2019 10th International Conference on Environmental Science and Technology (ICEST 2019)

June 7-9, 2019

Xiamen Ocean Vocational College, Xiamen, China

Sponsored by

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Conference Venue

厦門海洋職業技術學院
XIAMEN OCEAN VOCATIONAL COLLEGE

No.4566, Hongzhong Road, Xiangan District, Xiamen / 厦门市翔安区洪钟路 4566 号

Subordinated to the Education Department of Fujian Province, Xiamen Ocean Vocational College is a public vocational college, whose foundation was approved by Fujian Provincial Government. Xiamen Ocean Vocational College possesses a history of nearly 100 years, as it was developed from Jimei Marine School, the earliest school in China to nurture people with ocean technology, which was founded by Mr. Tan Kah Kee, a well-known patriotic overseas Chinese leader in 1920. Xiamen Ocean Vocational College is located in Xiamen Special Economic Zone, a city renowned as “Garden on the Sea”. The college now has two campuses: Siming campus and Xiang’an campus, whose planed construction areas cover more than 1000 mu. With 8 departments and sections consisting of 36 majors, the college has more than ten thousand students in present. Every year, the college contributes over 20 thousand person-times external training to the society. In its nearly a century’s history, Xiamen Ocean Vocational College has made great contributions to both ocean industry’s development of Fujian Province and China’s Maritime Power Strategy.

Xiamen Ocean Vocational College has been awarded as *College Features National Defense* by Ministry of National Defense of the People’s Republic of China and *Civilized College of Fujian Province* successively. The college was also evaluated as *Model Vocational College of Fujian Province* and *Model Vocational College in Modern times of Fujian Province (A Level)*. In April, 2000, President Xi Jinping, who was the governor of Fujian Province then, sent an inscription to Xiamen Ocean Vocational College to celebrate its 80th anniversary. In the inscription, he wrote: “Just as spring rains nourish fruits, so teachers nurture students”, which expressed his high expectation of the college’s development.

厦门海洋职业技术学院隶属于福建省教育厅，是经福建省人民政府批准设立的省属公办普通高等职业院校，是由著名爱国华侨领袖陈嘉庚先生于 1920 创办，是我国最早培养水产航海专业技术人才的摇篮之一，距今已有近百年的办学历史。

学校坐落于美丽温馨的“海上花园”厦门经济特区。现有思明和翔安两个校区，总规划建设面积 1000 余亩，目前设有 8 个院、系、部，36 个专业。全日制在校生超 1 万人，年社会培训量超过 2 万人次。办学

近百年来，优秀校友遍及世界五洲和全国各地，为福建省海洋经济产业发展和国家海洋强国战略做出了重要的贡献。

学校是中国教育部国防教育特色学校、福建省示范性高职院校、福建省文明学校、福建省第一届省级文明校园、福建省示范性现代高职院校 A 类院校。2000 年，时任福建省省长的习近平总书记为学院八十周年校庆题词“春风化雨，桃李满园”，对学校的建设和发展寄予厚望。

Conference Venue

会议场地

June 7-8, Lecture Hall T2, Third Teaching Building, Xiang 'an Campus, Xiamen Ocean Vocational College

6 月 7-8 日，厦门海洋职业技术学院翔安校区教学楼（3）T2 报告厅

June 9, Room 201, Office Building, Xiang 'an Campus, Xiamen Ocean Vocational College

6 月 9 日，厦门海洋职业技术学院翔安校区办公楼 201 会议室

Recommended Hotel

推荐酒店

Name: Golden Bay Resort

厦门金门湾大酒店

Address: No. 168, South Huan Deng Road, Da Deng Island, Xiangan District, Xiamen, Fujian, China

地址：厦门翔安区大嶝岛环嶝南路 168 号

Tel: 0592-7617888

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Session Chair: Prof. Ning Zhang and Prof. Gordon Huang

Poster

Xiamen Conference Introductions

✧ Publication

Welcome to 2019 HKCBEES Xiamen conference. This conference is organized by HKCBEES. The objective of the Xiamen conference is to bring together leading scientists, researchers around the world to discuss the priority topics for Environmental Science and Technology in recent years

2019 10th International Conference on Environmental Science and Technology (ICEST 2019)

Accepted papers will be published in the following conference proceeding:

IOP Conference Series: Earth and Environmental Science (EES) (ISSN: 1755-1315), which is indexed by **EI Compendex, Scopus**, Thomson Reuters (WoS), Inspec,et al.

Conference website: http://www.icest.org/;

Conference email address: icest@cbees.org

✧ Conference Committee

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Yongping Li, Beijing Normal University, China

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Presentation Instructions

Instructions for Oral Presentations

Devices Provided by the Conference Organizer:

Laptop Computer (MS Windows Operating System with MS PowerPoint and Adobe Acrobat Reader)
Digital Projectors and Screen
Laser Sticks

Materials Provided by the Presenters:

PowerPoint or PDF Files (Files should be copied to the Conference laptop at the beginning of each Session.)

Duration of each Presentation (Tentatively):

Regular Oral Presentation: about **10** Minutes of Presentation and **5** Minutes of Question and Answer
Keynote Speech: about **30** Minutes of Presentation and **5** Minutes of Question and Answer

Instructions for Poster Presentation

Materials Provided by the Conference Organizer:

The place to put poster

Materials Provided by the Presenters:

Home-made Posters
Maximum poster size is A1
Load Capacity: Holds up to 0.5 kg

Best Presentation Award

One Best Presentation will be selected from each presentation session, and the Certificate for Best Presentation will be awarded at the end of each session on June 8, 2019 and June 9, 2019.

Dress code

Please wear formal clothes or national representative of clothing.

Keynote Speaker Introductions

Keynote Speaker I

Prof. Caterina Valeo
University of Victoria, Canada

Dr. Caterina Valeo is a Professor in Mechanical Engineering at the University of Victoria and a Professional Engineer in the Province of British Columbia. After receiving undergraduate degrees in Physics and later, a second one in Civil Engineering, both from the University of Toronto, she went to McMaster University to complete a Masters degree and eventually a PhD specializing in urban water resources in 1998. She worked as an academic at the University of Manitoba for 2 years then moved to Geomatics Engineering at the University of Calgary in 2000 where she began developing what has now become a prolific 20 year career conducting research and teaching in Environmental Information Sciences. She moved to the Department of Mechanical Engineering at the University of Victoria in 2011 to continue her interdisciplinary research that merges information science with environmental science and engineering. Her research interests and areas of application are wide and varied and range from researching the impacts of global scale changes on forestry and water supply to developing sensors and models to describe the role of bacteria and biofilm in treating polluted water. She has more than 200 publications including 3 co-authored books on topics as diverse as Environmental Hydraulics and Digital Terrain Modelling. She has collaborated with over 100 researchers across the globe, has received and participated in several millions of dollars in grants and is the recipient of numerous accolades including the 2014 Award of Distinguished Scientist from the International Society for Environmental Information Sciences. Today Dr. Valeo runs the Biofilm Research Laboratory and the HAL Research Site at the University of Victoria and continues to conduct multi-collaborative research that uses Environmental Informatics tools to create sustainable solutions to society’s modern problems.

Topic: ‘Scaling in Sustainable Urban Design’

Abstract—As disruptive forces such as climate change and population increases intensify, urban infrastructure designs that are both sustainable and effective, ultimately drive policy – this is the true measure of success in engineering design. What is common to all these successful designs is that they were achieved through a systems approach that is integrative, technologically innovative, socially minded, and engages the individual, while considering past, current and future energy demands, civil service capacities (including water resources and transportation networks), the environmental condition, and the effect of scale in the design process – from conception to implementation. Scaling in urban infrastructure design is often overlooked and can result in reduced efficacy of a proposed solution at implementation. But knowing how to incorporate scale in the design process is a difficult question. To demonstrate the need and possible approaches for considering scale in sustainable urban design, several examples of innovative solutions for mitigating pollution are provided. These include representation of microscale biofilm formation for pollution mitigation in largescale bioretention cells; natural, low cost, environmentally “friendly” materials for removing pollutants in urban runoff on a large scale, and long term stormwater quantity and quality mitigation over large areas of the urban environment.

Keynote Speaker II

Prof. Yongping Li
Xiamen University Of Technology, China

Yongping Li is a Changjiang Scholar Professor at Beijing Normal University, China. She receives her MSc and PhD Degrees from the University of Regina, Canada. Her research interests involve in energy and environmental systems analysis, environmental pollution control, water resources management, and decision making under uncertainty. Since 2005, Li has led or involved in over 50 energy- and environment-related research projects supported by industrial, governmental and international organizations. She has produced over 270 peer-refereed international journal papers (with an SCI-based H-index of 35 in Science Citation Index under Thomson Reuters' Web of Science), and supervised over 50 Master/PhD students. Dr. Li was received a number of awards such as Distinguished Young Scientist Award, New Century Excellent Talents in University, the National Natural Science Funds for Distinguished Young Scholar, the National Award for Youth in Science and Technology, and the National Award for Youth Female Scientist.

Topic: ‘Water-energy-food nexus: Integrated simulation-optimization approach’

Abstract—Water-energy-food nexus management continues to be challenges faced by decision makers. Currently, these challenges are being further compounded by rapid socioeconomic development and population associated growth with increased energy and food demands as well as shrinking water availability due to climatic and anthropogenic changes. Moreover, water-energy-food nexus is complicated with many conflicting and uncertain factors as well as their interactive relationships. These complexities and uncertainties are amplified by not only the systems’ dynamic features but also the associated economic penalties if the promised targets are violated. In response to these concerns, decisions with sound economic and environmental efficiencies are desired to effectively manage the nexus. In this study, an integrated simulation-optimization approach is developed for assessing climate change and uncertainty impacts on water-energy-food nexus, where uncertainties presented as both interval numbers and probability distributions can be reflected. A variety of scenarios associated with different water availabilities and multiple uncertainties are examined. Results reveal that both water availabilities and uncertainties have significant effects on the nexus system planning strategies. Results also disclose that water-trading scheme is an effective manner to allocate limited water resources with a maximized system benefit in an arid region. The methodology and findings can help managers to gain scientific understanding of the consequences of water-allocation and -trading decisions when planning in a fast-growing economy development and ever-increasing energy demand region under climate change.

Keynote Speaker III

Prof. Lixiao Zhang
School of Environment, Beijing Normal University

Dr. Zhang obtained his Master degree and Ph.D. degree in environmental sciences from Peking University. Prior to joining BNU in 2005, he was a research fellow in BOKU university of Austria.

Dr. Zhang has been involved in research on various aspects of environmental accounting and management, with special focus on food-energy-water nexus, urban metabolism，and renewable energy systems since 2007. Over this time he has conducted research on life cycle assessment(LCA), Environmental Input-Output Analysis (EIOA) and Ecological Modelling techniques. Dr. Zhang is also recognized for his productive and highest cited scholarly output in environmental accounting and management. He has authored over 100 peer-reviewed papers and 5 books. His works are widely recognized and have more than 1500 citations with H-index of 22 according to Web of Science.

Dr. Zhang has served as the deputy dean of School of Environment, the General secretary of Environmental Geoscience Branch of Chinese Society for Environmental Sciences. He has also served as principal investigator for more than 20 large-scale research projects. He was appointed as associate editor of Journal of Environmental Management in November since 2017.

Topic: ‘Food-Energy-Water Nexus for Urban Sustainability: Conceptual Framework and Real Challenges’

Abstract—The rapid development of socio-economic systems and continuously proceeding urbanization in the world bring cities a prominent challenge to simultaneously satisfy the growing demands for food, energy, and water (FEW) resources. Emphasizing interlinkages between the three lifelines of material society, the nexus approach for food, energy and water governance has become a consensus in global community. However, consistent and explicit cognitions of the FEW nexus still lack, and sophisticated methodological modeling framework is urgent to establish. In this study, we present a comprehensive literature review to debate the current concepts of FEW nexus, analyze the elements, methods and foci for FEW nexus research. With regard to the concerns of efficiency and resilience of urban metabolism system, a three-hierarchy methodological framework of urban FEW nexus management was proposed, including the inherent interdependency of FEW, external environment (socio-economic-ecological context) of the FEW security, and FEW security optimization to achieve urban sustainable development goals. Finally, we shed light on three fundamental challenges for closing the gaps in FEW governance, i.e., the feasibility of science-policy integration, cross-scale inequalities, and path-dependencies in existing infrastructure and management system.

Keynote Speaker IV

Prof. Guangwei Huang
Sophia University, Tokyo, Japan

Born in Shanghai, graduated from Fudan University and obtained Ph.D from the University of Tokyo. Work experiences include Associate Professor at the Dept. of Civil Engineering, the University of Tokyo; Associate Professor at the Dept. of Civil Engineering, Kanazawa University; Associate Professor at the Dept. of Civil Engineering and Architecture, Niigata University; Associate Professor in Graduate School of Frontier Sciences, the University of Tokyo; Professor for an international education program at International Center for Water Hazard and Risk Management under the auspices of UNESCO. Career in Sophia started from Sep. 21, 2011.

My research activities over the past decade can be described as multidisciplinary and multi-scales. Lake eutrophication modeling; sustainable use of wetland; river flow and water quality simulations, urban flood risk management and long-term policy impact analysis as well. Some of recent publications are Huang, G.W.: Long-term impact of policy mismatch on watershed health, International Journal of River Basin Management. Vol. 9, No. 1, pp. 79-84, 2011. Huang, G.W.: Time lag between reduction of sediment supply and coastal erosion, International Journal of Sediment Research, Vol. 26, No. 1, pp.27-35, 2011. Huang, G.W.: Role change of in-channel vegetation with regard to sediment, Journal of Environmental Informatics, Vol.18, No.1, 31-37, 2011.

I deal with environmental problems in various approaches from field survey, statistical analysis and numerical modeling. My research strategy is a good combination of "seeds" and "needs". My belief is that environmental problems could not be solved unless we break the walls of conventional research fields. We must take integrated approaches to deal with the very complex and interconnected environmental issues. We need new concepts, new way of thinking, new tools, new value and ultimately new society.

Topic: ‘Shallow Lake Restoration: Case Studies in Japan’

Abstract—Many shallow lakes across the world have been degraded due to multiple causes, particularly eutrophication which is increased productivity due to excessive input of the nutrients by human activities. The restoration of ecosystems of shallow lakes presents a big challenge to lake researchers and managers due to the complexity of lake’s response to various management practices. This talk presents two case studies in Japan, highlighting the environmental changes of the two lakes and drivers behind the changes. Findings contribute to better understanding of shallow lake systems and improve lake management

Keynote Speaker V

Prof. R. J. (Dick) Haynes
Soil and Environmental Science, School of Land Crop and Food Sciences/CRC CARE,
The University of Queensland, St Lucia, Queensland

Professor Haynes works in the areas of soil and environmental science. His present research interests are in the use and recycling of industrial, agricultural and municipal wastes and minimising their effects on the environment. He has extensive experience having worked as both an applied research scientist and as a university professor and has worked in New Zealand, South Africa and Australia. He has published over 170 original research papers in international journals, over 20 review papers in international volumes as well as many conference and extension papers and contract reports. He has been an invited keynote speaker at 7 international conferences and has served on the editorial board of 4 international research journals. He has acted as principal supervisor and co-supervisor of PhD, MSc and honours students in both South Africa and Australia. Professor Haynes has carried out research in commercial horticultural, pastoral, arable and forestry production as well as in small-holder semi subsistence agriculture. He has also worked on bioremediation of soils contaminated with organic pollutants, rehabilitation of mined sites, application of organic and inorganic wastes to soils and the effects of heavy metal contaminants on soil processes. His research has been mainly in the areas of applied soil chemistry and soil microbiology/biology with links to soil physical properties and to pollution of air and water. He has specialised in working on applied problems and maintains strong links with industry. Major areas of research have included the role of grazing animals in the fertility of pastoral soils, N cycling and gaseous and leaching losses from arable and pastoral systems, soil quality and soil degradation under agricultural land use, effects of soil contaminants on soil processes, rehabilitation and remediation of contaminated, degraded and mined sites and use of wastes as soil amendments.

Topic: ‘Sustainable revegetation of bauxite processing residue’

Abstract—Bauxite is mined by open cut techniques and processed in alumina refineries by the Bayer process in which Al-containing minerals are dissolved in hot NaOH. The alumina produced is then transported to an aluminium smelter where aluminium metal is produced. The insoluble solids (bauxite processing residues) produced during the refining of alumina are deposited in impoundments surrounding the alumina refinery using either wet (15-30% solids) or dry (50-60% solids) disposal techniques. Dry disposal is now the dominant method used since it requires less space, the residue consolidates more rapidly, there are much less problems with treating drainage and it simplifies reclamation processes. For every tonne of alumina produced, 1-2 tonnes of residues are produced and, on a global basis, annual production of residue is about 120 million tonnes while the legacy over the last 120 years is about 2.7 billion tonnes. The material is red in colour due to its high content of iron oxides and is composed of mainly fine, silt-sized particles (0.002-0.02 mm dia.). As a result it is often referred to as red mud. Establishment of a vegetation cover on the residue waste areas is normally an essential closure strategy for the refinery. Major limitations to plant growth in residues include salinity, sodicity, alkalinity, Al toxicity and deficiencies of macro- and microelements. Physical properties are also problematic since residue mud consolidates to form a solid mass that waterlogs easily and can also dry to form a massive structure. Before establishment of vegetation it is desirable to leave the area for several years to allow excess salts (especially Na) and alkalinity (as bicarbonate) to leach down the profile. Gypsum (calcium sulphate) can then be cultivated into the surface horizon. This reduces pH by inducing precipitation of alkalinity as CaCO3. It also displaces Na with Ca and promotes further leaching of Na. Organic amendments (e.g. composts, animal manures) can then be applied to supply nutrients, increase CEC and improve physical conditions. Addition of inorganic fertilizers to supply nutrients is also essential. The type of vegetation established is often dependant on the nature of the surrounding vegetation (pasture or native vegetation). In either case, plants introduced need to be adapted to climatic conditions in the locality as well as being tolerant to saline, sodic conditions. With careful management a vegetation cover can be established. There is a need for long-term revegetation trials on bauxite residues since most revegetated sites are less than 10 years old.

Keynote Speaker VI

Prof. Gordon Huang
Faculty of Engineering and Applied Science, University of Regina, Canada

Dr. Gordon Huang is a Tier 1 Canada Research Chair in Energy and Environment, and Executive Director of the Institute for Energy, Environment and Sustainable Communities at the University of Regina, Canada. He holds BSC from Peking University (China), MSc from Simon Fraser University (Canada) and PhD from McMaster University (Canada). Since the 1990s, Huang has led over 150 research projects, produced over 800 peer-refereed international journal papers (with an SCI-based H-index of 51 in Science Citation Index under Thomson Reuters' Web of Science), and supervised over 100 Master/PhD students (with degrees awarded). Over 20 Huang's PhD graduates were appointed as faculty members at universities in Canada, USA, China and Singapore. He is a Fellow of the Canadian Academy of Engineering, and the President of the International Society for Environmental Information Sciences. He also acts as editor-in-chief for Journal of Environmental Informatics (http://www.iseis.org/JEI/), and served the United Nations Development Programme as Chief Scientist for a program of Rural Water Resources Management and Drinking Water Safety. His pioneering work in environmental risk management has been recognized as a significant innovation, and has influenced government and business approaches for tackling environmental challenges and formulating related policies.

Topic: ‘Management of Watershed Environmental Risks’

Abstract—Management of multiple risks in watershed systems relies on robust techniques for dealing with extensive uncertainties in various watershed components, as well as relevant modeling methodologies for simulating various processes and providing decision support. In this study, an integrated approach was proposed for managing environmental risks in watershed environmental systems. It involved modules of hydrological models for rainfall-runoff simulation, soil erosion and solute transport models for water quality prediction, flood frequency analysis for hydrologic risk assessment, and non-deterministic optimization for environmental risk management. These modules were integrated into a general framework for facilitating sustainable watershed development and management. The proposed approach was applied to a Chinese case study.

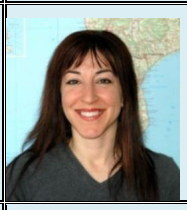
Brief Schedule for Conference

June 7, 2019 (Friday)

10:00-17:00	**Participants Onsite Registration & Conference Materials Collection** Lecture Hall T2, Third Teaching Building/教学楼（3）, T2 报告厅	

June 8, 2019 (Saturday)

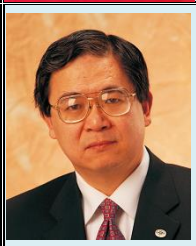
Arrival Registration, Keynote Speech and Conference Presentation

08:30-09:00	 **Opening Ceremony** **Prof. Changping Chen** **Xiamen Ocean Vocational College, China**	Lecture Hall T2 Third Teaching Building 教学楼（3） T2 报告厅
09:00-09:35	 **Keynote Speech I** **Prof. Caterina Valeo** **University of Victoria, Canada** **Topic: 'Scaling in Sustainable Urban Design'**	
09:35-10:10	 **Keynote Speech II** **Prof. Yongping Li** **Xiamen University of Technology, China** **Topic: 'Water-energy-food nexus: Integrated simulation-optimization approach'**	
10:10-10:30	Coffee Break & Group Photo Taking Outside Meeting Room	
10:30-12:15	**Session 1: Modeling of Environmental Systems** **(Chair: Prof. Lixiao Zhang and Prof. Haiyan Fu)**	Lecture Hall T2 Third Teaching Building 教学楼（3） T2 报告厅
12:15-13:30	Lunch Time Canteen in the College	

13:30-14:05	 **Keynote Speech III** **Prof. Lixiao Zhang** **School of Environment, Beijing Normal University** **Topic: 'Food-Energy-Water Nexus for Urban Sustainability: Conceptual Framework and Real Challenges'**	Lecture Hall T2 Third Teaching Building 教学楼（3） T2 报告厅
14:05-14:40	 **Keynote Speech IV** **Prof. Guangwei Huang** **Sophia University, Tokyo, Japan** **Topic: 'Shallow Lake Restoration: Case Studies in Japan'**	
14:40-14:55	Coffee Break Outside Meeting Room	
14:55-16:40	**Session 2: Environmental Pollution Control** **(Chair: Prof. Guangwei Huang and Prof. Huiyan Cheng)**	Lecture Hall T2 Third Teaching Building 教学楼（3） T2 报告厅
16:40-18:25	**Session 3: Environmental Management and Planning** **(Chair: Prof. Jing Liu and Prof. Xiaowen Zhuang)**	
18:30	Dinner Time Hong Zhuan Cuo (红砖厝)	

June 9, 2019 (Sunday)

Keynote Speech and Conference Presentation
Workshop and Forum

08:30-09:00	 **Keynote Speech V** **Prof. R. J. (Dick) Haynes** **The University of Queensland, St Lucia, Queensland** **Topic: 'Sustainable revegetation of bauxite processing residue'**	Meeting Room 201 Office Building 办公楼 201 会议室
09:00-09:30	 **Keynote Speech VI** **Prof. Gordon Huang** **Faculty of Engineering and Applied Science, University of Regina, Canada** **Topic: 'Management of Watershed Environmental Risks'**	
09:30-09:40	Coffee Break Outside Meeting Room	

09:40-11:40	**Session 4: Workshop on Environment, Water and Energy (Chair: Prof. Ning Zhang and Prof. Gordon Huang)**	Meeting Room 201 Office Building 办公楼 201 会议室
11:40-12:40	**Session 5: Forum on South-South Sustainable Development (Chair: Prof. Ning Zhang and Prof. Gordon Huang)**	
12:40	Lunch Time Canteen in the College	

Tips: Please arrive at the conference to upload or copy PPT into the laptop room 10 minutes before the session begins.

Note: (1) The registration can also be done at any time during the conference.

(2) The organizer doesn't provide accommodation, and we suggest you make an early reservation.

(3) One Best Presentation will be selected from each presentation session, and the Certificate for Best Presentation will be awarded at the end of each session on June 8, 2019 and June 9, 2019.

(4) Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Session 1

Morning, June 8, 2019 (Saturday)

Time: 10:30~12:15

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Modeling of Environmental Systems”

Session Chair: Prof. Lixiao Zhang and Prof. Haiyan Fu

J8012 Presentation 1 (10:30~10:45)
Impact of Warsaw Chopin Airport on the residential real estate market
R Cellmer, M Bełej and **J Konowalczuk**
Department of Investments and Real Estate, University of Economics in Katowice, Poland

Abstract—This article analyses the adverse impact of Chopin Airport in Warsaw on the prices of single-family houses located within the aircraft noise impact zone. The specific feature of the largest airport in Poland is its location within the city limits and the resulting direct surroundings of both multi- and single-family housing developments. Not only is the nuisance due to the proximity of the airport resulting from the actual exposure to an excessive noise level but also from legal restrictions associated with the Limited Use Area (LUA). The study used statistical modelling by applying a classic multiple regression model, spatial autoregressive model and geographically weighted regression model. Moreover, GIS tools and geostatic modelling were used to visualise the results. The modelling results clearly show the significant impact of the neighbourhood nuisance and the related spatial distribution of real estate prices. In addition, the geographically weighted regression model indicates that the proximity to an airport adversely affects the rate of price changes over time.

Session 1

Morning, June 8, 2019 (Saturday)

Time: 10:30~12:15

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Modeling of Environmental Systems”

Session Chair: Prof. Lixiao Zhang and Prof. Haiyan Fu

J8032 Presentation 2 (10:45~11:00)
Directional information coupling dynamics in complex climate system
Longhui Yuan, YJ Zhong
Southern University of Science and Technology, Shenzhen, China.

Abstract—Climate change has been significantly disturbing the dynamics of different earth system components, such as land surface and ocean, as well as the interactive relationship between different components. Here we aim to investigate the sea surface temperature dynamics and its remote connection to the precipitation patterns. Previous efforts on the remote ocean-land remote coupling are mostly relied on linear based statistical inference framework, disregarding the nonlinearity of the earth system dynamics. Here we apply a new inference framework that fully adapts to nonlinear system to quantify the coupling strength between Atlantic Oceanic temperature signals (AMO index) and US precipitation patterns. We found that the linear based coupling patterns are significantly different from the nonlinear based coupling patterns, which provides important insights into the system nonlinearity. We also conduct uncertainty analysis to quantify the estimated coupling strength uncertainty and discuss the robustness of the climate coupling between AMO and US precipitation.

Session 1

Morning, June 8, 2019 (Saturday)

Time: 10:30~12:15

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Modeling of Environmental Systems”

Session Chair: Prof. Lixiao Zhang and Prof. Haiyan Fu

J9018 Presentation 3 (11:00~11:15)
Power Monitoring and Management System of Residential Area Based on LabVIEW
Zehong Huang, Guanlu Yang, Shuyang Wang
College of Information and Science Engineering,Huaqiao University, Xiamen , China

Abstract—With the wide application of power equipment and non-linear equipment in the community, the power quality of the power grid is further reduced. Therefore, power quality has become the research focus of the power industry today. This paper designs a community power monitoring and management system based on LabVIEW. The system consists of two parts: data acquisition circuit and software program. The specific functions include the communication configuration of LabVIEW and data acquisition card and the design of power quality monitoring. The feasibility of the power monitoring and management system.

Session 1

Morning, June 8, 2019 (Saturday)

Time: 10:30~12:15

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Modeling of Environmental Systems”

Session Chair: Prof. Lixiao Zhang and Prof. Haiyan Fu

J8023 Presentation 4 (11:15~11:30)
Stability Analysis of a Model for Phenol and Cresol Mixture Degradation
N Dimitrova, **Plamena Zlateva**
Institute of Robotics, Bulgarian Academy of Sciences, Sofia, Bulgaria

Abstract—We propose a mathematical model for phenol and p-cresol mixture degradation in a continuously stirred bioreactor. The model is described by three nonlinear ordinary differential equations. The novel idea in the model design is the biomass specific growth rate, known as sum kinetics with interaction parameters (SKIP). We establish existence and uniform boundedness of positive solutions. Then we determine the equilibrium points of the model and study their asymptotic stability. The theoretical investigations are based on the classical dynamic systems theory. Numerical simulations are included to confirm and fill out the theoretical studies.

Session 1

Morning, June 8, 2019 (Saturday)

Time: 10:30~12:15

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Modeling of Environmental Systems”

Session Chair: Prof. Lixiao Zhang and Prof. Haiyan Fu

J9019 Presentation 5 (11:30~11:45)
Power Management System Based on Virtual Power Plant
Xiaofeng Chen,Guanlu Yang, Yajing Lv
College of Information and Science Engineering,Huaqiao University, Xiamen , China

Abstract—In recent years, the temperature-controlled load capacity has increased rapidly in China, and it has also brought huge regulatory potential. In order to effectively dispatch and manage a large number of demand response resources, this paper studies the energy efficiency management system based on virtual power plant based on demand response technology and virtual power plant theory, and effectively uses the management system to temperature. Collecting and controlling the power parameters of the load-control resources, making full use of the potential for reducing the demand side load, to achieve the “shift peak filling” of electricity, which is conducive to alleviating the contradiction between power supply and demand and ensuring the safe and stable operation of the power grid.

Session 1

Morning, June 8, 2019 (Saturday)

Time: 10:30~12:15

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Modeling of Environmental Systems”

Session Chair: Prof. Lixiao Zhang and Prof. Haiyan Fu

J0003 Presentation 6 (11:45~12:00)
WaveNet: Learning to Predict Wave Height and Period from Accelerometer Data using Convolutional Neural Network
Tong Liu, Yongle Zhang, **Lin Qi**, Junyu Dong, Mingdong Lv and Qi Wen
Ocean University of China, Qingdao, China

Abstract—Inertial sensors carried by buoys, such as accelerometers, are widely used in wave characteristics measurement. Traditional methods usually employ numerical integration on the accelerate data for wave height, where the “drifting” errors are intractable. In this paper we propose a novel method to predict wave height and period using machine learning approach, specially a convolutional neural network. The end-to-end 1D convolutional neural network named WaveNet predicts wave height and period from the raw acceleration data directly. We designed a simple device to simulate the motion of the buoy in the wave, and used it to collect data for training and testing our model. The results of the proposed method were compared with traditional numerical integration method and found that the proposed model outperforms existing method in outputting more accurate wave height and period.

Session 1

Morning, June 8, 2019 (Saturday)

Time: 10:30~12:15

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Modeling of Environmental Systems”

Session Chair: Prof. Lixiao Zhang and Prof. Haiyan Fu

J0015 Presentation 7 (12:00~12:15)
Sandy Coast Erosion Under the Conditions of a Storm Surge Combined With a Spring Tide
Shi Qian, Cai Aizhi, Qi Hongshuai
Xiamen University of Technology, Xiamen, China

Abstract—By comparing the changes of beaches and features in the southeastern coast of Xiamen Island before and after Typhoon No. 9914, the beach cycle and coast erosion processes under the condition of superimposed the spring tide of storm surge were discussed. The study showed that during Typhoon No. 9914, the coastal water level rose to 4.04m above the main sea level(MSL). The storm surge elevation was 1.43m. The stormy waves with 22m/s onshore winds brought overwash onto Huandao Road, up to the main sea level of more than 8.5m, depositing about 8-10cm of beach sands on the road. It caused the beach berm to disappear completely. The sand prism lying in the high tidal zone was scoured. Part of the sand of the prism was washed upward away from the beach, part of which was brought to the low tide zone. The bare shoreface without sand prism was scoured directly by waves and currents. Although the sandy sediment which was brought to the deeper zone by the storm can come back to the shoreface, but the overwash sand could not be returned after the storm, and the prime failed to return to its original condition for a long time, eventually leading to beach erosion and coast retreat.


Lunch	**12:15~13:30**
Canteen in the College	

Session 2

Afternoon, June 8, 2019 (Saturday)

Time: 14:55~16:40

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Environmental Pollution Control”

Session Chair: Prof. Guangwei Huang and Prof. Huiyan Cheng

J9014 Presentation 1 (14:55~15:10)

An empirical research on the relationship between water quality, climate change and economic development in Jiulong River Watershed

L Guangsheng

Fujian Engineering and Research Center of Rural Sewage Treatment and Water Safety, Xiamen University of Technology, Xiamen, China

Abstract—Climate change and economy development are key factors affecting the future of water quality and quantity in urbanized catchments. Under the dual effects of climate change and human activities, water environment problems become prominently, especially in coastal watershed of higher urbanization, concentrated populations. Thus, this study focus on the influence of economic growth and climate change on the evolution of water quality in Jiulong River Watershed(JRW). The results showed that inorganic nitrogen and phosphate nutrient increased significantly, and the river basin showed a trend of warm and humidification. The wind speed and sunshine duration decreased significantly. The results of principal component analysis showed that economic development play a leading role in the evolution of estuary water environment, and the influence of climate change cannot be ignored. Economic growth and climate change contribute to the deterioration of water quality. Water resource shortages and water pollutions are the big challenges for water resources management. The water will further deteriorate under the background of climate change and economic development. This study will be conductive to the water environmental pollution control and management.

Session 2

Afternoon, June 8, 2019 (Saturday)

Time: 14:55~16:40

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Environmental Pollution Control”

Session Chair: Prof. Guangwei Huang and Prof. Huiyan Cheng

J8030 Presentation 2 (15:10~15:25)
Joint prediction of CO, NOx, NMHC pollutant concentrations in urban area
Jinglin Zhao, MX Sun, Q Li
Hong-Kong Baptist University, Kowloon Tong, Hong Kong

Abstract—Primary air pollutants could directly and indirectly (through generating secondary air pollutants) threaten natural or human systems. In particular, urban air pollution issue becomes more and more significant in the recent decades, as a result of rapid urbanization. However, the estimation of multiple-pollutant concentrations is limited by high spatial and temporal variations, which hinders the accuracy of mechanistic modeling of air pollution. In this study, we employed an Artificial Neural Network (ANN) model to jointly predict multiple primary pollutants, including CO, NOx, and nan-methane hydrocarbons (NMHC), over the urban area of Italy. The results showed that performances of the ANN model (MSE and Pearson correlation) in joint prediction cross multiple pollutants were much better than in prediction of any single pollutant individually, indicating the joint measurements of multiple pollutants could favor the machine-learning model by providing useful information from one pollutant to predict another.

Session 2

Afternoon, June 8, 2019 (Saturday)

Time: 14:55~16:40

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Environmental Pollution Control”

Session Chair: Prof. Guangwei Huang and Prof. Huiyan Cheng

J8033 Presentation 3 (15:25~15:40)
Joint double sampling and variable sample interval control chart for monitoring process capability index

Dja Shin Wang
Department of Business Administration, TransWorld University, Taiwan

Abstract—In statistical process control, SPC, it is usually necessary to monitor both the process mean and the process variability. Recently developed adaptive charts have been shown to give substantially faster detection of most process shifts. Process capability indices provide numerical measures on process reproduction capability, which are effective tools for quality assurance. In this paper, we develop a joint double sampling and variable sample interval C_{pm} control chart i.e. DSVSIC_{pm}, to monitoring process capability indices C_{pm} for improve product quality. We compare the monitoring performance of DSVSIC_{pm}, and will tabulate the performance value for various commonly used situations to make the proposed method practical for in-plant applications. A sensitivity analysis will be carried out to study effect of model parameter on the monitoring performance.

Session 2

Afternoon, June 8, 2019 (Saturday)

Time: 14:55~16:40

Venue: Lecture Hall T2/Third Teaching Building

Topic: "Environmental Pollution Control"

Session Chair: Prof. Guangwei Huang and Prof. Huiyan Cheng

J0009 Presentation 4 (15:40~15:55)
Tracing of Arvand river plume in the Persian Gulf
Masoud Sadri Nasab
School of Environment, College of Engineering, University of Tehran, Iran

Abstract—In this study, a Three-dimensional hydrodynamic model (COHERENS) has been employed in order to describe the variability of the Arvand River's Plume in the Persian Gulf. This river which is situated at the northern part of the Persian Gulf is the main river, discharges into the Persian Gulf. The model based on 159×117 grids including the whole Persian Gulf and some part of the Oman Sea with 10 sigma levels. The input of the model are including 50 years of meteorological data from NOAA (wind, air temperature, clod coverage, relative humidity and precipitation), major tidal constituents (O1, K1, M2 and S2) and also monthly mean of river discharge, temperature and salinity. The model has been run for 15 years, in order to reach to the steady state. Results of the model show that annual circulation of the Persian Gulf, Coriolis force as well as river discharge affecting the river plume. The fresh water of the plume enters into the Persian Gulf from surface and mixes into the surroundings rapidly. River discharge leads to draw a classical river plume with a width of 62-74 km. There is a very good agreement between the outputs of the model with previous studies and field observations.

Session 2

Afternoon, June 8, 2019 (Saturday)

Time: 14:55~16:40

Venue: Lecture Hall T2/Third Teaching Building

Topic: "Environmental Pollution Control"

Session Chair: Prof. Guangwei Huang and Prof. Huiyan Cheng

J9021 Presentation 5 (15:55~16:10)
Fabrication of humic acid/biochar hydrogel beads for adsorptive removal of ciprofloxacin
Muhammad Zaheer Afzal, Rengyu Yue, Xue-Fei Sun, Chao Song, Shu-Guang Wang
Shandong Key Laboratory of Water Pollution Control and Resource Reuse, School of Environmental Science and Engineering, Shandong University, Qingdao 266237, China

Abstract—In this study, we incorporated humic acid (HA) on surface of biochar (BC) and results from different analyses such as SEM, TEM, FTIR, RAMAN and XRD confirmed it to be successful. This humic acid coated biochar (HA-BC) and chitosan were combined to prepare an adsorbent, humic acid-biochar/chitosan hydrogel beads (HBCB), with enhanced reactivity for the removal of ciprofloxacin (CIP). With initial CIP concentrations of 250 mg/L, the maximum adsorbed amount was 154.89 mg/g. Removal rates reached equilibrium after 12 h, obeying the pseudo second-order kinetic model. Adsorption isotherm data was better fitted to the Langmuir isotherm model. The sorption capacity decreased by 11.42%, 6.66%, 9.32%, and 23.92% in the presence of different electrolytes such as NaCl, NaNO3, Na2SO4, and Na3PO4, respectively. A complex mechanism was found to be responsible for the adsorptive removal of CIP including, hydrogen bonding, π-π electron donor–acceptor (EDA) interactions and hydrophobic interactions. After four regeneration steps, sorption capacity remained enough (61.23 mg/g). These removal results indicate that HBCB is durable and effective for long term CIP removal.

Session 2

Afternoon, June 8, 2019 (Saturday)

Time: 14:55~16:40

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Environmental Pollution Control”

Session Chair: Prof. Guangwei Huang and Prof. Huiyan Cheng

J8031 Presentation 6 (16:10~16:25)
Controlled Synthesis of MgO with Diverse Basic Sites and Its CO_2 Capture Mechanism
Wanlin Gao, Qiang Wang
College of Environmental Science and Engineering, Beijing Forestry University, Beijing 100083, PR China

Abstract— Novel sodium dodecyl sulfate (SDS)−assisted mesoporous MgO adsorbents with diverse basic sites were prepared hydrothermally via a urea hydrolysis synthesis method for intermediate CO2 capture. The control of synthesis parameters and the introduction of SDS surfactant greatly improved the capture performance. With elevated hydrolysis temperatures, the phase transition process made great contributions to the morphological changes of the precursor architectures. In situ DRIFTS analysis demonstrated that various carbonate surface species including bicarbonate, bidentate, and unidentate carbonates were formed on the obtained MgO during interaction with CO2. Furthermore, the main component of adsorbed CO2 surface species swings from bicarbonate to bidentate and unidentate carbonates with increase of adsorption temperature. The highest CO2 uptake of 1.22~1.99 mmol g−1 was attained for MgO sample at the lowest calcination temperature in a wide temperature range of 60~300 oC. High specific surface area (372.0 m2 g−1), large pore volume (0.38 cm3 g−1) as well as diverse basic sites of the synthesized MgO make it an eligible candidate for CO2 capture from certain sorption enhanced hydrogen production processes, with a nearly 20−fold enhancement of the commercialized light MgO. Additionally, the results of CO2 uptake studied under diluted and wet (H2O containing) CO2 conditions for the as−prepared MgO adsorbent also suggested good prospect in practical applications.

Session 2

Afternoon, June 8, 2019 (Saturday)

Time: 14:55~16:40

Venue: Lecture Hall T2/Third Teaching Building

Topic: "Environmental Pollution Control"

Session Chair: Prof. Guangwei Huang and Prof. Huiyan Cheng

J9020 Presentation 7 (16:25~16:40)
Influence of D-amino acids properties on the adhesion behaviors of *Escherichia coli*
Su-Fang Xing, Xue-Fei Sun, Shu-Guang Wang
Shandong Key Laboratory of Water Pollution Control and Resource Reuse, School of Environmental Science and Engineering, Shandong University, Qingdao, 266237, China.

Abstract—Biofilms are aggregated microbial cells attached to solid surfaces, which are widely used in wastewater treatment, exhaust gases treatment, and soil bioremediation. D-amino acids (D-AAs) were considered as kinds of quorum-sensing signals that inhibited biofilms formation. However, D-AAs could inhibit initial bacterial attachment was not clear. Hence, this study investigated the effect of exogenous D-AAs (D-tyrosine, D-leucine, D-tryptophan, D-aspartic, D-arginine) on the bacterial attachment, evaluating by bacterial physiological characteristics, and theoretical predictions. The extend DLVO (XDLVO) theory demonstrated that the total interaction energy increased with the addition of D-AAs (except D-arginine), and Lewis acid-base interactions played more important role on the change of total interaction energy as compared to the overall non-specific interactions. The bacteria exposed to exogenous D-AAs, especially D-tyrosine, have a high repulsive nature, leading to low potential of initial bacterial adhesion. This study shows a new method to influence biofilm formation by manipulating the D-AAs in the natural or engineered environment.

Session 3

Afternoon, June 8, 2019 (Saturday)

Time: 16:40~18:25

Venue: Lecture Hall T2/Third Teaching Building

Topic: "Environmental Management and Planning"

Session Chair: Prof. Jing Liu and Prof. Xiaowen Zhuang

J0010 Presentation 1 (16:40~16:55)
Desalination for Drinking Water Demonstration Project: A Case Study at Sichang Island, Thailand
Sompop Rungsupa, I Takehiro, C Petchporn, T Fijita and K Nakajima
Aquatic Resources Research Institute, Chulalongkorn University, Bangkok, Thailand

Abstract—"Desalion", a compact and movable SANSO ELECTRIC Company desalination machine was implemented for 617 days and tested at Sichang Marine Science Research Station (Aquatic Resources Research Institute, Chulalongkorn University), Sichang Island, Cholburi Province, Thailand. The utilization ratio of actual working days and effective working days was 76%. 483 tons of pure fresh water was produced for the utilization of 333 people. Fresh pure water and brine water were of WHO standards (2011) and Thailand's drinking water quality standard (maximum allowable concentration). Brine water outlet and seawater inlet salinity experienced a 23.9% changed but suitable for coral and abalone cultured. Apart from its aquatic culturing use, the water from "Desalion" can also be used for agriculture and human consumption considering its 1000 liters per day production capability. This research also founded that "Desalion", with more sample size, can prove to be a greatly useful tool in water production for areas or islands where fresh water access is scarce.

Session 3

Afternoon, June 8, 2019 (Saturday)

Time: 16:40~18:25

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Environmental Management and Planning”

Session Chair: Prof. Jing Liu and Prof. Xiaowen Zhuang

J1002 Presentation 2 (16:55~17:10)
Exploitation and utilization of Marine resources and protection of Marine ecology
Huiping Zhong
Xiamen ocean vocational and technical college, Xiamen, China

Abstract—With the development of society and the gradual enhancement of information science and technology, marine science and technology are gradually strengthened, the marine economy is playing an important part in our national economy. China's marine Energy Resources Total accumulation is very rich, and it is a great wealth, but the development of marine resources is not unlimited.Although it can promote the development of national economy, the sustainable development of marine resources should be considered.As the marine science and technology are growing today, the sustainability of marine resources is also seriously threatened . This paper analyzes the problems that encountered in the exploitation and utilization of marine resources and also in the protection of marine ecology.After expounding the importance of sustainable development of marine resources, the writer puts forward some methods and suggestions on how to make marine resources develop sustainably.

Session 3

Afternoon, June 8, 2019 (Saturday)

Time: 16:40~18:25

Venue: Lecture Hall T2/Third Teaching Building

Topic: "Environmental Management and Planning"

Session Chair: Prof. Jing Liu and Prof. Xiaowen Zhuang

J1009 Presentation 3 (17:10~17:25)
Systematic Study of Renewable Energy–Resource Potential in Pakistan
QASIM RAUF,YANPIN LI, ANAM ASHRAF
North China University of Water Resources and Electric Power, Henan,China

Abstract—Earth does not have an equal distribution of energy sources. Electricity performs a major contribution in the socio-economic improvement and national development of nation. Energy is essential for all financial exercises. In 2008 the government of Pakistan paid almost 9 billion USD to fulfill the energy demand by importing the crude oil. After this Pakistan's national economy effected badly. Now Pakistan is facing and going through its most bad period of energy crisis. The sustainability of the energy sector is directly proportional to the economic sustainability of the country. The important task of this paper is to highlight the perspective of renewable energy in Pakistan. This paper contains the current situation and future plans of renewable resources like Solar, Wind, Hydel, Biogas, Geothermal energy. The total current capacity of operational projects is solar 100 MW, Wind 308 MW, Biogas 145 MW, 98 MW micro hydel. While the many projects are in different stages of the development like solar 856MW, wind 1146 MW, biogas 297 MW and micro hydel 2638 MW.

This paper is also presenting the review about the renewable energy resources potential available in the country that is not exploited yet for the steady and reliable energy supply. This paper contains the information regarding the renewable energy which will be helpful for the government as well as for the stake holder of private sector, those who wants to invest in Pakistan for the renewable energy. The renewable energy resources are abundant and have great potentials that shows, Pakistan can minimize the energy gap between demand and supply in the future and overcome the energy crisis. This paper will be helpful for the government as well as the stake holders of national and international level.

Session 3

Afternoon, June 8, 2019 (Saturday)

Time: 16:40~18:25

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Environmental Management and Planning”

Session Chair: Prof. Jing Liu and Prof. Xiaowen Zhuang

J9006 Presentation 4 (17:25~17:40)
Terrain numerical simulation based on RANS/LES hybrid turbulence model
Lu Xiegui, Chen Qiuhua, Qian Changzhao, Chen Changping
School of Architecture and Civil Engineering, Xiamen University, Xiamen, China

Abstract—Based on the computational fluid dynamics (CFD) method, the terrain of 2 km near the proposed humanoid landscape bridge in Xiamen is taken as the research object. Firstly, the three-dimensional topographic map is established. Because the selected terrain is relatively flat, the bridge area is adopted in the form of spline curve. The boundary is extended, and the exponential rate of wind speed boundary conditions is applied to the boundary to avoid non-0m/s wind speed from the inflow near wall boundary. The RANS/LES hybrid mode is used to numerically analyze the external flow field of the terrain. The turbulence model of the three equations is used as the RANS part of the RANS/LES hybrid turbulence model. According to the Boussinesq hypothesis and dimension-analysis, the differential form equations of are rationally simplified, and the algebraic form of the normal stress equation of and the new turbulent viscosity equation are obtained and written into FLUENT in UDF form. By comparing and analyzing the standard turbulence model and the turbulence model, the wind speed amplification factor and the variation law of wind parameters along the height are studied, and the canyon effect and the reduction effect of the wind field are discussed. The results show that under the same calculation conditions, the mixed turbulence model can accurately reflect the change of airflow in the near-wall wall, and more accurately capture the wind field away from the bridge near the wall.

Session 3

Afternoon, June 8, 2019 (Saturday)

Time: 16:40~18:25

Venue: Lecture Hall T2/Third Teaching Building

Topic: “Environmental Management and Planning”

Session Chair: Prof. Jing Liu and Prof. Xiaowen Zhuang

J9001 Presentation 5 (17:40~17:55)
Study on Preparation Conditions of Electrolyzed Reduced Alkaline Water
liuxin Jing , mengliang Chen, huaiyu Cai
Chinese Academy of Environmental Planning, Beijing, China

Abstract—In this study, the preparation conditions (electrolytic voltage, electrode interval and electrolysis time) of electrolyzed reduced alkaline water were optimized. Results show that electrolytic time, electrolytic voltage and electrode interval could influence the water quality of the electrolyzed reduced alkaline water. More electrolysis time, higher of electrolytic voltage, and smaller electrode interval resulted in higher water pH value. More electrolysis time, higher electrolytic voltage, and larger electrode interval resulted in lower water ORP value. The optimum condition for preparation of weak alkaline primary water is 10v electrolytic voltage, 15 mm interval of electrodes and 2 min electrolysis time.

Session 3

Afternoon, June 8, 2019 (Saturday)

Time: 16:40~18:25

Venue: Lecture Hall T2/Third Teaching Building

Topic: "Environmental Management and Planning"

Session Chair: Prof. Jing Liu and Prof. Xiaowen Zhuang

J8018 Presentation 6 (17:55~18:10)
The Role of Muhammadiyah in Sustainable Development Through Community Empowerment Program
AHMAD MA'RUF ,RB Soemanto, TK Drajat ,W Edi
Departement of Economics, University of Muhammadiyah Yogyakarta INDONESIA

Abstract—Sustainable development is the development goal of every country, including Indonesia. The process of sustainable development has positioned the community as the subject with the main actor of the development is the community itself. Regarding this context, the process is performed through community empowerment approach. Muhammadiyah is the biggest non-governmental organization in Indonesia which engaged in religion, social community, economy, education, environment, and health sectors. This study aimed to discover the role of Muhammadiyah in the sustainable development of Indonesia. The method used in this study was mixed method as the combination of quantitative and qualitative approaches. The results of the research have concluded that Muhammadiyah has positive and significant roles in sustainable development of Indonesia, including from the evaluation results of the restoration program of tropical forest ecosystem in East Borneo Province and social-economic empowerment on vulnerable groups in Yogyakarta Province. The approach of Muhammadiyah through community empowerment program has been successful to improve the knowledge, change of attitude, and skills of the facilitated community. The community empowerment approach was implemented by Muhammadiyah to encourage public participation in sustainable development.

Session 3

Afternoon, June 8, 2019 (Saturday)

Time: 16:40~18:25

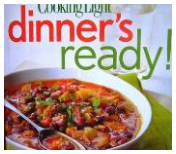
Venue: Lecture Hall T2/Third Teaching Building

Topic: "Environmental Management and Planning"

Session Chair: Prof. Jing Liu and Prof. Xiaowen Zhuang

J9031 Presentation 7 (18:10~18:25)
Study on water purification ability and permeability of different filter materials in LID-type ditch
M L Zhu and Y Chen
Xiamen University of Technology, China

Abstract—In rural areas of China, sewage is often discharged to ditch directly without any treatment. We propose a new type of ditch based on Low Impact Development (LID) strategy by replacing bed soil in rural ditch with mixed filter material of approximately 30cm in thickness. This new type of ditch is so-called LID-type ditch having the function of storage, penetration, purification and drainage. Four basic materials, red loam, sand, gravel and zeolite, are used to create 3 types of mixed filter materials by evenly mixing these basic materials with different mass ratios. Their saturated permeability coefficients and water purification ability are measured and compared. Results indicate that all 3 types of mixed filter materials are suitable to apply to LID-type ditch, and the all outflows meet the water quality standard for farmland irrigation. The best mixed filter material is type 1 with 50% of red loam, 30% of sand, 10% of gravel, and 10% of zeolite, it has removal rate for TP as high as 81.31% and average removal rate of 47.09% for TP, TN, NH3-N, COD, BOD_5.



Dinner	18:30
Hong Zhuan Cuo (红砖厝)	

Session 4

Morning, June 9, 2019 (Sunday)

Time: 09:40~11:40

Venue: Meeting room 201 in the Office Building

Workshop on Environment, Water and Energy

Session Chair: Prof. Ning Zhang and Prof. Gordon Huang

J0012 Presentation 1 (09:40~09:55)
Study on Production of Organic Acid Rust Remover from Passion Fruit Fermented by *Aspergillus Niger*
LONG Jiang-xue, JIANG Jia-li, ZHANG Shi-ming, DAI Xiao-feng, DONG Xu-jie
Xiamen University of Technology, Xiamen, China

Abstract—Organic acid and rust remover based on citric acid were gradually praised by the industry because of its environmental protection and good derusting effect. In this paper, the production cycle of citric acid by *Aspergillus Niger* shaking flask fermentation was studied with Passion Fruit/Shell, and the rust removal effect of the product was preliminarily verified. The cultivation factors included Passion Fruit/Shell 20%+Sucrose 5%, 35 ℃, pH 5.0-5.5, shaking table 150 r/min, the fermentation cycle could be completed in 4-5 days ,and the pH in fruit fermentation broth decreased to 2.7. At room temperature, the derusting effect of 1 time diluted fruit fermentation broth equaled that of 3% commercial citric acid , the rust removal time could prolonged properly at low temperature. The results had a guiding significance for producing organic rust remover from Passion Fruit by *Aspergillus Niger*.

Session 4

Morning, June 9, 2019 (Sunday)

Time: 09:40~11:40

Venue: Meeting room 201 in the Office Building

Workshop on Environment, Water and Energy

Session Chair: Prof. Ning Zhang and Prof. Gordon Huang

J9003 Presentation 2 (09:55~10:10)
Modeling climate change impacts on water resources
X.W. Zhuang, Y.P. Li, S. Nie, G.H. Huang
Institute for Civil Engineering, Qingdao Huanghai University, Qingdao 266427, China

Abstract—In this study, the effect of changes in daily temperature (minimum temperature and maximum temperature) during the baseline period on daily streanflow has been analyzed. The stepwise cluster analysis method is able to use a generated cluster tree to express the complex and nonlinear relationships between predictors and predictands. The results can be found that different characteristics of air temperature and precipitation exist during different seasons. Besides, the change of water resources can be indicated and is affected both by changes of climate factors and economic consequences. The most significant findings are that the simulated streamflow under various downscaling climate projections shows an increasing trend from future to recent periods.

Session 4

Morning, June 9, 2019 (Sunday)

Time: 09:40~11:40

Venue: Meeting room 201 in the Office Building

Workshop on Environment, Water and Energy

Session Chair: Prof. Ning Zhang and Prof. Gordon Huang

J8017 Presentation 3 (10:10~10:25)
Validation of wind turbine wake environment modelling
Qiuhua Chen, X Zhang
Wind Engineering Research Center, Xiamen University of Technology, Xiamen, Fujian, China

Abstract—The widely used wake environment models in engineering are validated according to wind tunnel experiment in this paper, namely the Jensen wake model, Frandsen wake model, the Larsen wake model and simplified vortex wake model. From the validation results, it can be found that the wake expansion are overestimated, namely the expansion efficient still needs to be further investigated. In Jensen and Frandsen models, the assumption of uniform distribution of wake speeds along radius differs from the experimental data, with low precision. The wake speed with an approximate Gaussian distribution adopted by Larsen model improves the accuracy. But for all these wake models, due to the overestimation of wake expansion, the wake profiles are definitely calculated with error, thereby lowering the precision of power prediction of wind farms. It is suggested that these models needs to be improved based on more measurement/experimental data.

Session 4

Morning, June 9, 2019 (Sunday)

Time: 09:40~11:40

Venue: Meeting room 201 in the Office Building

Workshop on Environment, Water and Energy

Session Chair: Prof. Ning Zhang and Prof. Gordon Huang

J8020 Presentation 4 (10:25~10:40)
Simulation analysis of the influencing factors on the wind environment around the hilly terrain
Qiuhua Chen, Y Liu
Wind Engineering Research Center, Xiamen University of Technology, Xiamen, Fujian, China

Abstract—The wind environment condition of hilly terrain is closely related to wind resources utilization. In this paper, based on Fluent numerical simulation method, the wind flow characteristics around the hill topography under the influence of varied slopes, incoming wind speeds, heights and roughness are analyzed and summarized. It can be drawn that for the range from the hillside to the top on the windward side, the slope has a significant effect on the wind speed. Within the 100m height above the ground, when the hill is steeper, the wind speed is significantly enhanced. At the top of the hill, the wind speed's maximum increment is 1.5 times of the incoming value. When the wind goes across the hilltop, the factors including the slope, height and roughness, have great influence on the wind environment on the leeward side. When the slope is greater than or equal to 0.5, the phenomenon of eddies present and the range of influence extends downstream. The wind speed weakness trend can also be found when the height and roughness increase.

Session 4

Morning, June 9, 2019 (Sunday)

Time: 09:40~11:40

Venue: Meeting room 201 in the Office Building

Workshop on Environment, Water and Energy

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J9015 Presentation 5 (10:40~10:55)
An interval energy-water nexus planning model for electric power planning
D Zhao, Y P Li, J Liu, H Y Fu
College of Environmental Science and Engineering, Xiamen University of Technology, Xiamen 361024, China

Abstract—Reasonable energy planning plays a vital role in urban development and even the development of the whole national economy. Energy planning is an important way to solve the problems of resources and environment, promote energy conservation and emission reduction, and ensure the sustainable development of cities. Taking Xiamen City as an example, this paper uses the method of interval linear programming, aiming at minimizing the total cost of the system, and taking energy availability, water resources availability, energy demand and pollutant discharge as constraints, establishes an optimization scheme that conforms to the characteristics of Xiamen's energy system. The research results show that the clean energy utilization technology should be improved to further increase the development and utilization of local renewable energy, and diversify the power supply methods to achieve safe, economic, clean and good urban development.

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J9016 Presentation 6 (10:55~11:10)

Effect of heat treatment on hydrogen production by combined fermentation of wild carp and excess sludge

H D Zhu, H Y Fu, M Xu, G X Su, Y C Wu,P F Gao, L Jin, S Lin

Key Laboratory of Environmental Biotechnology(XMUT), Fujian Province University, Xiamen University of Technology, Xiamen 361024, China

Abstract—As a lignocellulose-rich biomass, the wild carp can be efficientlyhydrolyzed into reducing sugar after a certain degree of pretreatment, and it is used as a high-quality raw material for the development and utilization of biomass energy such as fuel ethanol and hydrogen. In this study, the wild carp was pretreated at 50 ℃, 60 ℃, 70 ℃, 80 ℃, and 90 ℃ to investigate the effects of different heat treatment temperatures on the hydrogen production of wild mash and excess sludge mixed fermentation, and analyzed by gas chromatography. The experimental results show that when the pretreatment temperature is 70 ℃, the gas production is the highest, 216mL, the highest hydrogen production is 43.01mL, and the hydrogen concentration is up to 20.73%.

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J9017 Presentation 7 (11:10~11:25)
Experimental study on combination of microbial flocculants with PAC in In-situ remediation of black odorous water and sediment
H Y Cheng, J X Long, Z Liu and A L Yang
School of environmental science and engineering, Xiamen University of Technology, China

Abstract—In this study, the sediment of black and odorous water body in Xinyang main flood drainage channel of Xiamen City was taken as the research object, and the effect of in-situ remediation of black and odorous water body sediment by microbial flocculant (MBF) and polyaluminium chloride (PAC) in different proportions was studied through laboratory static simulation test. The experimental results show that: (a) The MBF dosage of 20 mg/L has a good effect on the remediation of the sediment in the black-odor river. The removal rates of TP and COD in the overlying water are 86.5% and 87.37% after 15 days of experiments, respectively. The removal efficiency of AVS is not very good, the removal rate is only 27.1%. 100 mg/L PAC is added to remedy the black-odor river sediment, and the overlying water under the same experimental conditions. The removal rate of TP was 51%. (b) The combination of MBF and PAC has a good effect on the remediation of the sediment and overlying water of the black and Odorous River in the city. The optimum dosage scheme is PAC with 20 mg/L and microbial flocculant with 10 mg/L. Under this scheme, the removal rates of NH4+-N, TP and COD in overlying water were 92.37%, 70.82% and 64.52% respectively after 15 days of restoration experiment. AVS in sediment was reduced by 52.21%, which basically eliminated the black odor in overlying water.

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J9030 Presentation 8 (11:25~11:40)
Study on water quality of Xiamen sea area
Y J He and **Z N Dai**
Xiamen University of Technology, China

Abstract—With the rapid development of the economy, it has brought huge pollution load pressure to the marine environment quality. The land-based pollutants have increased year by year, and the marine pollution problem has become more and more serious. The governance of the marine environment has become a serious problem. This paper investigated the water quality of Xiamen. The results showed that the average concentration of heavy metals was 2.16×10-3 mg/L for copper element, 2.84×10-5 mg/L for lead element, 7.61×10-5 mg/L for cadmium element, 1.97×10-3 mg/L for arsenic element and 3.66×10-3 mg/L for zinc element. The monitoring concentration of mercury element at each monitoring point is lower than 1×10-5mg/L. The main pollutants in the general indicators are active phosphate and inorganic nitrogen. This paper can provide data support for the future management of marine environmental problems in Xiamen Government, and it has positive significance for its future governance.

Session 5

Morning, June 9, 2019 (Sunday)

Time: 11:40~12:40

Venue: Meeting room 201 in the Office Building

Forum on South-South Sustainable Development

Session Chair: Prof. Ning Zhang and Prof. Gordon Huang

Panel Members: V. Kaewkrajang, S. Uppamarn, C. Nookyoo, L. Sukyirun, P. Sachakamol, N. Zhang, G. Huang, Y.P. Li, H.Y. Fu, L. X. Ma, C. G. Liu

Lunch	**12:40**
Canteen in the College	

Poster Session

June 8, 2019 (Saturday)

Time: 08:30~18:00

Venue: Lecture Hall T2

Third Teaching Building

Morning, June 9, 2019 (Sunday)

Time: 08:30~12:00

Venue: Meeting room 201 in the

Office Building

J8022 Presentation 1
PM2.5 and precursor removal performance by a wet-pulse complex process system
Junggu You, WhanyoungLee ,Munlye Park , Hakjae Noh, Hyunjin Park
R&D Department, BellE&C Co., Ltd., Seoul, Korea

Abstract—The present study analyzes a technology capable of maintaining simultaneous treatment of SOx and NOx even at low temperatures due to the electrochemically generated strong oxidation of the wet-pulse complex system. This system also reduces unreacted residual gas and secondary products through the wet scrubbing process. It addresses common problems of the existing fuel gas treatment methods such as SDR, SCR, and activated carbon adsorption (i.e., low treatment efficiency, expensive maintenance cost, large installation area, and energy loss).

J1010 Presentation 2
Numerical Simulation and Analysis of the Sink-Stability for the Deep-sea Walking & Swimming Robot
Wei Wei, Xinliang Wang and Hong Chen
Wuhan Second Ship Design & Research Institute, Wuhan 430205, China

Abstract—A brief introduction to the design concept of deep-sea walking & swimming robot is provided in this paper. And based on the computational fluid dynamics (CFD) method, a hydrodynamic numerical simulation model for the robot body is established. Then the flow field under different body inclination conditions and different ocean currents is numerically simulated by ANSYS Fluent, and the curves of resistance, lift and pitching moment with inclination are obtained. At the same time, the stability analysis method for deep-sea walking & swimming robot is established by combining dynamic stability margin method (DSM), and the stability of the walking & swimming robot is analysed. The stability of the tilting activity threshold is obtained under different inflow environments.

Poster Session

June 8, 2019 (Saturday)

Time: 08:30~18:00

Venue: Lecture Hall T2

Third Teaching Building

Morning, June 9, 2019 (Sunday)

Time: 08:30~12:00

Venue: Meeting room 201 in the

Office Building

J0005 Presentation 3

Effects of Seafloor Topography on Underwater Acoustic Channel

Huang Hua, Jin Baogang, Cheng Rui, Liu Juan and Chen Jian

Beijing Institute of Applied Meteorology, Beijing, China

Abstract—Sound wave is the main means of underwater communication at present. Focusing on effects of seafloor topography on underwater acoustic channel, some acoustic propagation models were compared and the BELLHOP method was chosen based on the experiment data of typical seafloor topography. Then the date of OFES model and SOM method were used to get the marine parameters of temperature, salinity, depth and sounding velocity along SS section near Diaoyu Island. At last, the acoustic propagations along the SS section in flat bottom and real seafloor topography were simulated using BELLHOP method. The comparison of acoustic propagation loss was presented. The results show that the BELLHOP method can be used to get authentic results of acoustic propagation under different seafloor topographies, and seafloor topography has a significient effect on acoustic propagation characteritics，which are also influenced by the depth of sound source and sound receiver.

J0004 Presentation 4

Effect of *Iris pseudacorus* L. on polysaccharide composition and microcystins content of *Microcystis aeruginosa*

G Y Chen, Q S Li and M L Zhu

Xiamen University of Technology, Ligong Road 600, Xiamen, China

Abstract—The present study aimed to explore the feedback mechanism of *M. aeruginosa* under the stress of *I. pseudacorus* L.. by determining the polysaccharide composition and microcystins (MCs) synthesis and release of *M. aeruginosa* through co-cultivation of *I. pseudacorus* L. and *M. aeruginosa*. The results of our investigation and observation have shown that, under the stress of 20 or 40 g/L of *I. pseudacorus* L., the contents of intracellular and extracellular MC-LR, and the intracellular polysaccharide (IPS), the bound extracellular polysaccharide (bEPS) of *M. aeruginosa* increased at first and then began to decrease gradually afterwards. And the maximum contents were (71.03±10.20) fg/cell, (0.66±0.07) fg/cell, (1.84±0.10) pg/cell, (1.11±0.11) pg/cell and (70.33±8.62) fg/cell, (0.64±0.10) fg/cell, (1.74±0.17) pg/cell, (0.90±0.12) pg/cell. *I. pseudacorus* L. had an adsorption-enrichment effect on MCs.The content of MC-LR in the roots were (8.37±1.58) ng/g and (4.33±1.31) ng/g when *I. pseudacorus* L. was 20 or 40 g/L, respectively.

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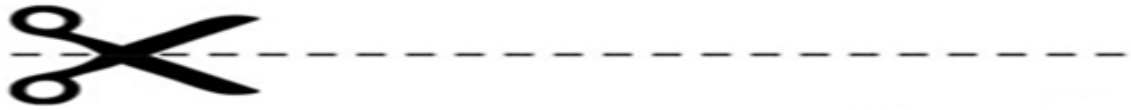

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