SEE Tech Talk Series
on Advanced Environmental Technologies

Time: **9:30AM - 11:45AM**

Date: **16th June 2018 (Saturday)**

Venue: **Peter Ho Lecture Theatre (LT-10), 4th Floor, Yeung Kin Man Academic Building, City University of Hong Kong, Tat Chee Venue, Kowloon, Hong Kong**

Organizer:

CityU 香港城市大學 City University of Hong Kong 專業 創新 胸懷全球 Professional·Creative For The World

能源及環境學院 SCHOOL OF ENERGY AND ENVIRONMENT

Co-organizers:

BUSINESS ENVIRONMENT COUNCIL 商界環保協會

energy INSTITUTE HONG KONG

HKIE THE HONG KONG INSTITUTION OF ENGINEERS 香港工程師學會 Environmental Division 環境分部

HKIE THE HONG KONG INSTITUTION OF ENGINEERS 香港工程師學會 Associate Members Committee

HKIE THE HONG KONG INSTITUTION OF ENGINEERS 香港工程師學會 Control, Automation & Instrumentation Division

Brief description:

SEE has been undertaking cutting-edge research to address urgent energy- and environment-related issues in three categories: (1) sustainable technologies for energy, environment and health, (2) urban atmospheric and aquatic environment and (3) smart and healthy cities. In this SEE Tech Talk Series, three SEE faculty members will present their ongoing research on advanced environmental technologies for various hit-hot topics.

Rundown:

09:15-09:30	**Registration**
09:30-09:35	**Opening Remark** Prof. Chak K. CHAN, Dean, SEE, CityU
	Presentations
09:35-10:05	**Solving Air, Water and Waste Problems with Bacteria** Dr. Patrick LEE, Associate Professor and Associate Dean (Undergraduate Studies), SEE, CityU
10:05-10:35	**Adsorption Technology for Gas Separation and Storage** Dr. Jin SHANG, Assistant Professor, SEE, CityU
10:35-10:45	Tea Break
10:45-11:15	**Understanding Regional Climate Change and Extreme Weather** Dr. Wen ZHOU, Associate Professor, SEE, CityU
11:15-11:45	Q&A Session
11:45	End of Event

Note: Attendance certificates will be issued to attendees at the end of the event.

Registration: Please register via https://cap.cityu.edu.hk/studentlan/postDetail.aspx?id=N16i3120p185705U104229

Enquiry: Please contact Miss Vivian Kong at email: kong.vivian@cityu.edu.hk or tel: 3442 4426.

Abstracts and Speakers:

Solving Air, Water and Waste Problems with Bacteria
Dr. Patrick LEE, Associate Professor and Associate Dean (Undergraduate Studies), SEE, CityU

Abstract

In Hong Kong and elsewhere, we face many environmental challenges. However, we can overcome some of the problems in air, water and solid waste via biological processes. In the past, biological processes are often treated as 'black boxes' because of their complexity and optimizing the processes is often viewed as an art than a science. However, we now have many advanced and robust tools to manipulate biological systems with high precision to achieve effective outcomes. In this seminar, recent advances in biological sciences applicable to environmental engineering will be highlighted. Furthermore, our recently developed technologies that are applicable to air, water and solid waste will be illustrated.

About the Speaker

Dr. Patrick Lee is an Associate Professor and the Associate Dean for Undergraduate Studies in the School of Energy and Environment at City University of Hong Kong. He received his BS degree in chemical engineering from Queen's University in Canada in 2001, and his MS and PhD degrees in environmental engineering from the University of California, Berkeley in 2002 and 2007, respectively. From 2008 to 2010, he carried out post-doctoral research, also at the University of California, Berkeley. Dr. Lee is the recipient of awards such as the Canadian Natural Sciences and Engineering Research Council Post-doctoral Fellowship. His research group applies multi-omics tools in a systems biology framework to study microbiology with applications in energy, environment and human health.

Adsorption Technology for Gas Separation and Storage
Dr. Jin SHANG, Assistant Professor, SEE, CityU

Abstract

Separation of gases into their pure components is an important unit operation in chemical industry and it can account for more than 60% of the total cost in many processes. Typical examples are natural gas processing, oil refinery, and environmental remediation, all of which play important roles in building a sustainable society. The gas industry is a 500-billion-dollar input to nearly every sector of the global economy, with high-density storage for transportation and delivery being the most technologically-challenging bottleneck. Typical gas storage applications include fuel gases (e.g., methane and hydrogen) for automobiles, natural gas for long-distance transportation, therapeutic medical gases (e.g., oxygen and nitric oxide) for clinical applications, instrument gases (e.g., nitrogen and argon) for industry usage, and electronic gases (e.g., arsine and phosphine) delivery in the semiconductor fabrication processes. Adsorption technology using porous materials can offer highly efficient routes for gas separation and storage applications. In this talk, I will introduce the basics of adsorption technology and present our latest accomplishment – the concept of active sieving technology which enables highly efficient and economical molecular separation and storage not possible before.

About the Speaker

Dr. Jin Shang is an Assistant Professor in the School of Energy and Environment at City University of Hong Kong. He received his PhD in Chemical Engineering at the University of Melbourne in 2013. He then worked as research fellow on an Australian Research Council Discovery Project focusing on developing advanced adsorbents for carbon capture in Cooperative Research Centre for Greenhouse Gas Technologies (CO2CRC) at the University of Melbourne. Afterwards, he moved to Georgia Institute of Technology and worked as a postdoctoral fellow funded by ExxonMobil focusing on restricted gas diffusion in zeolites by advanced molecular simulation, prior to joining the City University of Hong Kong in September 2016. Since 2015, as Co-founder of Australian Research Council Training Centre for Liquefied Natural Gas Futures, he has been actively participated in LNG focused research along with major industry partners in oil and gas field. Dr. Shang specializes in molecular adsorption, separation, and storage using porous materials such as zeolites and metal-organic frameworks. His research is focused on understanding the fundamental physical chemistry of molecular adsorption process via combined experimental and computational methods, in order to rationally develop high-performance adsorbents and catalysts. The target applications include carbon capture and utilization, methane purification from nature gas/biogas/landfill gas, nitrogen oxides removal and abatement, volatile organic compounds removal, energy gas storage, etc.

Understanding Regional Climate Change and Extreme Weather
Dr. Wen ZHOU, Associate Professor, SEE, CityU

Abstract
Global warming and its impact on regional climate are of the most concern for the public. A higher probability of extreme weather tends to occur under a global warming scenario. Extreme weather events have caused a variety of problems and threats which can seriously hamper the rapid socio-economic development in China, such as snowstorm, heat waves, flooding and droughts, storm surge and sea level rise, and etc. This presentation will focus on the causes of extreme weather events by examining the dynamical linkages between regional climate and various recurrent large-scale circulation patterns under present and future conditions. This integrated study will result in a better understanding of climate variability and regional climate extremes under a warming background and improve our ability to take adaptive measures to minimize the negative effects of climate change, thus helping ensure the sustainability of socioeconomic development in China.

About the Speaker
Dr. Wen Zhou obtained her PhD in City University of Hong Kong in 2004. She was Alexander Von Humboldt Fellow in 2008. She is scientific advisor to HKO since 2008. She is currently Associate Professor in School of energy and Environment, City University of Hong Kong. She has published about 130 SCI papers, her research area focuses on East Asia monsoon climate, tropical intraseasonal oscillation, different types of El Nino and their effects on climate. She also looks into natural hazards such as flood/drought, cold surge and heat wave, sea level rise / storm surge over Asia-pacific region and their relationship with different climate drivers in both present and future scenarios.