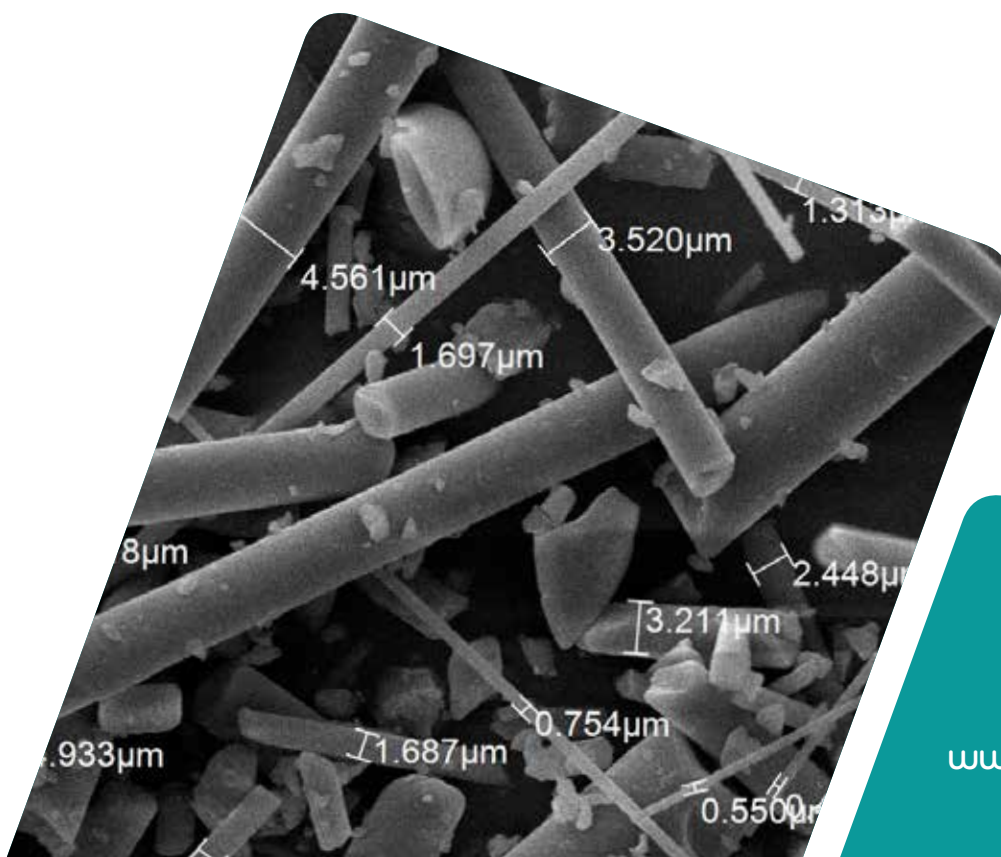


International Conference

# Advances and Controversies in Fibre Toxicology (ACFT 2014)

3<sup>rd</sup> - 4<sup>th</sup> June 2014

Cranfield University, UK



# Welcome



Dear Delegate

Welcome to the first International Conference on Advances and Controversies in Fibre Toxicology (ACFT 2014).

We have attracted world-renowned researchers to speak at the conference and we are sure you will find it both stimulating and informative, as well as providing an excellent opportunity to network with colleagues.

Cranfield University has an international reputation in the fields of materials science, manufacturing and health, and is uniquely placed to bring together leading experts from such diverse areas for a stimulating exploration and discussion of the key research and policy questions surrounding fibre toxicology.

In this booklet you will find the programme and a list of speakers with biographies. In your delegate bag you will also find the list of delegates, and abstracts of all the presentations and posters. If you have any queries or questions during the conference please do not hesitate to ask a member of the Cranfield University team (identifiable by our coloured name badges).

Finally, I would like to thank everyone involved in the organisation of this conference including our speakers, the International Scientific Steering Committee and the Organising Committee here at Cranfield. We hope you enjoy the meeting.

Best wishes,

A handwritten signature in black ink that reads "Paul Harrison". The signature is written in a cursive style with a large initial 'P'.

**Professor Paul Harrison**  
Visiting Professor,  
Cranfield University

A handwritten signature in black ink that reads "Ruth Bevan". The signature is written in a cursive style with a large initial 'R'.

**Dr Ruth Bevan**  
Senior Lecturer, Institute of Environment,  
Health, Risks and Futures (IEHRF),  
Cranfield University

# ACFT 2014 Scientific Programme

Chairman: Anthony Seaton

## Tuesday 3<sup>rd</sup> June

09:20 – 10:20	<b>Registration and Coffee</b>
10:20 – 10:30	<b>Welcome and Introduction</b> Paul Harrison, Cranfield University, UK
<b>Session 1: Manufacture, applications, monitoring and regulation of fibres</b>	
10:30 – 11:10	<b>The production and applications of High Temperature Insulating Wool (HTIW)</b> Ron Wainwright, Morgan Thermal Ceramics, UK *
11:10 – 11:40	<b>Manufacture of high aspect ratio nanoscale fibres and structures</b> Rob Dorey, University of Surrey, UK
11:40 – 12:10	<b>CARE: European monitoring program for RCF/ASW</b> Dan Maxim, Everest Consulting Associates, USA
12:10 – 12:30	<b>Short Poster Presentations</b>
12:30 – 13:45	<b>Lunch and Poster Viewing</b>
13:45 – 14:15	<b>Perspectives on RCF carcinogenicity</b> Helmut Greim, Technical University Munich, Germany
14:15 – 14:45	<b>Assessing the impacts of implementing changes to REACH regulations for nanomaterials: learning from a recent EU activity</b> Camilla Pease, ENVIRON, UK
14:45 – 15:15	<b>Discussion: The 'science' of regulation; challenges in monitoring and regulating modern fibres</b>
15:15 – 15:30	<b>Tea break</b>
<b>Session 2: Toxicology studies (<i>in vivo</i> and <i>in vitro</i>)</b>	
15:30 – 16:10	<b>Determinants of fibre pathogenicity to the lung and pleura</b> Tom Hesterberg, Consultant, USA *
16:10 – 16:50	<b>Nano-fibers and asbestos – lessons to be applied</b> David Bernstein, Consultant, Switzerland *
16:50 – 17:30	<b>High aspect ratio nanoparticles, the lungs and the pleura: What do we know and what don't we know?</b> Craig Poland, Institute of Occupational Medicine, UK *
*Invited presentation	

## Gala Dinner

**Woburn Sculpture Gallery 18:45 – 22:30**

Tonight you will enjoy an evening set within the beautiful and historic grounds of Woburn Abbey. The Sculpture Gallery is one of Britain's most treasured houses. Dress code: smart dress. Please note that coaches will depart from Cranfield Management Development Centre (CMDC) at 18:45 and return at 22:30.



Wednesday 4 <sup>th</sup> June	
Session 2 continued: Toxicology studies ( <i>in vivo</i> and <i>in vitro</i> )	
08:40 – 09:20	<b>Inhalation toxicity studies in rats with respirable-sized p-aramid, organic fibers: Correlation of findings with results of <i>in vitro</i> biodegradability studies</b> David Warheit, DuPont, USA *
09:20 – 09:50	<b>Biodistribution of <sup>60</sup>Co-labelled carbon nanotubes (CNT) following an acute inhalation in rats</b> Otto Creutzenberg, Fraunhofer ITEM, Germany
09:50 – 10:20	<b>Induction of malignant mesotheliomas by intraperitoneal injection of multi-walled carbon nanotubes in rats</b> Susanne Rittinghausen, Fraunhofer ITEM, Germany
10:20 – 10:50	<b>Long-fibre carbon nanotube- and asbestos-induced pleural lesions exhibit a common molecular signature</b> Fiona Murphy, MRC Toxicology Unit, UK
10:50 – 11:10	<b>Coffee break</b>
11:10 – 11:40	<b>Contribution of pro-inflammatory cells in pro-oncogenic alteration of normal mesothelium</b> Tanya Chernova, MRC Toxicology Unit, UK
11:40 – 12:20	<b>Interaction and bioreactivity of carbon nanotubes with primary human lung parenchymal cells <i>in vitro</i></b> Terry Tetley, Imperial College London, UK *
12:20 – 12:50	<b>Genotoxic and immunoregulatory effects of carbon nanotubes <i>in vitro</i></b> Martin Clift, Adolphe Merkle Institute, Switzerland
12:50 – 14:00	<b>Lunch</b>
14:00 – 14:30	<b>Multiwalled carbon nanotubes induce DNA damage and cellular senescence in human peritoneal mesothelial LP9 cells</b> Christina Ziemann, Fraunhofer ITEM, Germany
Session 3: Epidemiology	
14:30 – 15:00	<b>Epidemiology of aluminosilicate wools (ASW/RCF): Results to date and plans for continued study</b> Mark Utell, University of Rochester, USA
15:00 – 15:40	<b>The risk of mesothelioma and lung cancer due to asbestos exposure – an update including recent epidemiology</b> Andrew Darnton, HSE, UK *
15:40 – 15:50	<b>Tea break</b>
15:50 – 16:20	<b>Estimating children's vulnerability to asbestos</b> David Phillips, King's College London, UK
16:20 – 17:00	<b>Panel Discussions:</b> <ul style="list-style-type: none"> <li>• Current and arising challenges, including lessons learned from asbestos</li> <li>• To what degree can <i>in vitro</i> studies on fibres inform human health risk assessment?</li> </ul>
17:00 – 17:10	<b>Closing remarks and departure</b>
*Invited presentation	

## International Scientific Steering Committee

David Bernstein (Consultant, Switzerland)

Paul Borm (Zuyd University for Applied Sciences, The Netherlands)

Paul Boymel (Unifrax, USA)

Bob Brown (Consultant, UK)

Paul Harrison (Cranfield University, UK)

Tom Hesterberg (Consultant, USA)

Len Levy (Cranfield University, UK)

Robert Maynard (Consultant, UK)

Hartwig Muhle (Fraunhofer Institute, Germany)

Craig Poland (Institute of Occupational Medicine, UK)

Anthony Seaton (University of Aberdeen, UK)

Terry Tetley (Imperial College London, UK)

Ron Wainwright (Morgan Thermal Ceramics, UK)

David B. Warheit (DuPont, USA).

## Organising Committee

Ruth Bevan, Senior Lecturer, Institute of Environment, Health, Risks and Futures (IEHRF)

Derrick Crump, Reader in Environmental Toxicology, IEHRF

Helen Dixon, Corporate Communications

Paul Harrison, Visiting Professor in Environment and Health

Christina Tam, Toxicologist, IEHRF.

# Chairman

**Anthony Seaton CBE, MD, DSc, FRCP, FRCPE, FMedSci**

Anthony Seaton qualified from Cambridge University in 1962. He trained in Liverpool in general medicine, cardiology and neurology. After senior posts in respiratory medicine in West Virginia, USA, and Cardiff, he was director of the Institute of Occupational Medicine in Edinburgh from 1978-90. From 1988 until he retired in 2003 he was head of the department of Environmental and Occupational Medicine in Aberdeen University where he is now emeritus professor. After retiring, he rejoined the Institute of Occupational Medicine as an honorary senior consultant. His and his teams' research from 1969 to 1990 largely concerned asthma and occupational lung diseases, and in particular led to the development of UK protective health standards in coalmining, asbestos work, and silica, wool and PVC industries. His current research interests are the aetiology of asthma, the health effects of air pollution and nanoparticles, and neuro-psychological effects of organic solvents.



Throughout his career until 2003 he continued to work clinically in and teach respiratory and occupational medicine, and accumulated extensive experience of occupational disease diagnosis, management and prevention. He has written seven books and over 300 papers on respiratory and occupational medicine and other topics, and has lectured on these subjects internationally.

# Conference Speakers

**Ron Wainwright**  
**Morgan Thermal Ceramics, UK**

Ron studied Engineering and Electrical Sciences at the University of Cambridge from 1970 to 1973. He is a Chartered Engineer and a Member of the Institution of Engineering and Technology. During 40 years of industrial experience, Ron has worked with synthetic quartz, aero-engine metrology, colour sorting of food products, the manufacture of building materials and most recently High Temperature Insulation Wools.



In 2002, Ron was appointed as the Global Technical Director of Morgan Thermal Ceramics. During subsequent years he led the research and development of fibres with low bio-persistence and also the development of high performance fibre manufacturing systems. The 2000's was very much the period of Asian growth and so Ron's role included the development of manufacturing facilities in India, China and Korea which were equal in capability to those in Western countries.

Ron retired from his full time role with Morgan Thermal Ceramics in 2013 and is now retained by Morgan as a consultant working *inter alia* on matters related to fibre regulation.

**Rob Dorey****Chair in Nanomaterials, University of Surrey, UK**

Rob Dorey holds the chair in Nanomaterials at the University of Surrey and is Fellow of the Institute Materials, Mining and Minerals (FIMMM) and Higher Education Academy (FHEA) as well as a Chartered Scientist and Engineer.

Rob joined the University of Surrey in 2014. Prior to this he was at Cranfield University. Between 2003 and 2008 he held a prestigious Royal Academy of Engineering/EPSRC Research Fellowship.



His research interests are focused on the synthesis and manipulation of nanomaterials for the manufacture of functional devices for energy and environmental applications. Examples include thermoelectric and piezoelectric energy harvesters, solar thermal energy capture and storage, as well as sensors for detection of nanomaterials in the environment and acoustic structural health monitoring. His research has a particular focus on micro-scale processing, materials integration and manufacture to allow the creation of unique 3D micro and nanoscale structures. Within this context he has a particular interest in sustainable materials and manufacturing processes as well as understanding the fate of nanomaterials in the environment.

**Dan Maxim****Everest Consulting Associates, USA**

Dan Maxim is President of Everest Consulting Associates, a firm that specialises in health, safety, and environmental studies located in Cranbury, New Jersey (USA). His research interests include toxicology, epidemiology, statistics, risk analysis, industrial hygiene, product stewardship, and modern approaches to the analysis of human factors in aircraft and vessel mishaps. He has written numerous articles on the application of these disciplines to various minerals and fibers (including asphalt, carbon fibers, glass wool, perlite, refractory ceramic fiber, rock wool, refractory ceramic fiber, silica, and wollastonite).



He is on the editorial board of the journals Inhalation Toxicology and Regulatory Toxicology and Pharmacology and is a Council Member of the International Society of Regulatory Toxicology and Pharmacology. He is one of the architects of the RCF industry's product stewardship program for refractory ceramic fiber. Dan also serves on various advisory bodies to the United States Coast Guard concerned with vessel safety and accident prevention and has been awarded the Distinguished Service Award and Legion of Merit.

**Helmut Greim****Technical University Munich, Germany**

Helmut Greim is a toxicologist and former chair of the Institute of Toxicology and Environmental Hygiene at the Technical University of Munich, Germany. His research experience is drug metabolism, toxicokinetics, mechanisms of carcinogenic agents, in vitro test systems. He has been a member or chair of numerous national and international scientific committees. At present he chairs the Scientific Committee on Health and Environmental Risks of the DG SANCO, Brussels, is member of the Scientific Committee on Occupational Exposure Limits of DG EMPLOYMENT, Luxembourg and member of the Risk Assessment Committee of the European Chemicals Agency in Helsinki.



Helmut has published numerous papers in toxicology and risk assessment and has lectured on these subjects in Europe and abroad. Besides many contributions to text-books he has edited and published two text-books in Toxicology, one in German, the other by Wiley, London (H. Greim and R. Snyder: Toxicology and Risk Assessment. A comprehensive Introduction). Early June 2012 the book "The cellular response to the genotoxic insult: the question of threshold for genotoxic carcinogens" (H. Greim and R. Albertini) was published by the Royal Society, London.

## **Camilla Pease**

**ENVIRON, UK**

Camilla Pease is a Eurotox Registered Toxicologist and Chartered Chemist who works as a Senior Manager in the global human health & environmental consultancy company ENVIRON. Prior to this, Camilla was Principal Scientist in Human Health for the Environment Agency (England & Wales), spent 10 years working for Unilever as a Science Leader and began her experience and training in toxicology at Imperial College London. She has over 20 years' experience in consumer products safety assessment and human health risk assessment and has led diverse international teams initiating, designing and delivering on multi-million euro research and innovation projects. She is experienced at interpreting and advising on complex risk assessment scenarios for novel and innovative ingredients, devising responsible product development/product stewardship strategies to meet regulatory requirements, mitigating risk and communicating this to stakeholders. She is an internationally respected scientist in the areas of product/chemical safety assessment, human toxicology, human metabolism and bioavailability, and developing novel risk assessment frameworks for assuring human safety without animals. She regularly participates in European task forces, scientific committees and workshops.



## **Tom Hesterberg**

**Consultant, USA**

Tom Hesterberg is currently a Principal Toxicologist working for the Center for Toxicology and Environmental Health. He has also worked for Navistar, a major manufacturer of diesel trucks and engines, as Director of Product Stewardship, Sustainability, and Environmental Health. While at Navistar, Tom oversaw the evaluation of the potential health, safety and environmental risks related to the use of diesel trucks and engines. Tom spent 14 years at Johns Manville, where he was the Director of Health, Safety and Environment (HSE). While there, he directed a research program to assess the mechanisms of carcinogenicity of asbestos and synthetic vitreous fibers.



Tom has published over 100 peer-reviewed papers and book chapters on the potential health effects of chemicals and particles to which humans are exposed. He has also served on numerous health assessment and toxicology review panels for government agencies, including the International Agency for Research on Cancer, the US Environmental Protection Agency, the California Air Resources Board, the National Toxicology Program, the Department of Energy, the German MAK Commission, and the UK Medical Research Council.

## **David Bernstein**

**Consultant, Switzerland**

David Bernstein is a consultant in toxicology, specializing in inhalation toxicology residing in Geneva, Switzerland. Prior to this, he was the Managing Director of the Research and Consulting Company Ltd. (RCC), Geneva, Switzerland. RCC specialised in performing state of the art inhalation toxicology and lung pharmacology studies for industrial and regulatory (GLP) requirements. At RCC he was responsible for the design of the current protocols for evaluating the biopersistence and chronic inhalation toxicology of mineral fibers and performed numerous fiber biopersistence and chronic fiber inhalation carcinogenicity studies. Before that he was Manager of the Toxicology and Pathology Group in the Center for Toxicology and Biosciences of the Geneva Division of the Battelle Memorial Institute. His areas of expertise are inhalation toxicology, toxicology study design, monitoring and interpretation, risk assessment, and mineral fibre and chemical toxicity.



David has a Masters in Physics from Queens College, New York and a PhD in Environmental Medicine/ Toxicology from the Institute of Environmental Medicine, New York University Medical Center, New York. David has more than 75 scientific publications in addition to authoring chapters on fiber toxicology in toxicology textbooks and numerous presentations and reports.



## **Craig Poland**

Institute of Occupational Medicine, UK

Dr Craig Poland is Senior Research Toxicologist within the SAFENANO section at the Institute of Occupational Medicine based in Edinburgh. Craig is a particle toxicologist and his research interests lie in understanding the interactions between particles and biological systems and how these can lead to disease.

Craig has worked for the last 10 years in respiratory research after gaining his undergraduate degree in cell biology and pathology from the University of St Andrews and later, a Master's degree in biomedical sciences and his PhD in nanotoxicology at the University of Edinburgh. His research over the last 8 years has focused on the physico-chemical attributes of nanoparticles, in particular morphology, which can affect the toxicity of these particles and how adverse effects can be prevented. His current role involves diverse activities with key responsibilities including novel scientific research as well as providing critical technical analysis of the current understanding in nanotechnology risk and hazard assessment to a range of audiences (e.g. OECD WPMN, WHO, industry clients). In addition, Craig has published widely on the subject nanoparticle hazard and currently acts as associate editor for the journal *Particle and Fibre Toxicology*.



## **David B. Warheit**

DuPont, USA

David B. Warheit's major scientific research interests include pulmonary toxicological mechanisms and corresponding hazards/risks related to inhaled particulates, fibers and nanomaterials. He is the author/co-author of > 120 publications and has been the recipient of the ILSI Kenneth Morgareidge Award (1993 - Hannover, Germany) for contributions in Toxicology by a Young Investigator and the Robert A. Scala Award and Lectureship in Toxicology (2000). He has also attained Diplomat status of the Academy of Toxicological Sciences (2000) and the American Board of Toxicology (1988). He has served on NIH study section review committees (NIH SBIR, NIH Bioengineering) and has participated on working groups at IARC, ECETOC, OECD, ILSI RSI and ILSI-HESI and the National Academy of Sciences, as well as several journal editorial boards (including currently, Associate Editor – Inhalation Toxicology, as well as Toxicological Sciences), Particle and Fibre Toxicology, Toxicology Letters, Journal of Applied Toxicology, Critical Reviews in Toxicology and Nano Letters. Recently he was the chairman of the ECETOC (European Centre for Ecotoxicology and Toxicology of Chemicals) Task force on "Health and Environmental Safety of Nanomaterials", and currently serves on the National Academy of Sciences Committee to Develop a Research Strategy for Environmental, Health, and Safety Aspects of Engineered Nanomaterials; and the NCTR Science Advisory Board.



## **Otto Creutzenberg**

Fraunhofer ITEM, Germany

Otto Creutzenberg has been at the Dept. of Inhalation Toxicology & Chemical Risk Assessment, Fraunhofer ITEM, Germany since 1985. His research is in toxicology and toxicokinetics of lungs following exposure to occupational dusts (toner powders; mineral fibres). Otto's expertise is in inhalation toxicity of micro- and nanoscaled particles and fibres (endpoints bronchoalveolar lavage, cell proliferation, biokinetics (solubility, chemical analysis, electron microscopy). The projects he has been involved in include: Differentiation of toxicity of quartz varieties; CEFIC project on ZnO and amorphous silica within the OECD Sponsorship Programme on Nanomaterials; Toxicity of poorly soluble dusts (various projects for the Federal Institute for Occupational Safety and Health (BAuA); Toxicity of CNT dependent on their morphology; Biokinetics of CNT.



## **Susanne Rittinghausen**

Fraunhofer, ITEM, Germany

Veterinarian, University of Veterinary Medicine, Hannover, Germany. Postgraduate study in veterinary pathology and thesis. Graduation as Dr. med. vet. by the University of Veterinary Medicine, Hannover. Postdoctoral lecture qualification for Experimental Pathology (Dr. rer. biol. hum. habil.) at the Hannover Medical School. Head of pathology at the Fraunhofer Institute for Toxicology and Experimental Medicine ITEM, Hannover.



Special interests: respiratory tract, tumor pathology, immunohistochemistry.

Special experience: Responsibility for histopathology of several in vivo carcinogenicity studies with particles and fibers like asbestos and man-made mineral fibers.

Member of the European Society of Veterinary Pathology, European Society of Toxicologic Pathology, and Society of Toxicologic Pathology. Member of the Global Editorial and Steering Committee GESC for the INHAND project (International Harmonization of Nomenclature and Diagnostic Criteria for lesions in rats and mice ) and of the INHAND working groups for the respiratory system, soft tissue, endocrine system, special senses, and apoptosis.

## **Fiona Murphy**

MRC Toxicology Unit, UK

Fiona Murphy gained her PhD with Professor Ken Donaldson at the University of Edinburgh in 2012. Her main research interests are dissecting the molecular changes during the progression of malignant mesothelioma.



## **Tanya Chernova**

MRC Toxicology Unit, UK

Tanya's main research interest is in malignant mesothelioma (MM). Malignant mesothelioma is a highly aggressive tumour with a dismal prognosis. MM is a unique cancer strongly related to former asbestos exposure. The incidence of MM in the UK has increased more than 10-fold in the last 40 years and is due to reach its peak in around 2020.

There are substantial gaps in our understanding of the fundamental mechanisms of MM development, and to date most clinical trials have focused on the use of cytotoxic agents rather than targeted therapies.

MM research will use an unbiased system biology based approach and carry out transcriptional profiling, micro-RNA profiling, and translational profiling to identify pathways involved in the development of the disease.



## **Terry Tetley**

**Imperial College London, UK**

Terry Tetley is Professor of Lung Cell Biology and heads the Lung Cell Biology group at the National Heart and Lung Institute, Imperial College London.

She is a Fellow of the Society of Biology. Her research focuses on mechanisms of pulmonary inflammation and lung disease due to inhalation of airborne particles, including ambient particulate air pollution, cigarette smoke, engineered nanoparticles (therapeutic and accidental exposure) and microbial material. She has established novel in vitro human lung cell models to investigate particle-cell interactions which can be used to inform in vivo studies. Of particular interest in relation to inhaled nanomaterials are their specific reactivity with lung tissue, mechanisms of uptake and translocation across the pulmonary epithelial-endothelial barrier and putative cardiovascular reactivity. The aim is to understand which features of inhaled nanoparticles confer bioreactivity, to identify the safest and most effective, for example for drug delivery, and to determine potential adverse effects. Terry is President of the British Society for Lung Research, sits on the Council for the European Respiratory Society and is on the Scientific Committee of the British Lung Foundation. She is PI on two UK-USA Nanotoxicology consortia, funded by HPA/NERC (EPA STAR RD83469301 and NERC) and NIEHS (grant U19ES019536).



## **Martin Clift**

**Adolphe Merkle Institute, Switzerland**

Martin is a senior scientist in the BioNanomaterials group at the Adolphe Merkle Institute in Fribourg, Switzerland. His research interests span a plethora of aspects within nanotoxicology, notably alternative in vitro models combined with realistic exposure systems, as well as the nanoparticle cell interaction and how this relates to their genotoxicity and immunotoxicity. In these research contexts, the role of nanoparticle shape has strongly influenced his research activities. Predominantly, Martin has focused on nanofibres (i.e. carbon nanotubes and cellulose nanowhiskers), although he also investigates alternative nanoparticle types (e.g. gold, silver, iron oxide and silica). Additionally, Martin has recently become interested in the use of nanoparticles to create novel materials for biological application.



In 2008, Martin received his PhD in (nano)toxicology from Edinburgh Napier University, under the tutorage of Prof. Vicki Stone, in which he focused on the interaction of a series of quantum dot nanocrystals and their impact upon the immune system. Martin is the author of over 65 publications, regularly attends international conferences to present his ongoing research and is the recipient of a number of competitive grants and awards within the field. Martin also acts as an editorial board member for a number of journals, including Particle and Fibre Toxicology.

## **Christina Ziemann**

**Fraunhofer ITEM, Germany**

Christina Ziemann studied biology at the University of Göttingen, Germany, with focus on biochemistry, organic chemistry, and botany. After her diploma in 1994 she worked till 1998 on her PhD. thesis entitled "Regulation of *mdr1b* expression in primary rat hepatocytes" at the Department of Toxicology, University Medical Center Göttingen. In parallel she started qualification as "Fachtoxikologin DGPT" and "EUROTOX-registered toxicologist", with the titles being awarded in 2002. From 1998 until 2002 she worked as a postdoctoral research fellow in the same department, leading a small research group (focused on ABC transporter proteins responsible for chemotherapy resistance) and teaching medical students in pharmacology and toxicology. In 2003 she became group leader of the workgroup "Genetic Toxicology & Epigenetics" at Fraunhofer ITEM, Hannover, Germany. There she is responsible for non-clinical genotoxicity studies for regulatory purposes in the fields of chemicals, particles, biocides, and pharmaceuticals, and also for publicly funded projects on different environmental and work place exposures including electromagnetic fields, gaseous substances, and particulate matter. In recent years her research interest is more focused on mechanistic toxicology of particles, fibres, and nanomaterials, e.g. differentiation of quartz varieties and toxic and genotoxic effects of multi-walled carbon nanotubes.

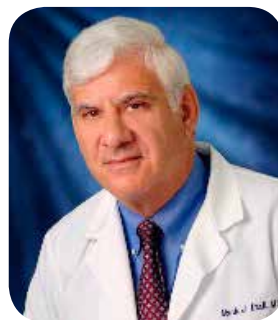


## **Mark J. Utell**

**University of Rochester, USA**

Mark J. Utell is professor of medicine and environmental medicine, director of occupational and environmental medicine, and former director of pulmonary and critical care medicine at the University of Rochester Medical Center, Rochester, New York.

His research interests have centered on the effects of environmental toxicants on the human respiratory tract. Mark has published extensively on the health effects of inhaled gases, particles, and fibers in the workplace and indoor and outdoor environments. He has had long-standing research support from federal and state government, private agencies, and industry. He is currently the principal investigator on a Henry M. Jackson Foundation Grant for the Advancement of Military Medicine (U.S. Department of Defense) to identify "serum indicators of occupational and environmental PAH exposures in burn pit workers" and served as the co-principal investigator of an U.S. EPA Particulate Matter Center. He is the recipient of the 2013 Mercer Award, International Society for Aerosols in Medicine and the American Association for Aerosol Research. Mark has served on and chaired professional committees and advisory panels including federal advisory boards for EPA and NIH, National Academy of Science, editorial boards and national research programs. He received his MD from Tufts University School of Medicine.



**Andrew Darnton**

Health and Safety Executive, UK

Andrew Darnton, MSc, is an epidemiologist working for the UK Health and Safety Executive (HSE), the national independent regulatory body for occupational health and safety. His role is to help ensure that strategies for controlling and reducing workplace risks – particularly those arising from asbestos and other respiratory hazards – are based on sound epidemiological evidence. This involves producing statistical information and research about the effects of exposure to respiratory hazards in the workplace. Andrew has been involved in various asbestos-related research projects, including developing models to assess asbestos-related disease risks, projecting future mesothelioma mortality trends, studies of the long term health of British asbestos workers, and a case-control and asbestos-lung burden study to identify the main sources of mesothelioma risk in the UK.

**David Phillips**

Kings College London, UK

David Phillips is Professor of Environmental Carcinogenesis at Kings College, London. His research interests are centred on mechanistic investigations into environmental causes of cancer and gene-environment interactions, and monitoring human exposure to carcinogens. David actively contributes to the work of national and international committees and working groups, most recently including the WHO Project 'Review of evidence on health aspects of air pollution – REVIHAAP' and the UK Environmental Mutagen Society. In addition, David is a member of several advisory panels to industry, government and non-government organisations including, UK Food Standards Agency General Committee on Science, Committee on Carcinogenicity of Food, Consumer Products and the Environment and, the Committee on Mutagenicity of Chemicals in Food, Consumer Products and the Environment.



## Sponsor

Thank you to ECFA, representing the High Temperature Insulation Wool industry, for sponsoring the Gala Dinner.



## Toxicology - What you need to know

Short Course  
Enquire for dates

*Cranfield*  
UNIVERSITY

- Are you a scientist who works with human or mammalian toxicology data?
- Would a better understanding of toxicology help you in your work?

### About the course

This course is aimed at scientists within government, industry and academia who come into contact with human and/or mammalian toxicology data.

Delivered by recognised experts in the field, this programme will focus on the principles of toxicology and health assessment.

### Topics include:

- Basic principles of toxicology and health risk assessment
- Toxicokinetics: the role of absorption, distribution, metabolism and excretion (ADME) on chemical toxicity

- Target organ toxicity: an overview of how chemicals have effects in particular 'target' organs, illustrated with examples
- Guidelines for toxicity testing: regulatory requirements
- Integration of toxicological findings into risk assessment
- In vitro toxicology
- Review and evaluation of toxicological studies and literature
- Current concerns: REACH; endocrine disruption; toxicology of mixtures; nanotoxicology, pesticides and ethical considerations focusing on the 3Rs.

[www.cranfield.ac.uk/toxshortcourse](http://www.cranfield.ac.uk/toxshortcourse)

# Toxicology and Epidemiology MSc

Start date: October 2014

Cranfield  
UNIVERSITY

At Cranfield our Institute of Environment, Health, Risks and Futures focuses on the interactions between the environment and health. Our independent research and consultancy has resulted in the development of our Toxicology and Epidemiology MSc - a unique course that provides focused learning in two individually diverse but inter-related disciplines.

Available on a full and part-time basis, this MSc will provide you with an understanding of the impact of chemicals on human health, the environment and integrated ecosystems, enabling you to develop comprehensive strategies to minimise the risk of future health and environmental issues. A part-time option is available for professionals wishing to comfortably combine work and study.

Delivered by world-leading academics in our industry standard laboratories, this course is designed for recent graduates wishing to start a career in toxicology and epidemiology from a scientific background and for professionals already working in either field who would like to train to enhance their career opportunities.

Students benefit from a project placement, with industry or a government partner, allowing them to make contact with prospective employers and develop their knowledge whilst actively applying it in the 'real-world'. Professionals following the part-time option normally carry out the research project at their place of work, allowing them to apply their training and make an immediate impact in their working environment.

Successful completion of the MSc will enable you to pursue a variety of career opportunities in planning and policy, risk management/assessment and regulatory affairs.



Gail Drummond,  
Toxicology and  
Epidemiology  
MSc, 2011/12

"I chose this MSc because it offered a broad range of subjects which provided me with a better understanding of toxicology and how it interrelates to epidemiology. It also highlighted how toxicology can relate to other areas, thus giving me better options when I completed my studies.

I was attracted to Cranfield University because of its strong links with industry.

I carried out my research project with Dow AgroSciences. This allowed me to gain contacts and experience in a real working environment. It also allowed me to work on a relatively new concept giving me hands on experience."

[www.cranfield.ac.uk/toxicologymsc](http://www.cranfield.ac.uk/toxicologymsc)

# Advances and Controversies in Fibre Toxicology

[www.cranfield.ac.uk/acft2014](http://www.cranfield.ac.uk/acft2014)