water and the emergence of life. *Open University Geological Society Journal*. **16**, no. 2, 9-11.
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- Russell, M.J., Couples, G.D. & Lewis, H. 1995. SEDEX genesis and super-deep boreholes: Can hydrostatic pressures exist down to the brittle-ductile boundary? In: *Mineral deposits: From their origin to their environmental impact*. J. Pasava B., Kribek & K. Zak eds, A.A. Balkema, Rotterdam, pp 315-318.
- Russell, M.J. & Hall, A.J. 1995. The emergence of life at hot springs: A basis for understanding the relationships between organics and mineral deposits. In: *Mineral deposits: From their origin to their environmental impact*. J. Pasava, B. Kribek & K. Zak eds, Balkema, Rotterdam, 793-796.
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Main ongoing collaborations

- Isik Kanik, Kevin Hand, Laurie Barge, Steve Vance, Takazo Shibuya, Richard Kidd, JPL, astrobiology/icy worlds, reactor and membrane experiments, methane/methyl sulfide synthesis/analysis and (hydro)magnesite microbialites
- Wolfgang Nitschke, (CNRS, Marseille/France), electron sinks and nitrogen oxide reduction.
- Elbert Branscomb (Institute for Genomic Biology, UIUC, Champaign-Urbana, IL, USA)

Disequilibria, free energy conversion, nanoengines
 James Milner-White (Glasgow University, UK), peptide/inorganic cluster interactions
 Dieter Braun, Center for Nanoscience, Ludwig Maximilians University Munich, Germany,
 How to create a Darwinian RNA machine from Monomers in a Hydrothermal Trap

Main invited lectures and lecture tours

- 2014 NASA Nationwide with Dr Mike Russell, <http://solarsystem.nasa.gov/nnw/home.cfm>
 2014 Linus Pauling Memorial Lecture, Portland
 2013 The Search for the Origin of Life, Montana PBS Film
 2013 III International Conference, Emergence in Chemical Systems. Anchorage, June
 2013 Engines of Life: Thermodynamic Pathways to Metabolism; Beyond Center for Fundamental Concepts in Science, Arizona State University,
 2013 Origins of Life through Serpentinization, SETI Institute
 2012 **Opening Presentation**, Energy transduction and genome function – an evolutionary synthesis, Royal Society London
 2012 Fourth **Annual Ljungdahl Lecture**, University of Georgia, Athens
 2012 Serpentinization: the engine that drove the onset of denitrifying methanotrophic acetogenesis at the emergence of life. AGU Annual Meeting: **Invited**.
 2012 University of Illinois
 2012 Presentation to Space Studies Board, The National Academies: Serpentinization and the Beating of the Acetyl Coenzyme-A Pathway to the Origin of life.
 2011 Foundational Questions Institute (FQXi) Setting Time Aright, Bergen, Norway
 2011 Royal Swedish Academy, Origin of Life and Molecular Evolution, Stockholm, Sweden
 2010 Astrobiology speaker and workshop participant, Lund University, Sweden
 2010 Panel member, World Science Festival, New York
 2010 National Center for Biotechnology, NIH, Bethesda, Maryland
 2010 Centro de Astrobiologia, CSIC-INTA, Madrid, Spain
 2010 **ABSCICON 2010, Organosynthesis in hydrothermal vent environments**, and panel member at ABSCICON
 2010 **Keynote address**, University of Durham, UK, Compartmentalization in the Origin of Life,
 2010 Invited presentation, NAI workshop, Dating early events in earth History, UCLA, March
 2010 **Plenary talk**, IEEE Aerospace Conference, Big Sky, Montana, March
 2009 **Opening lecture**, University Louisville, DARWIN 2009
 2009 TEDx lecture, Hollywood, LA, “Art and Science”.
 2008 Gordon Conference “Molecular Basis of Microbial One-Carbon Metabolism”, Maine
 2008 **International Year of Planet Earth**, invited lectures in Dublin and Kilkenny
 2008 Santa Fe Institute workshop, “Compartmentation, phase separation and the origin of life.”
 2008 The Committee on the Origins and Evolution of Life, NRC Washington
 2008 USC Viterbi School of Engineering, “How life began in our water world.”
 2008 American Chemical Society, 235th meeting, Chemical Evolution, New Orleans
 2008 Gordon Conference “Origin of Life”, Ventura
 2008 **Bennett Lecture**, University of Leicester 50th anniversary
 2008 **CosmoCaixa Science Museum in Barcelona** “The Beautiful Story of the Cosmos”.
 2007 **Plenary Lecture**, “Biosphere Origin and Evolution”, Greece
 2007 Invited lecture, 14th International congress of Photosynthesis, Glasgow, Scotland

- 2007 Invited lecture, Carnegie Institute, Washington
- 2007 Invited lecture, Emergence of Life, Max Planck Institute, Jena, Germany
- 2007 Invited lecture, Emergence of life – Los Alamos
- 2007 Invited lecture, Origin of life and oxygenic photosynthesis, UC Berkley
- 2006 **Keynote address**, Goldschmidt Conference, Abiotic-biotic transition, Melbourne, Australia
- 2006 Invited lecture, Santa Fe Institute, Origin of life, USA
- 2006 **Opening lecture**, Lecture series – University of Bremen, Origin and Evolution of Life
- 2006 **Keynote address**, Life in the Universe, IMA, Kolbe, Japan
- 2006 Invited lectures, Origin of life, University of Uppsala, Stockholm
- 2006 Invited Lecture, Early Evolution, Leopoldina Symposium, Bremen, Germany
- 2006 Invited lectures, NORDITA Astrobiology, Kittila, Finland
- 2005 Invited lectures, Origin of life, Chemical Physics, Earth Science, Caltech
- 2005 **Opening Lecture**, Origins and evolution of cells, Queen Mary College, London
- 2005 **Opening Lecture**, Astrobiology, NORDITA, Copenhagen
- 2005 **Keynote address**, Mineral Deposits Study Group, Ireland
- 2004 Invited lecture to Jet Propulsion Laboratory, Pasadena, USA
- 2004 Invited lectures, Astrobiology, UCL
- 2004 Invited lectures to ETH Zurich & LM University, Munich
- 2004 Invited lectures to CNRS Marseille, Grenoble & Paris Sud
- 2004 Invited lectures to Macquarie University Astrobiology & University of Tasmania
- 2004 **Opening Lecture**, Gordon Conference, Metals and Evolution, Maine, USA
- 2004 EGU, COSPAR, Paris, Hydrothermal Reactors and the Origin of Life
- 2003 Invited lectures, University of Arizona at Tempe and Tucson
- 2003 **Keynote speaker**, Fermor Conference, University of Wales
- 2003 British Association invited lecture
- 2002 Royal Society of Chemistry AGM invited lecture "Astrochemistry of life"
- 2002 The Kongsberg Seminar, Norway, invited lecture
- 2002 Invited lecture, University of Bergen
- 2001 Earth System Processes, GSA/GSL, Edinburgh, Convenor/speaker
- 2001 Invited lecture, Goldschmidt 2001, Mineral catalysts in organic synthesis, Virginia,
- 2001 British Association invited lecture
- 2001 Invited lecture ACS, Carbon dioxide in biogeochemistry, USA
- 2000 Invited Lecture, EMBO Symposium on Microbial Evolution.
- 2000 **Convener/Lecturer, Goldschmidt Conference**, Origin of Life, Oxford
- 1999 NASA Ames Research Center, Origin of Life/Exploring for Fossil Life on Mars.
- 1999 Invited lecture, Gordon Conference, Metals in Biology, Ventura, California.
- 1999 Invited Lecture, De La Beche Club, The Origin of Life.
- 1998 Invited lecture, GEOSCIENCE98, Life on other planets and the early Earth?
- 1998 Invited Lecture, Royal Astronomical Society, Planets outside the Solar System.
- 1998 Invited lecture, Life on Mars, British Interplanetary Society.
- 1997 **Keynote Address**, Giant Orebodies, Neves-Corvo Conference, University of Lisbon
- 1997 SEG-GSA Symposium, "Ore Deposits Through Time", Salt Lake City,
- 1996 International workshop, CIBA Evolution of hydrothermal ecosystems....
- 1996 **Keynote Address**, Thermophiles: University of Georgia, USA.
- 1995 Invited lecture, Open University Geological Society Meeting
- 1995 Invited lecture, University of Granada, Biomineral Patterns & Materials Science
- 1995 Lecturer, University of Granada Summer School on Origin of Life

- 1994 Invited lecture, British Association Meeting.
- 1994 **Keynote address**, 12th Australian Geological Congress.
- 1995 Invited lecture, Open University Geological Society Meeting
- 1995 Invited lecture, University of Granada, Biomineral Patterns & Materials Science
- 1995 Lecturer, University of Granada Summer School on Origin of Life
- 1993 Invited lecture tour, Universities in New Zealand.
- 1993 Invited lecture, Washington University, St. Louis, USA.
- 1992 Invited lecture, British Association Meeting.
- 1992 Invited lecture, Scientific Committee for Oceanographic Research, Sweden,
- 1992 Invited lectures, The Jagiellonian University, Krakow,
- 1991 **Co-organiser and speaker**, "The Inorganic-Organic Interface", Ross Priory, Scotland
- 1991 Invited lecture to Scientific Committee for Oceanographic Research, Oregon, USA.
- 1988 Invited lecturer, lead-zinc orebodies, University of Bilbao, Spain.
- 1988 **Review Lecture**, Economic Geology, Centennial meeting, Geol. Soc. America.
- 1988 Invited Senior Scientist, Sept-Oct. University of Oslo.
- 1989 **Distinguished** Lecturer, Institution of Mining & Metallurgy.
- 1989 **Review Seminar**, Mineral Deposit Models. Geological Society, London.
- 1987 **Keynote Speaker**, Mineral Deposit Research in the UK. GSL.
- 1987 Invited participant, Gordon Conference on Hydrothermal Geochemistry, USA
- 1986 Invited lecture, Earth Resource Research, Memorial University, Newfoundland.
- 1986 Visiting Lecture tour of North America, Society of Economic Geologists.
- 1986 Invited lecturer, Economic Geology Section, Geological Society of America A.G.M.
- 1986 **Principal Lecturer**, Institution of Geologists - A.G.M.
- 1986 **Closing Address**, VII Intern'l Assoc. on Genesis of Ore Deposits, Luleå, Sweden.
- 1984 Invited lecturer, 31st Inter Universities Geological Congress.
- 1983 Geological Association of Canada Short Course Lecturer,
- 1981 **"Prominent Geologist's"** Lecturer to Atlantic Geoscience Society of Canada and Lecture tour of the Maritime Provinces.
- 1980 Australian Academy of Sciences Lecturing Fund. A.N.U., C.S.I.R.O. Sydney, Adelaide, Townsville, Tasmania.
- 1980 **Keynote Speaker**, 4th Australian Geological Convention.
- 1977 **Royal Norwegian Foreign Office Guest Lecturer**, Universities in Norway.
- 1973 Invited lecturer, First Symposium, Metallogeneses & Plate Tectonics, Newfoundland.
- 1972 Invited lecturer, First Symposium on Implications of Continental Drift, Newcastle.

Recent grants

- 2013 \$190, JPL Research, Technology and development
- 2011-2013 \$360,730, JPL Research, Technology and development
- 2008-2013 \$7,500,000, Co-I, NASA: NAI "Icy Worlds" 2008-2012 (PI; Dr Isik Kanik)
- 2008-2010 \$300,000, Co-I NASA ROSES Astrobiology "Experimental test of an autogenic theory of the origin and earliest evolution of life" (PI; Isik Kanik)
- 1996-1999 £142,157, NERC -GR3/09926 Origin of life, Final report rated excellent

Outreach

- 2010-12 lectures to USC and MSU geobiology course students
 2009 TEDx lecture, Hollywood, LA, "Art and Science".
 2007 Discussions with Kansas teachers on teaching and evolution
 1992-2006 Lectures to Edinburgh School of Art
 2003 New Scientist
 2000 BBC HORIZON. Life on Mars
 1997 ITV Icon
 1996 Radio Scotland, Ores in Scotland
 1996 BBC 'Science Now', Origin of Life
 1996 BBC 5, Night Moves
 1996 BBC Scotland, The Usual Suspects
 1995 Radio Scotland, The Oceans
 1994 Radio Scotland, Origin of Mineral Deposits
 1993 BBC HORIZON, on the Origin of Life
 1993 Austrian TV, Origin of Life
 1988 Radio Scotland debate with Prof Thomas Gold on The Deep Gas Hypothesis
 1975 BBC News. Nuclear waste disposal
 Also, Open University Tutor, Lectures to amateur societies and young people's societies in Scotland, Numerous interviews with BBC and other radio stations

Main external committee and board membership

- 2012- National Academies Standing Committee on Astrobiology and Planetary Sciences
 2001-present Editorial Board of Astrobiology
 1999 British National Space Centre - Panel Member: Exobiology, Extremophiles and Habitats
 1992 Chairman, the NERC Review Committee, MSc Courses in Engineering Geology
 1992 Chairman, the NERC Review Committee, Extractive Industries Partnership Scheme
 1988-1992 Geological Sciences Research Grants & Training Awards Committee, the NERC
 1988-present Professional Affairs Committee, Institution of Mining & Metallurgy
 1988-1995 Editorial Board of the Institution of Mining & Metallurgy
 1988-1989 Chairman. Scottish Branch of the Institution of Mining & Metallurgy
 1982-1983 Scottish Universities Council on Entrance: Working Party on Geology
 1974-1980 Editorial Board of the Institution of Mining & Metallurgy

Teaching

Geochemistry, Metallogenesis, Plate Tectonics, Controversies in Geology, Origin of Life, Geochemical Exploration, Economic Geology Field Course, Mineral Exploration Fieldwork,

PhD supervision (since 1990)

- 2008-2013 Lauren White, UCSB, Investigating Inorganic Nanostructures for Heterogeneous Catalysis
 2007-2013 Randall Mielke, UCSB, Nanomaterials in the environment
 1988-1991 K Anderson (NERC) Genesis of the Giant Orebody at Navan, Ireland
 1990-1993 Daud Mohamad, Simulation of radionuclide waste disposal
 1990-1994 Veysel Zedef, Genesis of Turkish magnesite- stable isotopes

- 1992-1995 Helen Lewis, (NERC/Rio Tinto) Structural controls of Irish mineral deposits
1992-1996 Colin Ford, (NERC Case) Origin of the conglomerate goup ore, Navan, Ireland
1997 -2001 Rob Blakeman (NERC Case) Compositions and routes of fluids generating the Navan giant base-metal orebody
1998 -2003 Laiq Rahman, (NERC) Geochemistry of Emergent Life (with Dr Allan Hall)