

**2017 OJEONG ECO-RESILIENCE (OJERI) SYMPOSIUM:
“RESILIENCE AND ECOLOGICAL SUSTAINABILITY”**

Organized by
Ojeong Eco-Resilience Institute (OJERI), Korea University, Seoul,
The Republic of Korea

November 10, 2017 1:00pm~6:00pm
Korea University, College of Life Sciences and
Biotechnology, East Bld. Room 222

Time	Description	Chaired by
1:00pm – 1:50pm	Registration	
1:50pm – 2:00pm	Opening	
2:00pm – 2:30pm	Orienting Environmental Research for Enhancing Ecological Resilience – The Case of Persistent Toxic Substances Speaker: Prof. Ming-Hung Wong	Prof. Park Woojun (Division of Environmental Science & Ecological Engineering, Korea University)
2:30pm – 3:00pm	Biogeochemistry for Resilient Cities Speaker: Prof. Yong-Guan Zhu	
3:00pm – 3:30pm	Managing Carbon Storage to Enhance Resilience in Soil Health and Agricultural Productivity Speaker: Prof. Nanthi Bolan	Prof. Choi Yoon-E (Division of Environmental Science & Ecological Engineering, Korea University)
3:30pm – 4:00pm	Resilience: Towards a Workable Concept of Sustainability Speaker: Prof. Jinyung Chon	
4:00pm – 4:30pm	Coffee break	
4:30pm – 5:00pm	Environmental Resilience: Spatial Variation of Soil Geochemistry at Different Scales Speaker: Dr. Chaosheng Zhang	Prof. Kwon Jung Hwan (Division of Environmental Science & Ecological Engineering, Korea University)
5:00pm – 5:30pm	SMART Biochar for Resilience: A Shifting Paradigm Towards Environmental Research Speaker: Prof. Yong Sik Ok	
5:30pm – 6:00pm	Engineering Soil Eco-Resilience Using (Modified) Biochars Speaker: Prof. Brian John Reid	

Prof. Ming-Hung Wong



Having served as the Regional Coordinator of Central and North-East Asia of the project “Regionally Based Assessment of Persistent Toxic Substances” sponsored by United Nations Environment Program (UNEP) and Global Environment Facility (GEF), Prof. Wong has recently taken part in a panel of three to review a UNEP/GEF initiative “Emerging Chemicals Management Issues in Developing Countries and Countries with Economies in Transition” with the aim of understanding the sources and preventing adverse impacts of chemicals on human health and the environment in rapidly developing countries.

Professor Wong has published over 630 SCI papers and 32 book chapters, edited 25 books/special issues of scientific journals, and has successfully filed 5 patents. Professor Wong has been ranked first in the Environmental Science and Ecology, among the top 20 most influential Chinese scientists in the world based on paper citation frequency and the H-index in 2010 (June 1990 - July 2009).

His reputation has been widely recognized internationally and capped by receiving two DSc Degrees awarded by University of Durham and University of Strathclyde (both UK) in 1992 and 2004 respectively. He was awarded the Croucher Senior Fellow (Croucher Foundation of Hong Kong) in 1997, the Royal Society Visiting Fellow (Royal Society, UK) in 2000, Chang Jiang Chair Professor of Environmental Science (Ministry of Education of China) in 2014, and the Milton Gordon Award for Excellence in Phytoremediation (International Phytotechnology Society) in 2016. Professor Wong is currently the Editor-in-Chief of Environmental Geochemistry and Health (Elsevier).

Prof. Yong-Guan Zhu



Dr. Yongguan (Yong-Guan) Zhu, Professor of biogeochemistry and environmental soil science and soil biology, is the Director General of the Institute of Urban Environment, Chinese Academy of Sciences (CAS). He has been working on the biogeochemistry of nutrients, metals and emerging pollutants (such as antibiotics and antibiotic resistance genes).

Professor Zhu is a leader in taking multi-scale and multi-disciplinary approaches to soil and environmental problems. Before returning to China in 2002, he was working as a research fellow (Supported by the Royal Society London), the Queen's University of Belfast, UK (1994-1995); and a postdoctoral fellow in The University of Adelaide (1998-2002), Australia. He obtained his BSc from Zhejiang Agricultural University in 1989, and MSc from CAS in 1992, and then a PhD in environmental biology from Imperial College, London in 1998. Dr Zhu is currently the co-editor-in-chief of *Environmental Technology & Innovation* (Elsevier), associate editor of *Environment International* (Elsevier), and editorial members for a few other international journals.

He is a scientific committee member for the ICSU program on Human Health and Wellbeing in Changing Urban Environment, and served for nine years as a member of Standing Advisory Group for Nuclear Application, International Atomic Energy Agency (2004-2012). Professor Zhu is the recipient of many international and Chinese merit awards, among them including TWAS Science Award for Agricultural Science 2013, National Natural Science Award 2009; he was elected fellow, the America Association for the Advancement of Science (AAAS). Professor Zhu has published over 300 papers (among them 15 highly cited papers in the last 10 years) in international journals (such as *Science*, *PNAS*, *Nature Microbiology*, *Nature Plants*), and these publications have attracted over 14,000 citations (Web of Science) with an H-index of 64. He was selected as a Web of Science Highly Cited Researcher (2016 and 2017).

Prof. Nanthi Bolan



Dr. Nanthi Bolan is a Professor of Environmental Chemistry at the University of Newcastle, Australia. Before joining the University of Newcastle, Nanthi worked at the Professor of Soil Science at Massey University, New Zealand, and as the Chair in Environmental Science at the University of South Australia (UniSA).

He has served as the Dean of Graduate Studies of UniSA and also as the leader of Co-operative Research Center for Contaminant Assessment and remediation of the Environment (CR CARE) Programme on Prevention Technologies. His teaching and research interests include agronomic value of manures, fertilisers and soil amendments, soil acidification, nutrient cycling, pesticide and metal pollutants interactions in soils, soil remediation and waste and wastewater management.

Nanthi is a Fellow of American Soil Science Society, American Society of Agronomy and New Zealand Soil Science Society and was awarded the Communicator of the Year award by the New Zealand Institute of Agricultural Sciences. He has supervised more than 40 postgraduate students, and was awarded the Massey University Research Medal for excellence in supervision. He has published more than 200 papers and was awarded the M.L. Leamy Award in recognition of the most meritorious contribution to soil science. Nanthi has served as a Visiting Fellow in a number of research institutes including Savannah River Ecology Centre, USA, The University of Newcastle Upton Tyne, UK, Jinju National University, Korea, The University of La Frontera, Chile, and The Federal Agricultural Research Organisation, Germany.

Nanthi has served in the Editorial board of two international journals, Nutrient Cycling in Agroecosystem and Environmental Geology and Health, and also served as the Associate Editor of Journal of Environmental Quality and Critical Reviews in Environmental Science and Technology.

Prof. Jinhyung Chon



Professor Jinhyung Chon is Deputy Director of OJeong Eco-Resilience Institute and Chair of Landscape Architecture Program in the Division of Environmental Science and Ecological Engineering, Korea University, Seoul, Korea.

He leads Ecological Landscape Design and Research lab whose work focused on analyzing dynamics of social ecological systems and developing planning and design innovations for resilient green infrastructures to sustain our communities. Dr. Chon and his research group endeavor to make best use of research methods including System Dynamics, Geodesign, and statistics to examine how to better provide ecosystem services as well as assess landscape performance in urban, rural, coastal, and ecologically sensitive areas.

Work in the lab is built on the integration of resilience theory and trans-disciplinary approaches. With principles of ecological landscape design, the lab investigate disruptive natural events at all scales and promote adaptive design solutions that best support specific resilience goals. Recent projects are incorporating with climate change adaptation to identify sustainable ways that humans and nature are strongly coupled to be conceived as one Social Ecological System. Major design projects include ecological urban open space design, facility design in Environmentally Sensitive Area, habitats design for endangered species. For systematic approach to the design, he also utilizes computer modeling and digital media in order to better understand the impacts that human activities and development can have on sensitive ecological and environmental systems.

Research interest also expands to operationalize human-environment relationships through green infrastructure that can help resolve what many see as a paradox: resource conservation and visitor enjoyment. How to design viable landscape while at the same time sustaining the quality of life, livability, and recreation and tourism opportunity is a major issue in this line of research.

Dr. Chaosheng Zhang



Dr. Chaosheng Zhang received his bachelor's and master's degrees from Peking University, and PhD degree from Institute of Geography, Chinese Academy of Sciences, China.

Dr. Chaosheng Zhang is Director of International Network for Environment and Health, and head of Research Cluster of Environmental Change at Discipline of Geography, National University of Ireland, Galway. He was the founding head of Ryan Institute GIS Centre. He teaches Geographic Information System (GIS) courses at School of Geography and Archaeology of the University.

Dr. Zhang's academic background covers both GIS and environmental geochemistry. His research interest focuses on spatial analyses of environmental variables, especially metals and nutrients in soils and soil organic carbon, using GIS, geostatistics and other spatial statistical techniques, to identify hotspots and quantify spatial variation, with applications in environmental management and precision agriculture. With collaborators, he also works on the novel technology of DGT (diffusive gradients in thin films) for assessment of bioavailability of chemicals in the environment. One of the current research directions of Dr. Zhang is spatial analysis of environment and health. Dr. Zhang has published more than 110 papers in peer-reviewed journals (Google Scholar H-index: 31; SCOPUS H-index: 26). He is a reviewer for more than 40 international journals. Dr. Zhang has research experience in China, Sweden, USA, Australia, Jamaica and Ireland. He was a University Fellow of Hong Kong Baptist University in 2013. Dr. Zhang is chair and organizer of several internationally leading conferences in environment, health and GIS (SEGH 2010 International Conference and Workshops on Environmental Quality and Human Health; SESEH 2012 Sino-European Symposium on Environment and Health; ISEH 2016 & Geoinformatics 2016, Joint International Conference on Environment, Health, GIS and Agriculture). Dr. Zhang was an international advisor to Jiuzhaigou National Park of China (2013-2016).

Dr. Zhang holds the following international professional positions:

- ◆ President of SEGH (Society for Environmental Geochemistry and Health, www.segh.net)
- ◆ Chair, ISEG (International Symposium on Environmental Geochemistry) International Board (www.nuigalway.ie/ineh)
- ◆ Chair of Funding Committee, IMGA (International Medical Geology Association, www.medicalgeology.org)
- ◆ Member of Editorial Board of Science of the Total Environment
- ◆ Coordinating Editor of Environmental Geochemistry and Health
- ◆ Founder and Co-Chair of SEGH China-Ireland Consortium
- ◆ Founder and Co-Chair of IMGA China-Ireland Concord
- ◆ Founder: SESEH Sino-European Symposium on Environment and Health (Branded as ISEH from 2014 International Symposium on Environment and Health)

Prof. Yong Sik Ok



Prof. Yong Sik Ok is Full Professor in the Division of Environmental Science and Ecological Engineering, Korea University, Seoul, Korea, where he also serves as Director of the Korea Biochar Research Center. His positions include Adjunct Professor at the University of Wuppertal, Germany, Adjunct Professor at the University of Southern Queensland, Australia, Guest Professor at China Jiliang University, China and Guest Professor at Ghent University Global Campus, Ghent University, Belgium. Prof. Ok holds B.S. (1998), M.Sc. (2000) and Ph.D. (2003) from the Division of Environmental Science and Ecological Engineering, Korea University, Seoul. Prof. Ok was a Postdoctoral Fellow at the Department of Renewable Resources, University of Alberta, Canada and held Visiting Professorships in the Department of Renewable Resources (University of Alberta), in the Faculty of Bioscience Engineering (Ghent University), in the Department of Civil and Environmental Engineering (Hong Kong Polytechnic University) and in the Department of Chemical and Biomolecular Engineering (National University of Singapore).

Prof. Ok's academic background covers waste management, bioavailability of emerging contaminants, and bioenergy and value-added products such as biochar. Prof. Ok also has experience in fundamental soil science and remediation of various contaminants in soils and sediments. Together with graduate students and colleagues, Prof. Ok has published over 400 research papers, 21 of which were ranked as ESI top papers (19 nominated as "Highly Cited Papers" and 2 nominated as "Hot Papers"). Prof. Ok maintains a worldwide professional network through his service as an Associate Editor for Environmental Pollution and Critical Reviews in Environmental Science and Technology, and as a Member of the Editorial Boards of for Chemosphere, Journal of Analytical and Applied Pyrolysis and several other international scientific journals.

In addition, Prof. Ok has served as a Guest Editor for many leading journals, such as Journal of Hazardous Materials, Bioresource Technology, Science of the Total Environment, Chemosphere, Plant and Soil, Journal of Environmental Management, Applied Geochemistry, Environmental Geochemistry and Health, Environmental Science and Pollution Research, and Geoderma. Prof. Ok is chair and organizer of many internationally leading conferences, such as 2nd Contaminated Land, Ecological Assessment and Remediation (Korea, 2014), 3rd Asia Pacific Biochar Conference (Korea, 2016), 2nd Biological Waste as Resource (Hong Kong, 2017), and others. Prof. Ok has been involved in numerous national and international commissions and committees as an active member, and regularly serves as an external reviewer for national and international funding agencies.

Prof. Brian John Reid



Reid is a graduate of The University of Edinburgh BSc (hons) First Class Environmental Chemistry) and Lancaster University (PhD).

Reid is a Reader in Soil Science at the University of East Anglia and Adjunct Professor with the Chinese Academy of Science Institute for Urban Environment (Xiamen, China). Reid is a Technical Expert in Soil Quality to the British Standards Institute and a member of the International Standards Institute - ISO - Soil Quality

Technical Committee -TC190. He has published >60 journal articles; these have accrued 3500 citations; his H-index is 28. His research has focused on: soil interactions with contaminants, agrochemicals, antibiotics and nutrients; the fate and transport of these agents in association with soil colloids and organic matter; contaminated land; biochar; remediation, and; pollutant risks and ecotoxicity. His current research relates to: i) the fate, availability and risk associated with chemicals in the environment, ii) the role of soil carbon in controlling soil structure, soil hydrology and chemical mobility, iii) the mobilisation of soil organic matter and soil colloids during intense rainfall events, iv) innovation to minimise pesticide release into the environment, and iv) environmental applications of biochars.

Supporting manuscripts:

Khan et al. (2013) Reduced bioaccumulation of PAHs by *Lactuca sativa* L. grown in contaminated soil amended with sewage sludge and sewage sludge derived biochar. *Environmental Pollution*, 175, 64-68.

Zheng, et al. (2017) Mitigating cadmium accumulation in greenhouse lettuce production using biochar. *Environmental Science and Pollution Research*, 1-11.

Zheng et al. (2015) Mitigating heavy metal accumulation into rice (*Oryza sativa* L.) using biochar amendment - a field experiment in Hunan, China. *Environmental Science and Pollution Research*, 22 (14), 11097-11108.

Khan et al. (2014) Application of biochar to soil reduces cancer risk via rice consumption: a case study in Miaoqian village, Longyan, China. *Environment International*, 68, 154-161.

Waqas et al. (2015) Application of sewage sludge and sewage sludge biochar to reduce polycyclic aromatic hydrocarbons (PAH) and potentially toxic elements (PTE) accumulation in tomato. *Environmental Science and Pollution Research*, 22, 12114-12123.

Zama et al. (2017) The role of biochar properties in influencing the sorption and desorption of Pb(II), Cd(II) and As(III) in aqueous solution. *Journal of Cleaner Production*, 148, 127-136.

Zhang et al. (2016) Modest amendment of sewage sludge biochar to reduce the accumulation of cadmium into rice (*Oryza sativa* L.): A field study. *Environmental Pollution* 216, 819-825.

Freddo et al. (2013) Environmental contextualisation of potential toxic elements and polycyclic aromatic hydrocarbons in biochar. *Environmental Pollution*, 171, 18-24.