

Curriculum Vitae
Jamie Richard Lead
Professor of Environmental Nanoscience and Risk,
Director of the Center for Environmental Nanoscience and Risk (CENR)
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Academic Qualifications: 1991. BSc. Hons., 1st Class, Environmental Science (University of Sussex).
1994. PhD. 'Proton and trace metal (Eu, Am-241) binding by humic substances in synthetic and natural fresh waters'. Lancaster University
2002. Postgraduate Certificate of Teaching and Learning in Higher Education. University of Birmingham.

Employment

2012 – present	Professor of Environmental Nanoscience and Risk, University of South Carolina, USA.
2012 – present	Director, Center for Environmental Nanoscience and Risk SmartState, University of South Carolina, USA
2015 – present	Founding Director and <i>ex officio</i> advisory board member Facility for the Environmental Nanoparticle Analysis and Characterisation (FENAC).
2015 – present	Honorary Professor in Environmental Nanoscience, University of Birmingham, UK
2012 – 2015	Adjunct Professor in Environmental Nanoscience, University of Birmingham, UK
2012-2015	Director, Facility for the Environmental Nanoparticle Analysis and Characterisation (FENAC)
2008 - 2012	Professor in Environmental Nanoscience, University of Birmingham
2006 - 2008	Reader in Aquatic Chemistry, University of Birmingham
2006 - 2007	Visiting Scientist, CSIRO Land and Water, Sydney, Australia
2004 - 2006	Senior Lecturer in Water Chemistry, University of Birmingham

2000 - 2004	Lecturer in Water Chemistry, University of Birmingham.
1999	Post-Doctoral Research Associate, Lancaster University, UK.
1998	Post-Doctoral Research Associate, University of Geneva, Switzerland.
1994 - 98.	Post-Doctoral Research Associate, Lancaster University, UK.

Editorial work

- Editor in Chief, NanoImpact (2015-)
- Editor, Environmental Chemistry (2010-2015)
- Member Editorial Board, Environmental Pollution
- Editor of five books published/in press by Wiley, Elsevier and Cambridge University Press.
- Guest editor of Environmental Science and Technology (2012) and Environmental Chemistry (2006 and 2009)

Professional Associations

- Chair, External Advisory Board, Nanosphere, Swedish consortium led by Gothenburg University. Formas funded. 2010-2015
- Member, External Advisory Board, US CEINT, Duke University. NSF/EPA funded. 2012-2016
- Member of Standing Expert Panel on Environmental Pollution for the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS) (2010-2013).
- Fellow of the Institute of Nanotechnology (FIoN)
- Fellow of the International Union of Pure and Applied Chemistry
- Member UK Government (DEFRA) Nanotechnologies Environmental Hazard and Risk Assessment Taskforce (2006-2012).
- Member UK Government (DEFRA) Advisory Committee on Hazardous Chemicals reconstituted as the Hazardous Substances Advisory Committee (2007-2012).
- Member of the NERC Peer Review College (2003-2007; 2008-2012).
- International Atomic Energy Agency Invited Expert, trace metal analysis in the environment, 2000 and 2002.

RESEARCH

The nanoscale (1-100 nm) has emerged as a key scientific and technological concept in recent years with the understanding that there are novel size-dependent properties which are not apparent at larger scales. Huge effort and resource have been extended to understanding and exploiting such properties in optics, electronics and other areas. This has led to important fundamental and applied research questions which my research attempts to answer. The fundamental research comes from one simple question: *are there novel uses and consequences for the environment and health which stem from the unique properties of nanoscale materials?* Answering this question has required a detailed consideration of a range of physical, chemical, biological and regulatory issues relevant to nanomaterials (NMs) and these are detailed below. The applied research comes both from the scale of the current and future nanotechnology industry and this novelty at the nanoscale. Given the amount and growth in research and development funding and the growth in current markets, environmental and human exposure is large and growing. This in itself presents a risk and needs to be assessed and managed. However, the novel properties mean there is significant uncertainty regarding these questions. For instance, how do NMs behave and interact under environmental conditions? What are the important pathways for environmental transport? What factors govern their persistence and what are their ultimate sinks? Are there novel mechanisms of uptake and of toxicity? What are the human health consequences of such environmental exposure? Safe and sustainable development of the nanotechnology industry and its many attendant benefits require such uncertainties to be minimised and seen to be minimised. Emerging from these concerns has been a second major theme of my research: can nanomaterial applications and uses be developed in a manner which improves environmental health (*e.g.* remediation, sensing) and/or leaves a low environmental footprint (*e.g.* minimal energy or material inputs, use of low toxicity materials, use of abundant materials)? In addition to these nanomaterial implication, more recently my research has focussed on applications (oil, metal and organic remediation using polymer-coated magnetic and other ion oxide NMs; nanohybrids (metal-CNTs) to minimize biofouling and to understand fundamental issues of nanotoxicology (*e.g.* isotopically labelled 4 layered core-shell NMs).

My research aims to address these independent but linked challenges of fundamental and applied science. I have developed research group with the critical mass, expertise and technological base to do this effectively, first within the UK and latterly in the USA. Recognising the poor quality of most NMs, I have developed synthetic procedures to produce a range of tightly constrained inorganic NMs with varying physical-chemical properties including core-shell, materials, nanohybrids and isotopically labelled materials and NMs for remediation and sensing. In addition, my groups have the ability to fully characterise the physical and chemical properties such as size and surface chemistry. I have focussed on using non-perturbing preparation methods and a multi-method approach to metrology. Building on this, reference NMs developed have been used to probe environmental chemistry such as the development of nanoscale coatings (or coronas) of natural organic macromolecules in environmental systems and aggregation and transport in surface waters and in porous media. A substantial aspect of my research programme has involved understanding the biouptake and biological interactions of NMs and we have used bacteria and algae as model systems and collaborated substantially with the life science community to investigate impacts on invertebrate, fish and human systems. In particular, I have sought to investigate realistic systems and, in collaboration, use advanced molecular (omic) methods to understand novel mechanisms of action. I have advised and interacted with policy-makers, regulators and industry with a particular focus on links to the EU regulation REACH and how EU and US regulation develops nano-specific provisions. Related to this, research has investigated the ethical considerations related to new technology Commercial developments in the areas of synthesis and characterisation are on-going, especially in the remediation area.

Finally, my research group investigates naturally produced nanoparticles and colloids, in particular their chemistry and structure, interactions with pollutants such as trace metal and NMs and the subsequent change on pollutant biological impacts. This is a significant part of my research (ca 20-30% of total) and links strongly with my other research strands because of the effects of natural NMs on manufactured NM fate, biological effects and applications.

Specific research strands include:

- 1) Understanding the relationship between physical and chemical properties of nanomaterials and their effects and behaviour on environmental and human health.
- 2) Synthesis and characterisation of nanomaterials.
- 3) Characterisation of the structure and properties of environmental aquatic/terrestrial colloids and nanoparticles.
- 4) Quantifying the interactions between pollutants and natural colloids and nanoparticles.
- 5) The development and optimisation of novel analytical and sampling procedures.
- 6) Development of nanomaterials in areas such as soil, metal and organic pollutant remediation.

Current Center for Environmental Nanoscience and Risk (CENR) faculty, staff and students

Dr Jamie Lead, Director and Professor of Environmental Nanoscience

Dr. M. Baalousha, Assistant Professor in Environmental Nanoscience

Dr. R. Merrifield, Research Assistant Professor (Supervisor: Lead)

Dr C Toumey, Research Assistant Professor (Supervisor: Lead)

Dr. K Kadel, Postdoctoral Research Fellow (Supervisor: Lead)

Dominic Ponton, Postdoctoral Research Fellow (Supervisor: Lead)

Dr J Hong, Postdoctoral Research Fellow (Supervisor: Lead)

D. Das, PhD student (co-Supervisor: Lead)

S. Mirshahghassemi, PhD student (Supervisor: Lead)

Z. Amal, PhD student (Supervisor: Lead)

S. Butz, PhD student (Supervisor: Lead)

A. Alabresm, PhD student (Supervisor: Lead)

S. Pourheinni, PhD student (Supervisor: Lead)

Jianzhou He, PhD student (Supervisor: Lead)

Amna Al-Hashmi, PhD student (Supervisor: Lead)

M. Sikder, PhD student (Supervisor: Baalousha/Lead)

K. Afshinnia, PhD student (Supervisor: Baalousha)

S. McNeal (Supervisor: Baalousha)

H. Alhameed (Supervisor: Baalousha)

Dr M-N. Croteau, USGS, faculty.

Dr D. Holbrook, NIST, Adjunct faculty

Dr Angela Halfacre, Furman University, Adjunct faculty

Dr Mark Kindy, MUSC, Adjunct faculty.

Ms Karen, Coltarne, Adjunct Faculty.

2016 appointments being processed: 1 tenure track faculty, 1 laboratory manager, 1 postdoctoral researcher, 4 doctoral students

Member of PhD committee for 6 other PhD students

Recently left USC

Dr Dan Ross Research assistant professor

Dr S Palchoudhury, Postdoctoral research fellow.

C. Yan, Visiting PhD student

Research Funding (USC)

The SmartState Center for Environmental Nanoscience and Risk is endowed through funds from the South Carolina state, USC and matched private funding with a total in excess of \$10 million. Other funding includes:

- 1) The 9th International Conference on the Environmental Effects of Nanoparticles and Nanomaterials to be held on September 7-11, 2014 in Columbia, S.C).
National Science Foundation
\$35 000; 2014-2015, Lead (PI).
- 2) Evaluation of the Role of Size Dispersity on Nanoparticle Uptake and Toxicity
National Science Foundation
2014-2017; \$299 000; Baalousha (PI), Lead and Chandler (CoIs).
- 3) Novel probes to quantify the relative importance of ion and particle uptake when assessing nanoparticle bioavailability.

National Science Foundation
2015-2018; Lead (PI), Luoma and Croteau (CoIs); \$389 769

- 4) The value of societal and ethical implications of nanotechnology research.
National Science Foundation
\$252 000; Toumey (PI).
- 5) Development of Single particle inductively coupled plasma mass spectrometry
Perkin Elmer International
\$25 000; Lead (PI)
- 6) Fellowship for Dominic Ponton
Fonds de Recherche Nature et Technologies du Québec, USGS and CENR
\$50000; Ponton, supervised by Lead and Croteau.
- 7) Clinical Trials of a Micro Aerosol Disinfection Technology. Waterech Technologies; Scott (PI), Lead et al.(CoIs); \$250 000

Research Funding (UoB)

Total funding awarded since 2000 is > £25 million (Birmingham share: > £10 million). Funding from NERC, EU, EPSRC, MRC, industry, Defra, Environment Agency, university sources, charities (Leverhulme, Nuffield, Wellcome).

PI - Principal Investigator; CoI Co-investigator

Current Awards

- 1) **Facility for the characterisation of manufactured nanoparticles in the environment (FENAC).**
NERC Service and Facilities application
£960 000, 2009-present; JL is PI, with 5 CoIs at Birmingham.
- 2) **Developing a pH sensitive nanosensor.**
NERC. Analytical Science and Technology studentship.
£75 000, 2012-2016.
- 3) **Engineered nanomaterial mechanism of interaction with living systems and the environment: a universal system for safe nanotechnology**
EU FP7. NMP.2012.LARGE.6
9 million euros, Birmingham share ca 1 500 000 euros, CoI, ca 30 partners). 2014-2018.

Completed research projects (UoB)

- 1) **NERC Standard Grant (NE/E006884/1, CoI with G. Sambrook Smith as PI) Fluid dynamics across the interface in gravel-bed rivers; quantification and numerical modelling of flow in the hyporheic zone (£460 000, 2007-2011)**
- 2) **Development of in-situ sensors for direct quantification of metal speciation and bioavailability**
NERC, Technology Proof of Concept Directed Call
£210 000, 2010-2011; JL is CoI, with Hao Zhang PI) and two other CoIs,

- 3) **Behaviour of nanoparticles in lung surfactant**
Health Protection Agency (HPA)
£105 000; Co-Investigator with HPA.
- 4) **Is oxidative stress the principal mode of toxicity for metal oxide nanoparticles?**
NERC (NE/H008764/1).
£750 000; JL is CoI, with Drs Viant (PI) and Falciani and Professor Chipman (all University of Birmingham). 2010-2014.
- 5) **Quantifying particle number and specific surface area (SSA) of manufactured nanoparticles.**
NERC Open CASE PhD Studentship; NE/H018514/1 with CASE partner National Physical Laboratory)
£75 000, JL is PI.
- 6) **Quantifying baseline concentrations of titania manufactured nanoparticles in natural aquatic system**
NERC Open CASE PhD studentship; NE/H018727/1 with CASE partner Natural History Museum.
£62 000, JL is PI.
- 7) **Modelling nanoparticle toxicity: principles, methods, novel approaches**
EU FPVII. ModNanoTox. FP7-NMP-2010-EU-USA
1 million euros, 5 partners, Birmingham share ca 350 000 euros).
- 8) **Quantifying the structure of very small (<25 nm) natural aquatic colloids**
NERC standard grant (NE/G004048/1).
£810 000; JL is PI, with Dr Zhang Lancaster University CoI; 2009-2012
- 9) **NERC (NE/D004942/1).** Understanding the environmental behaviour and biological impacts of manufactured nanoparticles in natural aquatic systems (**£480 000, 2006-2010**). PI, with CoIs at University of Birmingham (Professor Preece, Chemistry and Professor Kendall, Engineering) and Exeter University (Professor Tyler).
- 10) **CIF and NERC.** Purchase of FCS system. **£275 000.**
- 11) **NERC small grant (NE/G010641/1).** Quantifying the physico-chemical characteristics of cerium oxide nanoparticles; a preliminary for ecotoxicological investigations. **Sole PI (£62 000, 2009-2010).**
- 12) **NERC small grant (NE/009317/1).** Elemental signals in karst: from soil to speleothem. **Co-I (£41 000, 2009-2010).**
- 13) **Environment Agency.** Nanomaterials and REACH – evaluation of applicability of existing procedures for chemical safety assessment of nanomaterials **CoI, 250 00 euros, 2011.**
- 14) **NERC NBAF Facility project.** Identifying toxicological effects of engineered nanoparticles on freshwater algae using a metabolomics approach. **Award value £8000.**
- 15) **NERC Knowledge Transfer Network (NE/E002889/1, sole PI).** Engineered nanoparticles in the natural aquatic environment (Nanonet) (**£150 000, 2007-2010**).

- 16) **NERC Environment and Human Health Programme (NE/E009204/1, CoI with V. Stone, Napier University as PI)** Assessing human exposure uptake and toxicity of nanoparticles from contaminated environments (**£150 000 100 FEC, 2007-2009**)
- 17) **NERC (NE/D000939/1).** Network on fluorescence for the water sciences (**£60 000, 2005-2008**). *CoI* with A. Baker University of Birmingham.
- 18) **EU FPVI Marie Curie Early Stage Training (MEST-CT-2004-504356).** Impact of aquatic colloids on pollutant and pathogen fate and behaviour (**£840 000, 2004-2008**). *Sole PI*, with extensive formal collaborations in UK and Europe.
- 19) **NERC. ENI directed programme (NE/E014496/1, sole PI).** Understanding the fate and behaviour of manufactured nanoparticles in natural waters (**£48 000, 2007-2008**)
- 20) **NERC (NER/M/S/2001/00073).** Characterising the physico-chemical properties of small (< 50 nm) natural aquatic colloids (**PI £50 000, 2001-2004**). Graded satisfactory (NERC projects either graded satisfactory or unsatisfactory). *PI*, with CoI at University of Gothenburg (D. Turner)
- 21) **Leverhulme Trust (F/00094/W).** Feasibility of novel methods of measuring freely dissolved organic pollutants (**£15 000, 2002-2003**). *CoI* with others at University of Birmingham (S. Harrad)
- 22) **Nuffield Foundation (NAL/00249/G).** The effects on trace metal speciation of the physico-chemical properties of natural aquatic colloids (**£3 000, 2001-2003**). *Sole PI*
- 23) **NERC (NER/B/S/2002/00544).** The relationship between colloid and particle size and surface area: understanding the mechanisms of contaminant binding. (**£30 000, 2003-2004**). Graded satisfactory (NERC projects either graded satisfactory or unsatisfactory). *PI*, with CoIs at University of Plymouth (G. Millward and E. Achterberg)
- 24) **IUPAC (2004-015-1).** Environmental colloids: behaviour, characterisation and behaviour (**\$11 000, 2004-2005**). *CoI* with PI at University of Geneva (K. Wilkinson).
- 25) **Wellcome Trust.** Virus-particle interactions; implications for public health (**£6065, 2004**). *PI*.
- 26) **DEFRA (CB01071)** A scoping study to identify exposure data needs for addressing the risks presented by nanoparticles and nanotubes. (**£22 229, 2005**). *Sub-contractor* with BGS, main contractor Health and Safety Laboratories, HSE.
- 27) **NERC (NER/A/S/2001/00963).** Migration of enteric viruses in deep aquifers: intergranular transport processes, sorption and survival. (**£200 000, 2002-2004**). *Co-I*, with 5 others at Birmingham and University of Surrey.
- 28) **NERC (NER/A/S/2000/01112).** Trace metal interactions with natural aquatic colloids and particles (**£210 000, 2002-2005**). *PI*, with CoI at CEH Lancaster (E. Tipping) and University of Geneva (J. Buffle).
- 29) **NERC (NE/C510532/1).** Metal-colloid interactions in freshwaters. (**£154 000, 2005-2008**). *Sole PI*, with Project Partners/Visiting Researchers at Alaska Fairbanks University (L. Guo) and Texas A&M University, Texas (P. Santschi) both USA; University of Gothenburg, Sweden (M. Hasselov), Postnova Analytics, Germany (T. Klein, managing Director) and Lancaster University, UK (H. Zhang).
- 30) **NERC (NE/C50850X/1).** Network on natural aquatic colloids (AQUANET). (**£60 000, 2004-2008**). *Sole PI*. Network involves 12 other academic, regulatory and industrial centres.
- 31) **SRIF 3.** Characterisation of the Environment. Funding for AFM and SNOM equipment. (**ca £190 000, 2006**).

- 32) **Wellcome Trust.** Nanoparticle characterisation for biomedical studies (£13 000, 2007-2008). PI.

Completed and Submitted PhDs

- N. Alexa**, Development of in-situ sensor to probe trace element speciation and bioavailability (2009).
- M. Amezcua**, The influence on heavy metal speciation in soils of the fungal bioremediation of phenanthrene (2003).
- S. Batchelli**, PhD, Colloid characterisation in estuarine systems (2010).
- M. Belinga**, Chemistry and transport of silver nanoparticles in wastewater treatment systems (2015)
- E. Cieslak**, Influence of hydration on colloid and nanoparticle structure and metal binding (2010)
- P. Cole**, PhD. Nanoparticles in aqueous environments: a physicochemical and ecotoxicological study of cerium dioxide nanoparticles (2011).
- S. Cumberland**, PhD. Engineered nanoparticles interactions with trace metals (2010).
- A. De Momi**, Understanding the colloid-particle split in aquatic systems (2008)
- S. Elliott**, Fluorescence signatures in natural aquatic systems (2006).
- L. Ellis**, Chemistry and transport of silver nanoparticles at environmentally relevant conditions (2015).
- J. Fabrega**, Biofilm interactions with metals and nanoparticles (2009).
- C. Gaebel**, Virus-colloid nanoscale interactions (2008).
- A. Hartland**, PhD Colloid and stable isotopes in the environment (2011).
- A. Hitchman**, PhD. Manufactured nanoparticles in the hyporheic zone (2011).
- I. Kaur**, Synthesis and multi-method approach to oxidation state measurement of ceria nanoparticles. (2015).
- B. Macaree**, Biofilm ecology in Cayman Islands water supply system (2006)
- A. Manciu**, Fate and behaviour of manufactured nanoparticles (2006).
- D. Muirhead**, Characterisation of aquatic nanoparticles and colloids by atomic force microscopy (2006).
- Y. Nur** (2013). Gold nanoparticles: synthesis, characterization and their effect on *Pseudomonas fluorescens* (2013).
- A. Prasad**, Development of force and electron microscopy for the quantification of number particle concentration in environmental and exposure media (2015).
- G. Raza**, Synthesis, aggregation and transport of titania nanoparticles (2015)
- H. Rahman**, Virus-colloid interactions in groundwater. (2006).
- P. Redwood**, Applications of environmental scanning electron microscopy to natural colloids and particles (2005).
- I. Romer-Roche**, The ecotoxicological and environmental transformations of silver nanoparticles (2012)
- B. Sredynska-Sobecka**, Colloid-particle separations by SPLITT (2008).

Knowledge Exchange

Recent meetings organised and chaired

- 1) Chair and organizer 9th International Conference on Environmental Effects of Nanoparticles and Nanomaterials, Columbia, South Carolina, September 2014.
- 2) Session co-convenor. Analysis of manufactured nanomaterials in the environment. Goldschmidt, California, 2014
- 3) Member of scientific organising committee 8th International Conference on Environmental Effects of Nanoparticles and Nanomaterials, Aix en Provence, September 2013

- 4) Session Chair 8th International Conference on Environmental Effects of Nanoparticles and Nanomaterials, Aix en Provence, September 2013
- 5) Chair and organizer, workshop on modelling nanomaterial biouptake and toxicity, London, July 2013.
- 6) Member of scientific organising committee 7th International Conference on Environmental Effects of Nanoparticles and Nanomaterials, Banff, September 2012
- 7) Session chair, Sustainable Nanotechnology Organisation conference, Washington, November 2012.
- 8) Session chair, SETAC North America, Analysis and Metrology of Nanomaterials in the environment, November 2011.
- 9) Member of scientific organising committee 6th International Conference on Environmental Effects of Nanoparticles and Nanomaterials, Royal Society, London, September 2011
- 10) Session Chair, 6th International Conference on Environmental Effects of Nanoparticles and Nanomaterials, Royal Society, London, September 2011
- 11) Organiser and lecturer, Training course on nanomaterials in the environment, Imperial College, September 2011
- 12) Session co-convenor. Biotic and Abiotic Transformations and Effects of Manufactured Nanomaterials – Applied Environmental Aspects. Goldschmidt, Prague, August 2011.
- 13) Member of organising committee. FFF Symposium, San Francisco, May 2011.
- 14) Session Chair and co-convenor, Implications from environmental fate and behaviour research for the field of nanomedicine. 3rd Nanoimpactnet conference, Lausanne, February 2011.
- 15) Organiser, PhD Winter School/CPD course on Environmental Effects of Nanoparticles, Birmingham, UK, September, 2010.
- 16) Member of scientific organising committee 5th International Conference on Environmental Effects of Nanoparticles and Nanomaterials, South Carolina, USA, August 2010
- 17) Session convenor. Biotic and Abiotic Transformations and Effects of Manufactured Nanomaterials – Fundamental Environmental Aspects. Goldschmidt, Tennessee, USA June 2010
- 18) Session co-convenor. Biotic and Abiotic Transformations and Effects of Manufactured Nanomaterials – Applied Environmental Aspects . Goldschmidt, Tennessee, USA June 2010
- 19) Organiser, PhD Summer School on Environmental Effects of Nanoparticles, Norway, June 2010.
- 20) Member of organising committee, Workshop on the Marine Environment and Human Health, Weymouth, UK February 2010.
- 21) Member of organising committee, 4th International Conference on Environmental Effects of Nanoparticles and Nanomaterials, Vienna, Austria, 9-11th September 2009.
- 22) Co-chair, Eco-responsible Design of Nanomaterials, Rice University, USA, 10-11th, March 2009.
- 23) Chair 3rd International Conference on Environmental Effects of Nanoparticles and Nanomaterials. September 15th-16th 2008
- 24) Chair and organiser. International workshop on the human ecological health effects of manufactured nanoparticles, 6th-7th November, 2008, University of Birmingham
- 25) Chair. International workshop on the physico-chemical speciation and ecotoxicology of manufactured nanoparticles, 11th-12th November, 2007, University of Birmingham.
- 26) Member of organising committee/Session chair 2nd International Conference on Environmental Effects of Nanoparticles and Nanomaterials. Organised by SETAC-UK and SEB, London, September 24th-25th 2007.
- 27) Co-organiser and co-Chair. 2nd International Conference on Natural Aquatic Colloids and Nanoparticles, University of Plymouth, 13th-14th September 2006. Funded by NERC

- 28) Member of organizing committee/Session chair. 1st international Conference on Environmental Effects of Nanoparticles and Nanomaterials. Organised by SETAC-UK and SEB, London, September 18th-19th 2006.
- 29) Organiser/Chair. 1st International Conference on Natural Aquatic Colloids, University of Birmingham, 8th November 2005.

Main recent (2008-) invited presentations

- 1) Invited speaker, Virginia Technology University, May 2015
- 2) Invited speaker, Johns Hopkins University, December, 2014
- 3) Invited speaker, 17th international symposium on flow-and field- based separations, Salt Lake City Utah, October 2014.
- 4) Invited Speaker, CEINT, North Carolina, February 2014.
- 5) Invited Speaker, Duke University Superfund conference, October 2013
- 6) Invited speaker, NIST, Maryland, USA, March 2013.
- 7) Invited speaker, TEDx, Columbia, January 2013
- 8) Invited Speaker, Clemson University, January 2013
- 9) Invited speaker, NIEHS workshop on Nanoparticle Exposure, RTP, North Carolina, January, 2013.
- 10) Invited speaker, NOAA, Charleston, South Carolina, January, 2013
- 11) Invited speaker, SETAC, Long Beach, USA, November 2012 (Assessing the Risks of Nanosilver in the Environment)
- 12) Invited speaker, SETAC, Long Beach, USA, November 2012 (Advances in Nanotechnology Research)
- 13) Invited speaker, National Academy of Sciences organised workshop on Research Progress on Environmental, Health, and Safety Aspects of Nanotechnology, November 2012
- 14) Invited speaker, Sustainable Nanotechnology Organisation, Washington, November, 2012
- 15) Invited speaker, Goldschmidt, Montreal, June 2012.
- 16) Invited speaker, NanoKTN workshop on Nanomaterials characterisation, Begbroke Park, Oxford, 14th September, 2012.
- 17) NSF Chemistry Workshop on Nanomaterials and the environment, Washington, USA, 27-28th June 2011
- 18) Invited speaker, Royal Society of Chemistry, Role of Metals in the toxicity of nanoparticles. Burlington House, 24th June, 2011.
- 19) Invited Speaker, Gordon Conference on Environmental Nanotechnology, USA, May 2011.
- 20) Invited speaker, European Cooperation in Science and Technology (COST) international workshop on Quantitative-Nanostructure-Toxicity-Relationships (the application of QSAR methods to nanomaterials), April, 2011, Maastricht, The Netherlands
- 21) Invited speaker 4th International Conference on Nanotechnology. Institute of Materials, Minerals and Mining, University of Manchester, 11-12th January 2011.
- 22) Invited speaker. Expert Group meeting, Federal Institute of Hydrology, Koblenz, Germany, 19-20th October 2010.
- 23) Invited Speaker. 5th International Conference on Environmental Effects of Nanoparticles and Nanomaterials, South Carolina, USA, August 2010
- 24) Invited Speaker AFM BioMed Conference, Red Island Croatia, May 2011.
- 25) Invited Speaker, Analytica Conference, Germany, March 23-25th 2010.
- 26) Invited Speaker. Potential Human Health and Environmental Issues associated with Nanotechnology, Franco-British workshop, British and French Embassies, 10-11th March, 2010.
- 27) Invited presentation, EAWAG, Switzerland, March 5th 2010
- 28) Invited Speaker. UK Surface Analysis Forum, UK, January 13th 2010.
- 29) Invited Speaker, Conference on Environment and Human Health, Natural History Museum, UK, 21-23rd September 2009.

- 30) Invited speaker, ENI Stakeholders Workshop, UK, 4th November, 2008.
- 31) Invited speaker, Chemodynamics in the environment, Switzerland, 26th-30th, October, 2008.
- 32) Invited speaker, AGU Fluorescence of natural organic matter, UK, 20-23rd October, 20-23rd October 2008.
- 33) Invited speaker, USEPA Environmental Technology Conference, USA, 7-9th October, 2008
- 34) Invited speaker, DEFRA Nanotechnologies Dialogue Forum, UK, September 30th, 2008
- 35) Invited speaker. NanoECO, Switzerland, 12-17th, March, 2008.

List of Publications

The two papers:

G. V. Lowry, K. B. Gregory, S. C. Apte, and **J. R. Lead** (2012). Transformations of nanomaterials in the environment. *Environmental Science and Technology*, 46, 6893-6899.

and

Y. Ju-nam, **J.R. Lead** (2008) Manufactured Nanoparticles and Natural Aquatic Colloids: An Overview of their Chemical Aspects, Interactions and Potential Environmental Implications. *The Science of the Total Environment*, 400, 396-414.

received the awards Best Feature Article 2012 and Best Paper 2008-2009, respectively, from the journals which published them.

That co-author is a PhD student or post-doctoral fellow supervised by Lead is indicated by underlined name. H index (February 2016) = 38 (WoS) and 43 (Google Scholar).

Peer reviewed research papers

- 1) H. C. Henderson, J. Hong, D. Friedman, D. E. Porter, A. C. Halfacre, G. I. Scott, **J. R. Lead** (2015). A content analysis of Internet resources about the risks of seafood consumption. *Health, Risk & Society* (in press).
- 2) S. McDermott, D. Salzberg, A. P. Anderson; T. J. Shaw; **J. R. Lead** (2015). Systematic review of chromium and nickel and their impact on birth outcomes in humans *Science of the Total Environment*, 78, 1348-1368.
- 3) M. A. Baalousha, M. Sikder, A. Prasad, T. Chandler, **J. R. Lead** (2015). The concentration-dependent behavior of nanoparticles, *Environmental Chemistry* (in press).
- 4) I. Mahapatra, T. Sun, J. Clark, P. J. Dobson, K. Hungerbuhler, R. Owen, B. Nowack and **J. R. Lead** (2015) Probabilistic modelling of prospective environmental concentrations of gold nanomaterials from medical applications as a basis for risk assessment, 13, 1-14.
- 5) T. Stoiber, M-N. Croteau, I. Romer, M. Tejamaya, **J. R. Lead**, S. N. Luoma (2015). Influence of hardness on the bioavailability of silver to a freshwater snail after waterborne exposure to silver nitrate and silver nanoparticles. *Nanotoxicology*, 9,
- 6) P. Baker, C. Hogstrand, **J. R. Lead**, R. W. Pickup, H. Zhang (2015). Immobilization of *Shewanella oneidensis* MR-1 in diffusive gradients in thin films for determining metal bioavailability. *Chemosphere*, 138, 309-315
- 7) A. Prasad, M.A. Baalousha, **J. R. Lead** (2015). Measurement of nanomaterial number concentration in simple and complex media. *The Science of the Total Environment*, 537, 479-486.
- 8) S. Mirshahghassemi, **J. R. Lead** (2015). Oil Recovery from Water under Environmentally Relevant Conditions Using Magnetic Nanoparticles. *Environmental Science and Technology*, 49, 11729-11736.
- 9) E. J. Petersen, S. A. Diamond, A. J. Kennedy, G. G. Goss, K. Oh, **J. Lead**, S. K. Hanna, N. B. Hartmann, K. Hund-Rinke, B. Mader, N. Manier, P. Pandard, E. R. Salinas, P. Sayre (2015). Adapting OECD Aquatic Toxicity Tests for Use with Manufactured Nanomaterials: Key Issues and Consensus Recommendations. *Environmental Science and Technology*, 49, 9532-9547.
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Patents

- 1) Patent serial number: 14/695,083. Novel probes to quantify the relative importance of ion and particle uptake when assessing nanoparticle bioavailability (patent pending)
- 2) Patent serial number: 14/627,056. Separation of oil-water mixtures using nanotechnology (patent pending).

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Invited Editor

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- 2) ***Environmental Chemistry***, Guest editor of special issue ('Research Front') focussing on manufactured nanoparticles. Issue published Jan 2010.
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Other

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Many conference presentations given every year. These are not included here.