

INTERNATIONAL
INSTITUTE FOR
ENVIRONMENTAL
STUDIES

IIES NEWS



ISSUE
03
AUGUST
2020

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DIRECTOR'S MESSAGE

It has been about five months since we issued our last newsletter. At that time, the SARS-CoV-2 virus was not widely distributed, and the full extent of the damages caused by COVID-19 poorly understood. By now, the pandemic has affected most countries in which the IIES operates. While some countries like China and South Korea have returned to a somewhat normal daily routine, for others, the pandemic is still uncontained. Travel restrictions and genuine concerns about potential health problems will have a significant impact on the operations of the IIES for some time to come.

While we can't currently enjoy each other's company in person, we can still work together to meet our organization's objectives. We plan to do this over the coming months by holding several virtual events, including our annual Science and Policy Workshop and our International Graduate Forum. We will also be expanding our on-line lecture series. More details of these events can be found elsewhere in this newsletter.

The pandemic has highlighted several environmental issues that require our attention, including supply chain problems,



food security, and problems of waste disposal during times of restricted commerce and movement. As a group, IIES can play an important role in addressing some of these.

As we hold our virtual events, we will try to incorporate them. We would also appreciate your input on how best to hold virtual events and have IIES maximize its benefits to you. I hope you will all join us for some of our on-line gatherings. Please stay safe.

A handwritten signature in black ink, appearing to read "Douglas Evans".

Professor Douglas Evans
Director

WHAT WE'VE BEEN UP TO

ONLINE SEMINAR SERIES

International Graduate Student Seminar Series

ONLINE | MARCH, 2020

We were pleased to offer this online seminar series again to the IIES community. An IIES and Trent ENLS initiative, this series offered a unique collaborative learning environment by providing a space for postgraduate students to share ideas and questions freely.

This session featured talks on diverse topics, including sea surface temperatures in the western Arabian sea, nutrient composition in Canadian streams, Hawaiian coral reef resilience, legumes in the African Savanna and the stability of gravel-sand transition of the Ganga plains.

The on-going series is an opportunity for those who have participated in other IIES events to continue to develop their connections with colleagues from partner institutions, and an opportunity for newcomers to start to build these relationships.



Student Experience



CATCHING UP WITH POSTDOCS AT NANJING UNIVERSITY

Four post-doctoral fellows share
an update with us after two-years
of research

YINI MA MICROPLASTICS

Yini Ma has developed a research program and coordinated several research projects on environmental microplastics (MPs) and nanoplastics (NPs), focusing on the interactions between MPs and organic pollutants and subsequent effects on the bioaccumulation and environmental fate of organic pollutants in terrestrial and aquatic ecosystems. She developed the method using dual-label (fluorescence and radioactive label) to quantitatively trace the bioaccumulation and transport of both MPs and organic pollutants in organisms and other complex environments. The vector effects of nano-MPs on organic pollutants depend on the hydrophobicity and molecular structure of pollutants, which influenced the desorption hysteresis.

Also, the ageing of nano-MPs with UV light or oxidation changed MPs' surface properties and their retention in soil columns.

Ma has collected and characterized aged Polyethylene (PE) mulching films in the field where mulching films were applied over decades. We also studied the impact of different environmental factors on the ageing process of PE mulching films under laboratory conditions. She synthesized ¹⁴C labelled Polystyrene (PS) NPs and used them to study the photo-degradation of PS MPs under UV light. The results showed that among light, pH (acid rain), freezing, UV light was still the main driver of the plastic ageing process. The presence of water stimulated the photooxidation and mineralization of PS MPs, possibly due to the different reaction pathways in water vs in air.

KRISTIINA VÄÄNÄNEN

AQUATIC ECOTOXICOLOGY



I am Kristiina Väänänen from the University of Eastern Finland, specialized in aquatic ecotoxicology. After receiving my doctoral degree, IIES and Nanjing University supported me in conducting an international research period in Nanjing University, School of the Environment. I was given a great opportunity to work together with Professor Cheng Gu and his colleagues and students.

My research at NJU focused on the bioavailability of antimony in different types of waters. Since NJU is one of the leading institutes in the world when it comes to water-related research and analysis of metal bioavailability, it was an honour to learn from the best.

The 6-month research period in China had a wide impact on my career. Besides skills in aquatic research, I gained valuable international experience and was able to upgrade my Chinese

language skills. My love for international aspects led to a career in international cooperation at the university level.

Currently, I work as a Head of International Planning and Development at the University of Eastern Finland, where I develop new international cooperation actions, and coordinate one of the European University alliances, YUFE (Young Universities for the Future of Europe). I have also recently been given an opportunity to continue my Chinese language studies in Finland.

CHAO WANG MICROPLASTICS



Over the past two years, Chao Wang has investigated the degradation of organic contaminants by the Fe(III)-TAML/H₂O₂ system and the natural photo-ageing of polyvinyl chloride microplastics (PVC-MP). For the catalytic degradation of pollutants, Fe(III)-TAML/H₂O₂ system exhibited excellent reactivity for the removal of bisphenol compounds (e.g., bisphenol A, bisphenol AF and tetrabromobisphenol A) and antibiotics (e.g., ciprofloxacin and triclosan).

Moreover, Fe(III)-TAML-based microstructures, which were synthesized via the surfactant assistant self-assembly method, showed higher reactivity for the degradation of bisphenols than the free Fe(III)-TAML.

For the photo-ageing of PVC-MP, the presence of low molecular weight organic acids (LMWOA) could accelerate the ageing rate of microplastics, which could be attributed to the photo-generated hydroxyl radicals via the photolysis of LMWOA and their ferric complexes.



WENLI TANG

BIOGEOCHEMISTRY

Wenli Tang joined the IIES International Post-Doctoral Support Program in July 2018. During the last two years, Tang has mainly focused on the research of Hg biogeochemistry in rice-paddy systems, including the effects of farming activities on Hg methylation and methylmercury (MeHg) accumulation in rice, and the translocation/ transformation of Hg from pedosphere to biosphere.

One of the main results in Tang's research is that she found that straw amendment may increase risks of MeHg exposure. Straw return, a prevalent farming activity globally, could improve soil properties and fertility and is considered as a green way of straw management. However, Tang et al. found that straw return could significantly increase (by 95%) the MeHg level of rice grain.

These increases could be attributed to enhanced abundances/activities of microbial methylators and the transformation of refractory HgS to organic matter-complexed Hg, facilitating microbial Hg methylation in soils; enhanced MeHg mobility, and increased root lengths (35–41%) and tip numbers (60–105%), increasing MeHg uptake by rice roots; and enhanced MeHg translocation to rice grains from other tissues. The results of this study emphasize fresh organic matter-enhanced MeHg production and bioaccumulation and highlight the increased risk of MeHg after straw amendment and the need for new policies concerning straw management. This research was published in *Environmental Science & Technology*. 2019, 53, 6144-6153.

NEWEST IIES MEMBER



We are pleased to welcome our newest IIES member, University College London (UCL). UCL is a dynamic and progressive university that boasts one of the largest enrollment rates in the UK. UCL is a leading multidisciplinary university home to the Bartlett School of Environment, Energy and Resources (BSEER).

"I am delighted to see UCL joining this fascinating international network and collaborative opportunities for our PhDs and early career researchers across UCL; may it facilitate world-leading research and transformative impacts!" says Professor Raimund Bleischwitz, Director of BSEER.

Professor Bleischwitz spoke at our last Annual Science and Policy Workshop in Seoul in November 2019.

We look forward to this new partnership and to building a stronger IIES community.

If you would like to reach out to us to find out more about IIES members and membership, please contact Doug Evans [devans\[at\]trentu.ca](mailto:devans@trentu.ca) or Julia Colley [juliacolley\[at\]trentu.ca](mailto:juliacolley@trentu.ca).

6TH ANNUAL SCIENCE AND POLICY WORKSHOP

NOVEMBER 12-14, 2020

This year we have adjusted our annual workshop format to ensure the safety of our participants. We are pleased to offer a versatile, innovative virtual workshop, which will be held from November 12-14. The meeting will include a mix of pre-recorded, on-demand presentations and live sessions to accommodate various time zones. Taking place over three days, our program will be a series of two-hour sessions, highlighting dynamic live plenary speakers from multi-disciplinary backgrounds, followed by three consecutive discussion sessions exploring research being done within the IIES community.

SESSIONS

New this year, each day will offer three half-hour sessions chaired by one faculty member from a different university. The chairs will organize their sessions around a series of talks showcasing the research being done at their institution. Each day will showcase talks from a different geographic region of the IIES community.



THEMES

This year's themes will be determined by the session organizers but will encompass the Institute's four over-arching themes of Green Technology, Environmental Health, Environmental Policy and Environmental Processes.

Be sure to visit our website www.II-ES.com for updates on the workshop and other events.

UPCOMING EVENTS

NANOPARTICLES ONLINE SEMINAR SERIES

Our next online seminar series will focus on nanoparticles and is set to begin in the fall, and will feature seminars from both IIES member and external faculty.

ONLINE | FALL 2020

6TH ANNUAL IIES SCIENCE & POLICY WORKSHOP

Nanjing University will host this year's annual workshop online.

ONLINE | NOVEMBER 12-14, 2020

GRADUATE STUDENT FORUM

This year's forum will be offered virtually with tentative dates in mid November or early December. More information will be available in the coming months.

ONLINE | DATES TO BE DETERMINED

SHANGHAI JIAO TONG - UNIDO GREEN GROWTH INSTITUTE

The IIES is involved in planning and development of a new research institute on internationalization of circular economies. The Institute will be located at Shanghai Jiao Tong University. IIES will provide support for students and faculty from IIES member institutions to take part in the activities of the Institute. The IIES Director will serve as one of the committee members of this proposed institute. The institute will start from October 2020.

SHANGHAI JIAO TONG UNIVERSITY | OCTOBER 2020



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