



**4th ANNUAL IIES SCIENCE AND POLICY WORKSHOP
EDINBURGH, SCOTLAND**

WORKSHOP PROGRAMME
JULY 1-3, 2018

SUNDAY | JULY 1

18.30-20.30 ICE-BREAKER | THE CANONS' GAIT (232 CANNONGATE, ROYAL MILE)

MONDAY | JULY 2

OPENING CEREMONY | IIES WORKSHOP ROOM A (ECCI)

08.50 Scottish pipes - Brighde Chaimbeul

09.00-09.30 Welcome – Dr Margaret Graham, Workshop Organiser
VP International Professor James Smith
Head of School of Geosciences, Professor Simon Kelley
Head of School of Chemistry, Professor Colin Pulham
Director IIES, Professor Douglas Evans

09.30-09.45 **BREAK**

PLENARY SESSION ONE | IIES WORKSHOP ROOM A | CHAIR - MR ANDY KERR, DIRECTOR ECCI

09.45-10.20 Mr. Ed Craig, University of Edinburgh, **Building an inter-disciplinary partnership for a zero-carbon world**

10.20-11.00 Mr. Andrew Bissell, SunAmp, **Developing novel heat storage systems**

11.00-11.40 Mr. Max Carcas, Caelulum, **The role of policy in creating markets and driving innovation**

11.40-12.00 **TEA / COFFEE / CAKES | BREAKOUT ROOM**

PARALLEL SESSIONS

ROOM A | NOVEL LOW CARBON ENERGY SYSTEMS | CHAIR: NEIL ROBERTSON (UNIVERSITY OF EDINBURGH)

ROOM B | ACADEMIC INNOVATION & ENGAGEMENT ACTIVITIES | CHAIR: ADAM MOOLNA (KEELE UNIVERSITY)

12.00-12.20 **An eco-friendly multi-energy microgrid: the use of fuel cells, hot water tank storage and PV**
Jun Cao, Keele University

Collaborating for success: an empirical examination of a university-based innovation initiative
Asaf Zohar and Marisol Campos Navarrete, Trent University

12.20-12.40 **Integration of plant microbial fuel cells into an urban green roof in Taipei city**
Chang-Ping Yu, National Taiwan University

Carbogenics: low carbon technology to recycle low-value fibre-containing wastes
Jan Mumme, University of Edinburgh

12.40-13.00 **Coumarin-based europium complexes for luminescent solar concentrations**
Ahmad Alsaleh, University of Edinburgh

Citizen science and aquatic macroinvertebrates: public engagement for catchment-scale pollution vigilance
Adam Moolna, Keele University

13.00-14.00 **LUNCH | BREAKOUT ROOM WITH SEATING IN THE ATRIUM AND THE POD (+COURTYARD IF GOOD WEATHER)**

PARALLEL SESSIONS

ROOM A | SUSTAINABLE TECHNOLOGY & ECONOMIC STRATEGY | CHAIR: SIMON SHACKLEY (UNIVERSITY OF EDINBURGH)

ROOM B | ECOSYSTEM IMPACTS OF EMERGING/PERSISTENT CONTAMINANTS | CHAIR: JOEL PEDERSEN (UNIVERSITY OF WISCONSIN-MADISON)

14.00-14.20 **Maximising sustainability for tomorrow's biobased chemicals manufacturing industry**
Philip Weyrauch, Ingenza Ltd.

The effects of microplastics on the fate of persistent organic pollutants and their entry into the base of the aquatic food web
Brendan Hickie, Trent University

14.20-14.40 **Bacteria and ionic liquids: sustainable techniques for rare-earth recovery**
Jamie Hunter, University of Edinburgh

Effects of carbon nanomaterials on the fate of sulfadiazine in Huangpu River, Shanghai, China
Xiaohan Ling, Nanjing University

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| 14.40-15.00 | Value of pyrolised biomass for land reclamation and management Saran Sohi, University of Edinburgh | Impacts of wastewater discharges on freshwater mussels in a watershed within Southern Ontario, Canada Erin Hayward, Trent University |
| 15.00-15.20 | Biochar and environmental applications Ondrej Masek, University of Edinburgh | Background and bioaccessible concentrations of PAHs in Florida urban soils Peng Gao, University of Florida |
| 15.20-15.40 | TEA / COFFEE / CAKES BREAKOUT ROOM | |
| PARALLEL SESSIONS | | |
| ROOM A MATERIALS RE-USE/RECYCLING, CARBON CAPTURE & BIOCHAR APPLICATIONS CHAIR: SARAN SOHI (UNIVERSITY OF EDINBURGH) | | |
| ROOM B AIR POLLUTION: HUMAN HEALTH IMPACTS, PERCEPTION & RISK CHAIR MAIJA-RIITTA HIRVONEN (UNIVERSITY OF EASTERN FINLAND) | | |
| 15.40-16.00 | Evaluating the spatial and temporal pattern of building stocks as the urban mining potential in Taipei City Dr Li, National University of Taiwan | Lead emissions in China: abatement and health management policies for high-risk provinces Yuanchun Zhou, Nanjing University |
| 16.00-16.20 | Opportunities for embodied carbon reductions and carbon capture and storage in building materials Chris Magwood, Trent University | Air pollution and well-being metrics Miaomiao Liu, Nanjing University |
| 16.20-16.40 | Research and analysis on recycled concrete and reinforcement performance of axial compression cylinders Jiangfeng Dong, University of Edinburgh | In-situ aerosol measurements in southern China Ari Leskinen, Finnish Meteorological Institute |
| 16.40-17.00 | Evaluation of 15 biochars for tertiary treatment of landfill leachate Christian Wurzer, University of Edinburgh | Brain's automatic detection of visibility change caused by PM2.5 pollution Jianxun Yang, Nanjing University |
| 17.00-17.20 | The biochar-soil-plant interface: probing the potential for a sustainable phosphorus fertiliser Steven Lewis, University of Edinburgh | Interactions of chlorophenol with natural montmorillonite and their toxicity to human health Cheng Gu, Nanjing University |
| 17.20-17.40 | Impacts of biochar on co-digestion of cow manure and maize silage at different ammonia levels Mingyu Hu, University of Edinburgh | Developing Air Quality Services in China: Can Science Meet the Needs of Policy Makers? Simon Shackley, University of Edinburgh |
| 17.40-18.30 | POSTER SESSION ATRIUM | |
| 19.00 | PRE-DINNER DRINKS with Bach Ensemble of Edinburgh (Viewing Gallery, Dovecot Studios) | |
| 19.30 | DINNER Viewing Gallery, Dovecot Studios (12 Infirmary Street) | |
| TUESDAY JULY 3 | | |
| 08.30-08.35 | Introduction – Dr Margaret Graham (IIES Workshop Room A) | |
| 08.35-08.45 | Nanjing University – Plans for IIES Science and Policy Workshop 2019 (IIES Workshop Room A) | |
| PLENARY SESSION TWO IIES WORKSHOP ROOM A CHAIR – MARGARET GRAHAM (UNIVERSITY OF EDINBURGH) | | |
| 08.50-09.30 | Professor Hao Zhang, Lancaster Environment Centre, Lancaster University Towards integrated monitoring and holistic process understanding of pollutants | |
| 09.30-10.10 | Professor Sébastien Sauvé, University of Montreal Circular Economy of Water: Tackling Quantity, Quality and Footprint of Water | |
| 10.10-10.20 | BREAK | |

| PARALLEL SESSIONS | | |
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| ROOM A NOVEL TECHNOLOGIES & ENVIRONMENTAL PROCESSES CHAIR: HAO ZHANG (LANCASTER UNIVERSITY) | | |
| ROOM B ENVIRONMENTAL PROTECTION & MANAGEMENT CHAIR: ASAF ZOHAR (TRENT UNIVERSITY) | | |
| 10.20-10.40 | Radioactive tracers for investigating microbial processing of dissolved organic matter in freshwater ecosystems Helen Glanville, Keele University | Should glyphosate-based herbicides be used for crop protection? Daisy Martinez, University of Edinburgh |
| 10.40-11.00 | Lake ecosystem studies at the experimental lakes area, NW Ontario, Canada Chris Metcalfe, Trent University | Agricultural pesticides entering protected wetlands – balancing land and water stewardship with economic pressures Verena Sesin, Trent University |
| 11.00-11.20 | N/A | Planning Protected Areas Lindsey Bargelt, Trent University |
| 11.20-11.40 | TEA / COFFEE / CAKES BREAKOUT ROOM | |
| PARALLEL SESSIONS | | |
| ROOM A AQUATIC SYSTEM MODELLING & MANAGEMENT CHAIR: SÉBASTIEN SAUVÉ (UNIVERSITÉ DE MONTRÉAL) | | |
| ROOM B LAND-ATMOSPHERE INTERACTIONS: EMISSION/DEPOSITION INVENTORIES CHAIR: ARI LESKINEN (FMI) | | |
| 11.40-12.00 | Modelling approaches for aquatic systems Mikko Kolehmainen, University of Eastern Finland | Biological nitrogen fixation by diazotrophic microbes: a natural pathway by which mosses meet the demands for reactive nitrogen in pristine rain-fed peatlands Ernesto Saiz, Keele University |
| 12.00-12.20 | Critical loads of acidity for lakes in the Canadian Arctic: potential impacts of ship-source emissions Tanner Liang, Trent University | Determining accurate non-methane volatile organic compounds (NMVOC) emissions inventories for Jiangsu, E China Yu Zhao, Nanjing University |
| 12:20-12:40 | Determining baseline P concentrations in organic-rich lakes – improvement of current EU WFD models Xiaoyun Hui, University of Edinburgh | The long-range atmospheric transport of microplastics Brett Roblin, Trent University |
| 12:40-13:40 | LUNCH BREAKOUT ROOM WITH SEATING IN THE ATRIUM AND THE POD (+COURTYARD IF GOOD WEATHER) | |
| PARALLEL SESSIONS | | |
| ROOM A CONTAMINANT SOURCES & FATE CHAIR: FIONA FORDYCE (BGS) | | |
| ROOM B NOVEL WASTEWATER TREATMENT METHODS CHAIR: CHRIS METCALFE (TRENT UNIVERSITY) | | |
| 13.40-14.00 | Assessing soil and stream geochemistry in the Clyde Basin, Scotland, UK Fiona Fordyce, British Geological Survey | Novel heterogeneous peroxymonofulfate activators: application to sulphonamides and bisphenol A degradation Jiayi Yao, Nanjing University |
| 14.00-14.20 | Unravelling the sources of lead in the urban soils of greater Glasgow, Scotland Sarah Donoghue, University of Edinburgh | Degradation of 2,4 chlorophenol by CuO-activated peroxydisulfate process Yi-Pin Lin, National University of Taiwan |
| 14.20-14.40 | Understanding chromium behaviour in COPR-impacted sediments in the Polmadie Burn, Glasgow (focus towards human health risk) Gavin Sim, University of Edinburgh | The controlling mechanism of wastewater treatment by hydrate process Hongsheng Dong, University of Edinburgh |

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| 14.40-15.00 | Understanding vanadium cycling in a “red sludge” impacted lake James Watt, University of Edinburgh | Wastewater bioremediation with filamentous algae Andrea Semaio, University of Edinburgh |
| 15.00-15.20 | TEA / COFFEE / CAKES BREAKOUT ROOM | |
| PARALLEL SESSIONS | | |
| ROOM A UNDERSTANDING & MITIGATING CONTAMINANT IMPACT CHAIR: IAN OLIVER (KEELE UNIVERSITY) | | |
| ROOM B NOVEL WATER AND SOIL TREATMENT METHODS CHAIR: ANDREA SEMIAO (UNIVERSITY OF EDINBURGH) | | |
| 15.20-15.40 | Examining the behaviour and mobilisation of heavy metals from a former mining site: towards a remediation strategy Sam Carter, University of Edinburgh | Modifying water purification membranes with bioinspired polydopamine and silver nanoparticles for biofilm prevention Margaret Fleming, Johns Hopkins University |
| 15.40-16.00 | The alternative use of water treatment residuals Tomi Turner, Keele University | Investigating chemical free cleaning of membranes in seawater desalination and wastewater reclamation Sorcha Daly, University of Edinburgh |
| 16.00-16.20 | Is there a “one-size-fits-all” for the remediation of abandoned mines? Andrew Innes, University of Edinburgh | Bio-based materials: a greener approach for water treatment Amit Bhatnagar, University of Eastern Finland |
| 16.20-16.40 | Transcription factor genes play a role in Cd phytoaccumulation under molybdenum treatments Fazal Hadi, Sun Yat Sen University | Key factors controlling risk of methylmercury in contaminated paddy soils Huan Zhong, Nanjing University |
| 16.40-17.00 | Rhizosphere effects on plant accumulation of pharmaceuticals Joel Pederson, University of Wisconsin-Madison | N/A |
| 17.00-17.30 | CLOSE OF MEETING ROOM A (Doug Evans/Margaret Graham) | |
| 18.30-20.00 | WHISKY TASTING DINING ROOM, 3RD FLOOR, TEVIOT ROW HOUSE (13 BRISTO SQUARE) | |

LOCATION

IIES WORKSHOP ROOM A: Training and Skills Room

IIES WORKSHOP ROOM B: Conference Room

TEA/COFFEE BREAKS: Breakout Room

LUNCH: Breakout Room with seating in the Atrium and the Pod

POSTERS: Atrium

POSTER SESSION | MONDAY JULY 2 | 17:40-18:30 | ATRIUM

Effect of local demographic data on estimating health impacts attributed to ambient PM2.5 in Chinese cities

Ge Zhu, Nanjing University

Contaminated sediments as sources of “in-place” pollutants in the Laurentian Great Lakes

Mary-Claire Buell, Trent

Assessment of soil remediation using water treatment residuals

Karrar Arab, Keele University

An initial investigation of element contents in mine spoils from 5 historic mining areas of the UK

Maysaa Alhar, Keele University

Ecotoxicological assessment of two types of biochar on earthworms *Eisenia fetida* and *Lumbricus terrestris*

Tom Elliston, Keele University

Pencil-drawn, ionic-liquid based, solid-contact ion selective electrodes for rapid detection of nitrate in soils

Jittima Choosang, Keele University

Development and analysis of sustainable materials and methods for precious metal recovery

Lorna Eades, University of Edinburgh

Characterisation of fouling build-up on hydroelectric pipelines in peaty upland areas

James Watt, University of Edinburgh

NMR and HR-MS insights into changes in molecular composition of DOM through different water treatment works

Alan Smith, University of Edinburgh

Brownification and big data: assessment of the underlying mechanisms and implications for water treatment using Scotland’s historic water quality samples

James Harding, University of Edinburgh

Assessing contamination in historic mining areas of the leadhills, southern Scotland, and exploring initial options for solid mining waste remediation

John Nightingale, Keele University

Molecular level characterization of damaged and restored sites of a Scottish raised peat bog

Yufan Zhu, University of Edinburgh

Detection of cyclooctaselenium and selenium-sulfur rings in sediments by GC-MS

Jana Farell, Trent University

N mineralisation and nitrous oxide emission from forest soils exposed to elevated atmospheric CO₂ concentration

Suparat Cotchim, Keele University/Prince of Songkla University

Developing air quality services in China

Kai Wan, University of Edinburgh

BOARD DIMENSIONS

Boards are 1.0M x 1.5M and take a standard size portrait poster