# 2017 HKCBEES MADRID CONFERENCE ABSTRACT

**June 12-14, 2017**

**Computer Science School, Campus de Montegancedo, Technical University of Madrid (UPM), Madrid, Spain**

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# 2017 HKCBEES Madrid Conference Introductions

Welcome to CBEES 2017 conference in Madrid, Spain. The objective of the Madrid conference is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Environment Science and Technology and Petroleum Industry and Energy.

## 2017 8th International Conference on Environmental Science and Technology (ICEST 2017)

**Papers will be published in one of the following journals:**

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


**Environmental Science and Development (IJESD, ISSN:2010-0264),** which will be included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Cross ref, ProQuest , CABI.

**Conference website and email: http://www.icest.org/; icest@cbees.org**

## 2017 6th International Conference on Petroleum Industry and Energy (ICPIE 2017)


**Papers will be published in one of the following journal:**

**Journal of Clean Energy Technologies (JOCET, ISSN: 1793-821X),** which will be included in EI (INSPEC, IET), Electronic Journals Library, Chemical Abstracts Services (CAS), Ulrich's Periodicals Directory, Google Scholar, ProQuest and DOAJ.

**Conference website and email: http://www.icpie.org/; icpie@cbees.org**

# 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 **12** Minutes of Presentation and **3** Minutes of Question and Answer
Keynote Speech: about **35** Minutes of Presentation and **5** Minutes of Question and Answer
Plenary Speech: about **25** 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 Oral Presentation will be selected from each presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on June 13, 2017.

## Dress code

Please wear formal clothes or national representative of clothing.

# Keynote Speaker Introductions

## Keynote Speaker I

Prof. Roberto San Jose

Technical University of Madrid (UPM), Madrid, Spain

**Professor Roberto San Jose** is a Professor of the Technical University of Madrid (UPM). He studied Physics in the University of Valladolid (Spain) and made the Ph. D. in 1983 on relation to Atmospheric Boundary Layer. He became associated professor in University of Valladolid in 1986. He was on leave in the Max-Planck Institute of Meteorology in Hamburg (Germany) in 1989-1990 and He was a guest senior scientist in the IBM-Bergen Environmental Sciences and Solutions Center in Bergen (Norway) in 1990-1992. In 1992 he moved to the Computer Science School of the Technical University of Madrid (UPM) in Madrid (Spain). In 2001 he became head professor of the UPM. In 1992 He started a laboratory in UPM called Environmental Software and Modelling Group. Up to now, Prof. San Jose has been principal investigator in more than 200 projects related with Air Quality and Climate issues. The projects were down with private and public companies and also with European Union. More than 20 EU projects on the environmental area and Information Technology have been carried out.

# Topic: “Air Quality Forecasting Integrating Real Time Forest Fire Emissions”

Prof. Roberto San Jose

Technical University of Madrid (UPM), Madrid, Spain

***Abstract*—**This research applied the WRF-Fire/Chem system, which includes real-time forest fire emissions based on the fire behavior model Fire and the pollution is modelled with the Chem chemistry model. Both use meteorological information from the WRF model. Calculated fire emissions have been aggregated to a 23 Km. grid cell and injected into the atmosphere using the WRF/Chem plume rise model. The linkage of the fire behavior model with the atmospheric dispersion and air quality model help to predict the effects of the forest fire on atmospheric processes. The air quality forecasting system with real time biomass burning emissions has been applied to a Portugal case study to demonstrate the capabilities of the system. Air quality concentrations were compared against surface observations and with results from a simulation, which did not consider forest fire emissions. Model performance based on statistics parameters has shown that WRF-Fire/Chem improves the air quality forecast and The results were especially satisfactory with stations located more than 60 km from the starting point of the fires.

# Keynote Speaker II

Prof. Carlos Garbisu

The Basque Institute for Agricultural Research and Development, Spain

**Professor Carlos Garbisu** is the Head of the Department of Conservation of Natural Resources at NEIKER-Tecnalia, The Basque Institute for Agricultural Research and Development (Spain), where he leads the Soil Microbial Ecology Group (http://www.soilmicrobialecology.com). He obtained his PhD degree in Biology at King's College London (1992). Then, he carried out postdoctoral studies in the Department of Biochemistry and Molecular Biology of the University of the Basque Country (1992-1993, 1996-1997) and in the Department of Plant Biology of the University of California at Berkeley (1993-1996). He has published more than 100 international papers (h-index>25; total number of citations: >2500), >145 communications to congresses, led more than 30 research projects, and taught a great deal of courses at the university level. He has participated in many scientific committees and acted as project evaluator for many organizations (including the European Commission) and as reviewer for many international journals. He has focused his career on the fields of microbiology and environmental biotechnology, mainly regarding the utilization of microorganisms and plants to clean-up contaminated soils and water. At the moment, he is most interested in the field of soil microbial ecology and, in particular, in the utilization of microbial indicators of soil quality within the context of the phytoremediation/bioremediation of contaminated soils. His research projects deal with the impact of contamination on soil functioning, the biological monitoring of bioremediation and phytoremediation procedures, and the effects of agricultural practices on soil quality.

# Topic: "Reflections on the Phytoremediation and Phytomanagement of Contaminated Soils"

Prof. Carlos Garbisu

The Basque Institute for Agricultural Research and Development, Spain

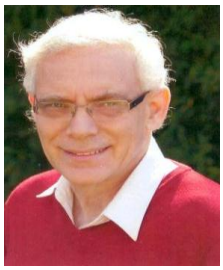
***Abstract*—**Soil is a dynamic and highly complex living system whose functioning is essential for the sustainability of terrestrial ecosystems and our own survival. Regrettably, soil contamination has become an environmental problem of great magnitude, with potential deleterious effects on the functioning and sustainability of the soil ecosystem.

It is widely accepted that it is not possible to assess the ecological impact of soil contaminants by simply measuring the concentration of those contaminants. Such measurements provide information about "contamination" (presence of a substance where it should not be or at concentrations above the natural background level for the area), but they do not provide information about "pollution" (contamination that causes adverse biological effects on resident organisms).

Traditionally, physicochemical methods have been used to remediate contaminated soils. However, this approach is frequently expensive and often results in irreversible damage of the soil ecosystem. Consequently, nowadays, a variety of biological methods of soil remediation (*e.g.*, bioremediation, phytoremediation) are receiving much attention, mainly owing to their lower cost and environmentally friendly character. In relation to toxic heavy metals, phytoremediation (phytoextraction and phytostabilization) and phytomanagement are suggested as suitable remediation options that, in addition to the reduction of the risk generated by the metal contaminants, offer many other additional benefits.

Interestingly, in the last years, it has been frequently highlighted that the ultimate goal of all soil remediation techniques (physicochemical and biological) must be not only to reduce the concentration of contaminants in the soil (or the bioavailable fraction) but, most importantly, to restore soil quality. After all, some physicochemical remediation technologies reduce the concentration of soil contaminants at the expense of negatively affecting the integrity of the soil ecosystem. In this respect, microbial parameters that provide information on the biomass, activity and diversity of soil microbial communities are valuable indicators of soil quality, owing to their rapid response, sensitivity and capacity to provide information that integrates many environmental factors. Finally, the impact of heavy metal contamination, as well as the effectiveness of phytoremediation techniques (*e.g.*, continuous metal phytoextraction with hyperaccumulators; assisted phytoremediation using organic amendments and/or bacterial endophytes with plant growth-promoting traits) in soils contaminated with heavy metals, can also be determined through the grouping of a set of soil microbial properties within higher-level categories, such as attributes of ecological relevance and ecosystem services.

# Keynote Speaker III



Professor 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.

Topic: “Sustainable Management and Revegetation of Bauxite Processing Tailings”

Professor R. J. (Dick) Haynes

Soil and Environmental Science, School of Land Crop and Food Sciences/CRC CARE, The University of Queensland, St Lucia, Queensland

***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.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| **Coffee Break & Group Photo Taking** | **11:10~11：30** |

# Plenary Speaker Introductions

## Plenary Speaker I

Prof. Satya Harpalani

Southern Illinois Uinversity, USA

**Professor Satya Harpalani** is a Professor of Engineering at Southern Illinois University Carbondale. He earned his Ph.D. from University of California Berkeley, M.S. from Virginia Tech and B. Tech (Honors) from the Indian Institute of Technology. Starting with his Doctoral work at UC Berkeley in 1984, he has devoted his entire career to studying flow in deep rocks, with emphasis on unconventional gas recovery, enhanced recovery of gas and charging depleted gas reservoirs. His primary area of specialization is evaluating pressure-dependent-permeability in a laboratory environment, replicating in situ conditions, and modeling the flow behavior. Dr. Harpalani has a long list of peer-reviewed journal papers, conference proceedings and presentations. During last fifteen years, he has secured external funding in excess of US$ 7 Million for his research from various sources of funding, including federal government and industry. He has a state-of-the-art laboratory for flow characterization which is one-of-its-kind in North America.

# Topic: “Past, Presentand Future of UnconventionalGas in the United States”

Prof. Satya Harpalani

Southern Illinois Uinversity, USA

***Abstract*—**Production of natural gas from unconventional sources, primarily coalbed methane (CBM) and shale gas, has a short history. CBM Production in the United States was almost zero in 1980, which grew to almost two trillion cu ft (TCF) in 2010, accounting for ~8% of natural gas consumption. Similarly, shale gas production started in 2000 in the US and exceeded eight TCF in 2013. Hence, relatively speaking, CBM is a mature industry, with growing interest in Australia, Canada, Indonesia, India and China. Its future, however, is somewhat dependent on the growth of shale gas, given that shale gas has not been very successful in other parts of the world. The potential is definitely significant.

For CBM production, the most prolific basins in the US at this time are the San Juan and Powder River, with Appalachian emerging at a fairly fast pace. The primary reason for the success of CBM production in the San Juan basin has been the pressure-dependent-permeability behavior of coal, with permeability increases of between ten and hundred times, resulting in phenomenal production over long periods of time. In the Powder River Basin, it is the shallow depth and very high initial permeability that have accelerated production. Shale gas production has primarily been from the Barnett, Marcellus and Haynesville formations. Nine other formations are coming up although the production from these has not been significant to date. Also, a critical factor influencing future production is the evolution of price of gas in the future.

This presentation will include the history, current status and future of production of these two sources of unconventional gas, along with the associated uncertainties.

# Plenary Speaker II

Prof. José M. Cela

Universitat Politècnica de Catalunya, Spain

**Prof. José Mª Cela** is PhD.in Telecommunication Engineering from Universitat Politècnica de Catalunya (UPC) and Professor of Computer Architecture at same university since 1996. He is director of the Department of Computer Applications in Science and Engineering (CASE) at the Barcelona Supercomputing Center (BSC) since 2007. He has directed more than 25 R & D projects (and participated in more than 40), has published over 80 articles and has participated in more than 100 international conferences. His research is related to numerical simulation in engineering and high performance computing (HPC). In recent years, his research has focused on the energy sector. He directs the joint research center Repsol-BSC. In addition, he is responsible for the macro-research project with Iberdrola renewables and several other projects in the field of fusion energy.

Topic: "Exploration Geophysics Developments at BSC"

Prof. José M. Cela

Universitat Politècnica de Catalunya, Spain

***Abstract*—**We present the recent developments in exploration geophysics done at BSC. We develop BSIT processing package that includes modeling, migration and Full Wave-form Inversion (FWI) facilities for different types of waves (acoustic, elastic, electromagnetic) and media (isotropic, VTI, TTI, etc). Some techniques to decrease the computational cost of FWI will be presented.

# Plenary Speaker III

Dr. Frederic Cegla

Imperial College London, United Kingdom

**Frederic Cegla** is currently a Senior Lecturer and EPSRC Research Fellow in the Non-destructive Evaluation (NDE) group at Imperial College London. He was born in Freiburg im Breisgau, Germany, and received the MEng and PhD degree in Mechanical Engineering from Imperial College London, United Kingdom, in 2002 and 2006 respectively. He returned to Imperial College London after a short stay as postdoctoral research fellow at the University of Queensland in Brisbane, Australia. His current research focuses on the topics of ultrasonic sensors, ultrasonic monitoring techniques, structural health monitoring and ultrasonic manipulation of particles and bubbles. He was a founder of Permasense Ltd. a spin out company and market leader in the field of wireless ultrasonic corrosion monitoring. He has authored more than 50 publications and 6 patents.

# Topic: “Monitoring of Oil and Gas Assets with Ultrasonic Sensors”

Dr. Frederic Cegla

Imperial College London, United Kingdom

***Abstract*—**Oil and gas assets deliver a large fraction of the world’s energy. They are responsible for large flows of financial funds, crude oil and processed product around the globe and therefore there is a keen interest in optimising asset integrity, availability and plant life. Traditionally, ultrasonic technology has mainly been employed for non-destructive testing and inspection of plant components. The results of this are snapshot surveys of the plant condition that indicate if there are any gross defects (corrosion/erosion induced damage often being the largest concerns). However, the accuracy and repeatability of these traditional measurements was not good enough to influence short term operational decisions. Recently, it has become technologically and financially viable to permanently install ultrasonic sensor networks. The measurement results from the permanently installed sensors is repeatable enough to monitor small changes that can arise as a function of process conditions. Therefore, this technology can be used to influence operational decisions which can have an associated financial benefit. In this paper I will demonstrate what permanently installed ultrasonic sensors can do. I will illustrate this with examples from laboratory work at Imperial College and my personal experience during the commercialisation of wireless ultrasonic measurement technology via Permasense Ltd. Ultrasonic sensor networks of this type have been deployed in over 130 oil and gas facilities worldwide with more than 10000 individual sensors deployed and 10’s of millions of measurements taken.

# Brief Schedule for Conference

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| **Day 1** | **June 12, 2017 (Monday)** 13:00~17:00<br>**Venue:** BLOQUE 1, ROOM: H-1002 of Computer Science School (Escuela Técnica Superior de Ingenieros Industriales, formerly called Facultad de Informática), Campus de Montegancedo<br>Participants Onsite Registration & Conference Materials Collection |
| **Day 2** | **June 13, 2017 (Tuesday)** 9:00~18:45<br>**Venue: Building 1, ROOM H-1002**<br>Keynote Speech, Plenary Speech and Conference Presentation |
| | **Morning Conference** |
| | **Opening Remarks** 9:00~9:10<br>Prof. Roberto San Jose<br>Technical University of Madrid (UPM), Madrid, Spain<br>**Keynote Speech I** 9:10~9:50<br>**Topic: "Air Quality Forecasting Integrating Real Time Forest Fire Emissions"**<br>(Prof. Roberto San Jose, Technical University of Madrid (UPM), Madrid, Spain)<br>**Keynote Speech II** 9:50~10:30<br>**Topic: "Reflections on the Phytoremediation and Phytomanagement of Contaminated Soils"**<br>(Prof. Carlos Garbisu, The Basque Institute for Agricultural Research and Development, Spain)<br>**Keynote Speech III** 10:30~11:10<br>**Topic: "Sustainable Management and Revegetation of Bauxite Processing Tailings"**<br>(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) |
| | **Coffee Break & Group Photo Taking** 11:10~11:30 |
| | **Plenary Speech I** 11:30~12:00<br>**Topic: "Past, Presentand Future of UnconventionalGas in the United States"**<br>(Prof. Satya Harpalani, Southern Illinois Uinversity, USA)<br>**Plenary Speech II** 12:00~12:30<br>**Topic: "Exploration Geophysics Developments at BSC"**<br>(Prof. José M. Cela, Universitat Politècnica de Catalunya, Spain)<br>**Plenary Speech III** 12:30~13:00<br>**Topic: "Monitoring of Oil and Gas Assets with Ultrasonic Sensors"**<br>(Dr. Frederic Cegla, Imperial College London, United Kingdom) |
| | **Lunch 13:00~14:00** |
| | **Afternoon Conference** |

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|---|---|---|
| | **Session 1:**14:00~16:00<br>**Venue: Building 1, ROOM H-1002**<br>8 presentations-Topic: "Petroleum and Energy Engineering" | **Session 2:** 16:00~18:45<br>**Venue: Building 1, ROOM H-1002**<br>11 presentations-Topic: "Environmental Engineering and Management" |
| | **Poster session 9:00~18:45** | **Venue: Building 1, ROOM H-1002** |
| | **Dinner 21:00** | **Venue: Restaurant** |

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

# Detailed Schedule for Conference

## June 13, 2017 (Tuesday)

### Venue: Building 1, ROOM H-1002

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|---|---|
| **9:00~9:10** | **Opening Remarks**<br>Prof. Roberto San Jose<br>Technical University of Madrid (UPM), Madrid, Spain |
| **9:10~9:50** | **Keynote Speech I**<br>Prof. Roberto San Jose<br>Technical University of Madrid (UPM), Madrid, Spain |
| **9:50~10:30** | **Keynote Speech II**<br>Prof. Carlos Garbisu<br>The Basque Institute for Agricultural Research and Development, Spain |
| **10:30~11:10** | **Keynote Speech III**<br>Professor R. J. (Dick) Haynes<br>Soil and Environmental Science, School of Land Crop and Food Sciences/CRC CARE, The University of Queensland, St Lucia, Queensland |
| **11:10~11:30** | **Coffee Break & Group Photo Taking** |
| **11:30~12:00** | **Plenary Speech I**<br>Prof. Satya Harpalani<br>Southern Illinois Uinversity, USA |
| **12:00~12:30** | **Plenary Speech II**<br>Prof. Jos é M. Cela<br>Universitat Polit ècnica de Catalunya, Spain |
| **12:30~13:00** | **Plenary Speech III**<br>Dr. Frederic Cegla<br>Imperial College London, United Kingdom |
| **13:00~14:00** | **Lunch** |
| **14:00~16:00** | **Session 1**<br>8 presentations-Topic: “Petroleum and Energy Engineering” |
| **16:00~18:45** | **Session 2**<br>11 presentations-Topic: “Environmental Engineering and Management” |
| **21:00~22:00** | **Dinner** |

**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 Oral Presentation will be selected from each oral presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on June 13, 2017.**

# Session 1

**Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.**

## Afternoon, June 13, 2017 (Tuesday)

## Time: 14:00~16:00

## Venue: Building 1, ROOM H-1002

## Session 1: 8 presentations- Topic: "Petroleum and Energy Engineering"

## Session Chair: Prof. Satya Harpalani

J0001 Presentation 1 (14:00~14:15)

Simulation of Counter-Current Imbibition in SRVs of Tight Oil Reservoir Data

**Zhongyi Xu,** Lingsong Cheng, Renyi Cao, Sidong Fang and Hao Liu

China University of Petroleum-Beijing, China

*Abstract*—During the process of tight oil exploration, counter current imbibition effect is significantly different due to the presence of complex fracture network and flow characteristics in tight oil reservoir. To simulate counter-current imbibition in fractured tight oil reservoir properly. PEBI grids are used to match the complex fracture network, natural fractures and matrix are idealized as dual-porosity medium, rate of mass transfer of imbibition between matrix and fractures is treated as source or sink term in dual porosity model. A new semi analytical model for the calculation of mass transfer function of counter-current imbibition in the presence of complex fracture network is presented by using radial integration boundary element method (RIBEM), In addition, to reflect the flow characteristics of tight oil, relative permeability and capillary pressure curve, which have considered the effect of boundary layer, has also used in the mass transfer model. Besides, with a field example from tight oil reservoir, we show the capacity and practical use of the model. From simulated results, it is concluded that counter-current imbibition place an important role on the early and middle stage of exploration and the existence of boundary layer makes the contribution of imbibition to oil production greatly reduced.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 14:00~16:00

## Venue: Building 1, ROOM H-1002

## Session 1: 8 presentations- Topic: "Petroleum and Energy Engineering"

## Session Chair: Prof. Satya Harpalani

J0003 Presentation 2 (14:15~14:30)

Estimation of Shrinkage Factor for Adjustment of Loss from Crude Decanting Point to Main Storage Tanks during Custody Transfer of Pakistani Crude Oils

**Mudasar Mahmood,** Tallal Joiya and Rafi Ullah Khan

Pakistan Oil Fields Limited (POL), Pakistan

*Abstract*—The knowledge of rheological behavior of crude oils is important in many aspects such as in pipeline sizing, pump selection, and handling and storage requirements for these materials. In the present study, the rheological performance of selected Pakistani crude oils is investigated experimentally and their shear stress-shear rate behaviors are studied. Various Pakistani crude oils are characterized and the rheology of these crudes is studied at a constant temperature in a standard rotational rheometer. The crude oils studied exhibit a non-Newtonian behavior in the range of shear rate of 0.9–4×103 s–1. The experimental rheological data is fitted with the power law (Oswald de Waele) model which is found extremely satisfactory in representing the data. The crude oil samples under investigation are found pseudoplastic in nature with high degree of conformity between power law predications and the experimental results of the study. The values of the power law parameters, i.e., consistency index (K) and power law index (n) are in the range of 0.56–0.77 and 0.49–0.54, respectively.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 14:00~16:00

## Venue: Building 1, ROOM H-1002

## Session 1: 8 presentations- Topic: "Petroleum and Energy Engineering"

## Session Chair: Prof. Satya Harpalani

J0005 Presentation 3 (14:30~14:45)

Isolation and Characterization of Biosurfactant Producing Bacteria for the Application in Enhanced Oil Recovery

Niraj Prasad, Sumita Dasgupta, Mousumi Chakraborty, **Smita Gupta**

Sardar Vallabhbhai National Institute of Technology, Surat - 395 007, Gujarat, India

*Abstract*—In the present study, a biosurfactant producing bacterial strain was isolated, screened and identified. Further, various fermentation conditions (such as pH (5-10), incubation period (24-96h) and incubation temperature (20-60 $^{o}$C) were optimized for maximum production of biosurfactant. The produced biosurfactant was characterized by measuring emulsification index, foaming characteristics, rhamnolipid detection, interfacial tension between water and oil and stability against pH and temperature for its potential application in oil recovery process. The additional oil recovery for two different sand, sand1 and sand2, was found to be 49% and 38%, respectively.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 14:00~16:00

## Venue: Building 1, ROOM H-1002

## Session 1: 8 presentations- Topic: "Petroleum and Energy Engineering"

## Session Chair: Prof. Satya Harpalani

J0006 Presentation 4 (14:45~15:00)

Synthesis and Nitrogen-Plasma Treatment of Silicon/Carbon Nanotube/Graphene Composites as Anode Materials for Lithium-Ion Batteries

**Chuen-Chang Lin** and Jyun-Wei Chang

National Yunlin University of Science and Technology, Taiwan

*Abstract*—Carbon nanotube/graphene composites were directly grown on cobalt catalysts-coated nickel foam by one-step ambient pressure chemical vapor deposition. Next, The silicon film was deposited on the carbon nanotube/graphene composites by radio frequency magnetron sputtering at different power levels (150 and 200 W). Finally, the silicon/carbon nanotube/graphene composites were modified by radio frequency nitrogen-plasma at different power levels (50, 75, and 100 W). The silicon film sputtered on the carbon nanotube/graphene composites at a lower power level possessed higher specific capacity and cyclic stability due to the silicon thin film sputtered on the carbon nanotube/graphene composites at 150 W with loose microstructure. Furthermore, the higher the nitrogen-plasma power, the higher the cyclic stability because a conductive Li3N matrix primarily was derived from SiN0.73, the higher the power, the higher the percentage of SiN0.73 as well as then the higher the percentage of ductile and conductive Li3N which buffered volume expansion of the Si-Li alloy as well as prevented aggregation of the Si nanoparticles. However, the higher the nitrogen-plasma power, the lower the specific capacity since the higher the power, the higher the percentage of nonconductive SiN1.33 which led to the lower specific capacity. Moreover, silicon/carbon nanotube/graphene composites modified by nitrogen-plasma showed a stable cyclic performance in comparison to silicon/carbon nanotube/graphene composites since the incorporation of nitrogen improved the cyclic stability of the anode.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 14:00~16:00

## Venue: Building 1, ROOM H-1002

## Session 1: 8 presentations- Topic: "Petroleum and Energy Engineering"

## Session Chair: Prof. Satya Harpalani

J2002 Presentation 5 (15:00~15:15)

Main Directions and Priorities of Kaliningrad Region Oil and Gas Complex Development

**Pavel Shcherban** and Sergey Koryagin

Baltic Federal University of Immanuel Kant/Engineering – Technical Institute, Kaliningrad, Russia

*Abstract*—This article presents main steps of oil and gas complex formation in Kaliningrad region. Serious changes in political situation especially in recent years generate new challenges. At the same time, new technologies and research create various opportunities for further development and improvement of oil and gas complex within this area. This review demonstrates different approaches of sustainable development of oil and gas companies in terms of exclave region. The key directions for further growth are gas network expansion so as development of both offshore and shelf oil reserves.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 14:00~16:00

## Venue: Building 1, ROOM H-1002

## Session 1: 8 presentations- Topic: "Petroleum and Energy Engineering"

## Session Chair: Prof. Satya Harpalani

J2003 Presentation 6 (15:15~15:30)

A Techno-Economic Analysis on Spinning Reserve Services of Battery Energy Storage Systems for Thermal Power Plants

**Qiangqiang Liao,** Peng Zhou , Zhiqin Wang, Bo Wang, Youlang Zhang, Jie Zhang, and Guoding Zhou

Battery Energy Storage Techniques in Shanghai University of Electric Power in Shanghai, China

*Abstract*- Some new battery energy storage techniques are suitable for spinning reserve services for thermal power plants due to their quick response to millisecond time scale adequate to balance instantaneous load fluctuation. Technical and economic performances of three kinds of batteries including lithium ion battery, sodium-sulfur battery and vanadium redox flow battery (VRFB) are discussed as illustrations of standby supply of thermal power plants. As the spinning reserve power sources, they can achieve remarkable economic benefits in the life cycle despite their high power costs and energy costs. The reserve capacity of battery energy storage systems can improve generation rates of thermal power plants, decline gross coal consumption rates, decrease generating cost and the emission of carbon dioxide and pollutants, thus playing a significant role in energy conservation and emission reduction.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 14:00~16:00

## Venue: Building 1, ROOM H-1002

## Session 1: 8 presentations- Topic: "Petroleum and Energy Engineering"

## Session Chair: Prof. Satya Harpalani

T2009 Presentation 7 (15:30~15:45)

Optimal Energy Management of an Academic Building with Distributed Generation and Energy Storage Systems

**C Roldán-Blay**, C Roldán-Porta, E Peñalvo-López and G Escrivá-Escrivá

Universitat Politècnica de València, Spain

*Abstract*—In this paper, an optimisation algorithm is used to simulate the management of distributed energy resources in an academic building. This optimisation algorithm, called DEROP, consists of an iterative procedure reach a supply schedule with the minimum energy cost. The inputs to the algorithm are the demand forecast, the availability of each resource, the level of storage in energy storage systems and prices and efficiencies of each resource. With these data, the algorithm proposes the optimal schedule to minimise costs of energy supply. The main advantages of this algorithm are that it is fast, easy to be implemented in real buildings and flexible. The algorithm is simulated with real data to optimise management of distributed energy resources and energy storage systems in an academic building. The management of these resources is optimised for a tariff with hourly discrimination and for a tariff with no time restrictions. One of the main conclusions drawn from these simulations are that significant savings are obtained with this algorithm. Also, DEROP allows taking advantage of tariffs with hourly discrimination, even in an academic building with low night-time consumption in which, a priori, these tariffs are not profitable.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 14:00~16:00

## Venue: Building 1, ROOM H-1002

## Session 1: 8 presentations- Topic: "Petroleum and Energy Engineering"

## Session Chair: Prof. Satya Harpalani

T2015 Presentation 8 (15:45~16:00)

Production of Biodiesel Using a Membrane Reactor to Minimize Separation Cost

**O A Olagunju** and P Musonge

Department of Chemical Engineering, Durban University of Technology, South Africa

*Abstract*—This study investigates the performance of a packed bed membrane reactor in the transesterification process of triglycerides to methyl ester using soyabean oil as feedstock. A $TiO_2/Al_2O_3$ ceramic microporous membrane was selected due to its chemical inert nature and thermal stability to selectively remove the product from the reaction medium. CaO impregnated on the surface of activated carbon was packed into the membrane and acted as catalyst. The synthesized catalyst had a total loading of 40.50 % and was characterized by XRD and temperature-programmed desorption of $CO_2$ ($CO_2$-TPD). The crude biodiesel produced was micro-filtered by the ceramic membrane with a pore size of 0.02 μm to retain the unreacted oil and free glycerol, at the transmembrane pressure of 100 KPa. The best condition was achieved with a temperature of 65 $^oC$, methanol/oil molar ratio of 6:1 for 150 minutes, which resulted in the highest FAME yield of 94 %. Methyl ester produced met the ASTM D6751 and SANS 1935 specifications. The product obtained was mainly composed of methyl esters. Glycerol was not detected in the product stream due to the ability of the membrane to retain the glycerol and the unreacted oil in the medium, which solved the issue of glycerol separation from biodiesel.

# Session 2

**Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.**

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

T0005 Presentation 1 (16:00~16:15)

Modelling the Effect of Black Carbon and Sulfate Aerosol on the Regional Meteorology Factors

**X Ma** and W Wen

National Meteorological Center, CMA, Beijing, China

*Abstract*—In this study, we focus on the effect of black carbon aerosol and sulfate aerosol on meteorology factors during heavy pollution period and non-heavy pollution period. The version of WRF/chem V3.4 was used in this work, Four Simulation scenarios are applied to simulate the effect of the effect of black carbon aerosol and sulfate aerosol on solar radiation, temperature, PBL high. The analysis results show that the effect of black carbon and sulfate aerosol cause decline on three meteorological factors in both heavy pollution and non-heavy pollution period in both January and July. The influence of two aerosols on meteorological factors are less significant than winter. During heavy pollution, black carbon aerosol cause the loss of solar radiation is 29.1W/m2; the warming effect of black carbon aerosol caused temperature to rise 0.05℃; PBL height decreased by an average of 73.1m. Sulfate aerosols cause the loss of solar radiation is 21.5W/m2; Temperature fell an average of 0.89℃; PBL height decreased by 66.6m .The change of three meteorological factors due to aerosol feedback in non-heavy pollution period in much smaller than heavy pollution period.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

T0011 Presentation 2 (16:15~16:30)

Component, Disperse and Morphological Composition of Ambient Air Dust Contamination in the Zones of Mining-Processing Enterprises

**S Y Zagorodnov**, A A Kokoulina and S V Klein

FBSI "Federal Scientific Center for Medical and Preventive Health Risk Management Technologies", Perm, Russia

*Abstract*—The article presents the results of complex studies of dust emissions of the mining and processing complex. The main technological processes and the sources operation that produce intense dust emissions are determined. It has been proved that dust emissions of the investigated enterprise contain fine dust dangerous for human health. The results of the studies allowed us to detect precisely the dispersed composition of dust emissions, with the separation of PM10 and PM2.5 fractions, the chemical composition of the dust, and the shape of the particles. Thus, operating with obtained data on dispersed composition of the dust emissions and the specified sedimentation coefficient, we were able to calculate the dispersion of all solid particles and separately the PM10 and PM2.5 at the location of the enterprise. The dust exposure of the population at the targeted zones has been also determined. The obtained concentration values were used for assess health risk level to population living at the border of sanitary protection zone of the enterprise. Due to the obtained results, the enterprise was provided with recommendations on the inclusion of fine particles PM 10 and PM 2.5 in the production control program. In the case of increasing its production capacity was recommended to introduce the environmental measures for the reduction of emission of the finely dispersed fractions PM10 and PM 2.5.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

T1003 Presentation 3 (16:30~16:45)

Effects of Amino Functionality on Uptake of Cationic Dye by Titanium Metal-Organic Frameworks

**RehanaBibi**, Jiancheng Zhou and Naixu Li

Southeast University, Nanjing, Jiangsu, China

*Abstract*—Titanium based metal-organic frameworks (MOFs), MIL-125 and $NH_2$-MIL-125 havebeen successfully synthesized by hydrothermal method. These MOFs were specially designed to apply for the removal of cationic dye *i.e.*, Methylene Blue (MB) in the aqueous solution. Experimental results revealed that $NH_2$-MIL-125 is more effective for the removal of Methylene Blue dye compared to MIL-125.The maximum adsorption capacity of $NH_2$-MIL-125 for MB dye was 300mg/L.This high adsorption selectivity is due to the electrostatic interaction between the amino groups of the dye molecules and $NH_2$-MIL-125. Furthermore, owing to the more negative zeta potential resulted from the charge balance for the protonation of $–NH_2$, $NH_2$-MIL-125 exhibit much higher adsorption capability for the cationic dye. The factors that affect the adsorption behavior of dye on adsorbents including: exposure time, initial dye concentration, adsorbent dose and temperature were studied in detailed. Pseudo first order kinetics and pseudo second order kinetic were used to best-slop fit the adsorption data. Pseudo second order represents the kinetics adsorption of MB dye on both the adsorbents. The adsorption isotherm and thermodynamics were also studied in detail, the reaction data were best fitted to Langmuir isotherm model. Thermodynamics parameter such as entropy ($\Delta S$), enthalpy ($\Delta H$) and Gibbs free energy ($\Delta G$), demonstrated that the adsorption of MB dye on both adsorbents was spontaneous and endothermic in nature. Characterization and structural analysis of the samples were evaluated by X-ray powder diffraction (XRD), scanning electron microscopy (SEM), Fourier transform infrared (FT-IR) spectrometry,$N_2$ adsorption/desorption (BET) and Zeta potential.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

T1008 Presentation 4 (16:45~17:00)

Erosion of *Brassica incana* Genetic Resources: Causes and Effects

**A Muscolo**, G Settineri, C Mallamaci, T Papalia and M Sidari

Mediterranea University of Reggio Calabria, Agriculture Department, Italy

*Abstract—Brassica incana* Ten., possessing a number of useful agronomic traits, represents a precious genetic resource to be used in plant breeding programs to broaden the genetic base in most *Brassica* crop species. *B. incana* that grows on limestone cliffs is at risk of genetic erosion for environmental constraints and human activities. We studied the pedological conditions of a Calabrian site where the *B. incana* grows, and we correlated the soil properties to the physiological and biochemical aspects of *B. incana* to identify the causes and effects of the genetic erosion of this species. Our results evidenced that physical soil conditions did not affect *B. incana* growth and nutraceutical properties; conversely, biological soil properties modified its properties. We identified leaf pigments and secondary metabolites that can be used routinely as early warning indicators of plant threat, to evaluate in a short term the dynamic behavior of plants leading to species extinction.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

T2003 Presentation 5 (17:00~17:15)

Remediation of Oil-Based Drill Cuttings Using Low-Temperature Thermal Desorption

Huan Liu, **Jianbing Li** and Min Zhao

University of Northern British Columbia, Prince George, British Columbia, Canada

*Abstract*—In this study, a bench-scale apparatus was used to examine the feasibility of low-temperature thermal desorption (LTTD) remediation for oil-based drill cuttings (OBDCs). Sand was mixed with OBDCs with different mixing ratios to enhance the LTTD remediation process. It was found that the petroleum hydrocarbons (PHCs) were barely left in the high-oil-content drill cuttings after LTTD (at 300 ℃ for 20 min), with total petroleum hydrocarbons (TPH) content reduced from 6.55 wt.% to 0.019 wt. The results illustrated that the TPH removal efficiency improved with the increase of all four tested factors, and the influential effects were ranked as treatment temperature > treatment time > sand/OBDCs mixing ratio > initial TPH content. Sand addition could enhance TPH desorption rate, especially at high residual TPH condition, maybe by increasing the effective diffusivity of PHCs in OBDCs or thermal conductivity of OBDCs. LTTD of OBDCs was shown to follow nonlinear least-squares exponential kinetics (adjusted R2 > 0.9), and the treatment under optimal operating conditions could both achieve Canadian management limits and minimum costs. In summary, LTTD process appears to be a feasible choice for the remediation of OBDCs especially due to its high efficiency and cost effectiveness, and the obtained results are of practical guiding significance for designing effective treatment system of OBDCs.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

T2006 Presentation 6 (17:15~17:30)

Phenol-Activated Persulphate ($S_2O_8^{2-}$) as Efficient Terminal Electron Acceptor for Enhancing the Performance of Microbial Fuel Cell

**Md. T. Noori**, M.M. Ghangrekar and C.K. Mukherjee

Indian Institute of Technology Kharagpur, India

*Abstract*—Phenolic compounds can activate persulphate to enhance the cathodic reaction kinetics in microbial fuel cells (MFCs) and simultaneously phenolic compound can be reduced. Phenol (10 mM, PhO-) containing wastewater was treated in the cathodic chamber of MFC in presence of sodium persulphate (Na2S2O8, ~10 mM). Linear sweep voltammetry (LSV) revealed PhO- - S2O82- synergetic effect on the cathodic current production, showing highest amount of reduction current density of 0.08 A/m2 in MFC with PhO- - S2O82- followed by MFC with only S2O82- (0.07 A/m2) and control MFC (0.03 A/m2). The power density of 17.6 W/m3 in MFC with PhO- - S2O82- catholyte was significantly higher as compared to control MFC-1 (2.8 W/m3). Additionally, the PhO- reduction of 98 ± 1% was obtained after 4 days of operation of MFC and the final concentration of 0.18 mg/l achieved can be considered as safe limit for discharge in water bodies.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

T2007 Presentation 7 (17:30~17:45)

Study on Photocatalytic Degradation of Endocrine Disrupting Compound

Bhagwan Pralhad Parihar, Smita Gupta, **Mousumi Chakraborty**

Sardar Vallabhbhai National Institute of Technology Surat – 395 007, Gujarat, India

*Abstract*—Propylparaben (PP) is catagorized as endocrine disrupting compounds and is found to be present in urban wastewater comparatively at high concentrations. In the present work, propylparaben was degraded photo-catalytically by optimizing different process parameters such as initial concentration of propylparaben (25mg$L^{-1}$ to 100 mg$L^{-1}$), pH of the feed phase and concentration of photocatalyst $TiO_2$ (50 mg$L^{-1}$ to 200 mg$L^{-1}$). Finally PP degraded and converted to $CO_2$ and $H_2O$ and the degradation was found to follow the first order kinetics.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

T2012 Presentation 8 (17:45~18:00)

Anodic Oxidation of Atrazine on Pt Anode with Cathodic Electrogeneration of $H_2O_2$

**Kai Zhu** and Zhirong Sun

Beijing University of Technology, China

*Abstract*—Atrazine, one of the most widely used herbicides in recent decades, is refractory organic with high occurrence in environment. Electrochemical advance oxidation processes based on in situ electrogenerated $H_2O_2$ have attracted increasing interest in the treatment of refractory organics. The objective of this study was to investigate the degradation behaviors of atrazine by anodic oxidation with cathodic eletrogeneration of $H_2O_2$ (AO-$H_2O_2$). The oxidation of atrazine was performed in an undivided cylindrical glass cell using Pt anode and graphite cathode, air was compressed into working solution at atmospheric pressure. A series of trials was carried out to assess the influence of the most important variables (current intensity, air feeding flow rate, cathode-to-anode area ratio and initial organic concentration) in atrazine removal. During all trials performed, the concentration of atrazine declined significantly, and in the best operating parameters found (current intensity 80mA, air feeding flow rate 0.9L/min, cathode-to-anode area ratio 12 ), 72% of atrazine removal was reached within 120min treatment. CV was performed to deeply understand the electrochemical reactions involved in the AO-$H_2O_2$ system. The intensity of anodic peak was strengthened when the working solution is $O_2$-saturated, implying that $O_2$ might play an important role in the anodic oxidation of atrazine. Three major oxidation intermediates were identified by HPLC analyses through the comparison of their retention time, indicating dealkylation and dechlorination occur as parallel reactions during the process.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

T2013 Presentation 9 (18:00~18:15)

Photoelectrochemical Degradation of Phenol on Sn-Mo Co-doped $TiO_2$ Nanotube Arrays

**Xiaoyue Ma** and Zhirong Sun

National Engineering Laboratory for Advanced Municipal Wastewater Treatment and Reuse Technology, Beijing University of Technology, China

*Abstract*—Phenol is a typical kind of refractory organics with high toxicity, persistance and bioaccumulation. It is necessary to study the methods of degradation and elimination. In this study, Sn-Mo co-doped $TiO_2$ nanotube array electrode (Sn-Mo-$TiO_2$-NTs/Ti electrode) was prepared by a single-step anodization method of Ti plate and used for degradation of phenol in water. Photo-electrochemical measurements of Sn-Mo-$TiO_2$-NTs/Ti electrode were carried out by electrochemical workstation under simulated sunlight. The Sn-Mo-$TiO_2$-NTs/Ti electrode was characterized by field emission scanning electron microscope and UV-vis diffuse reflectance spectroscopy. Under simulated sunlight, photoelectrocatalytic degradation of phenol was studied with a three electrode system. The results indicate that the removal rate of phenol reached the maximum value at initial pH 6.6 with 0.5 V (vs. $Hg/Hg_2SO_4$) bias voltage. With the bias voltage increasing, the removal rate of phenol increases. Products analysis indicates that hydroquinone, 1,2-benzenediol and benzoquinone are the intermediate products. These intermediate products are mineralized into $CO_2$ and $H_2O$ at last.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

T2016 Presentation 10 (18:15~18:30)

Insecticide Usage and Chemical Contamination Assessment in Asiatic Pennywort

**S Bumroongsook**

King Mongkut's Institute of Technology Ladkrabang, Bangkok 10520, Thailand

*Abstract*—The insecticide usage in commercially grown asiatic pennywort plantations in Nakhonpatum and Nonthaburi province,Thailand was surveyed during January-June, 2016. The results showed that asiatic pennywort cuttworms was leaf destructive and caused the most damge to the production. The growers used organophosphate insecticides to control the caterpillars the most, followed by pyrethoid, abamectin, carbamate and organochlorine, respectively. The chemical contaminants of pennywort from 9 fresh markets in Bangkok was monitored, the result indicated that lead was not detected in the samples. The amount of arsenic was less than 0.075 mg / kg. The insecticide residue measurement of dicofol, chlorpyrifos and methidathion was 0.98, 2.84 and 0.46 mg / kg, respectively.

## Afternoon, June 13, 2017 (Tuesday)

## Time: 16:00~18:45

## Venue: Building 1, ROOM H-1002

## Session 2: 11 presentations- Topic: "Environmental Engineering and Management"

## Session Chair: Prof. R. J. (Dick) Haynes

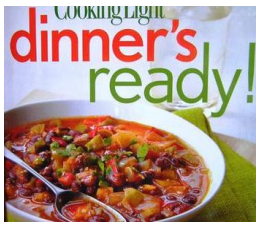
T3005 Presentation 11 (18:30~18:45)

Adsorption of Paraquat Dichloride by Graphitic Carbon Nitride Synthesized from Melamine Scraps

**A Watcharenwong**, A Kaeokan, R Rammaroeng, P Upama and P Kajitvichyanukul

School of Environmental Engineering, Suranaree University of Technology, Thailand

*Abstract*—In this research, graphitic carbon nitride (g-$C_3N_4$) was synthesized from useless melamine scraps. Mixture of melamine powder and urea was directly burned in the muffle furnace at 550 °C. Later as-synthesized g-$C_3N_4$ was modified with hydrochloric acid. The g-$C_3N_4$ powder was characterized by several techniques including X-ray diffraction, scanning electron microscope, and specific surface area analyser. Adsorption of the herbicide paraquat from an aqueous solution to suspended particles of g-$C_3N_4$ was investigated, taking into consideration several parameters such as initial concentration of paraquat, initial pH, and dosage of g-$C_3N_4$. The results showed that with the same amount of g-$C_3N_4$, the increase in the paraquat concentration caused the reduction in the removal efficiency and the higher the amount of g-$C_3N_4$, the less residual paraquat remained in the bulk solution. G-$C_3N_4$ showed better adsorption behaviour in the basic condition. Finally, Langmuir and Freundlich adsorption isotherms were also evaluated. Paraquat adsorption by g-$C_3N_4$ was in accordance with Langmuir more than Freundlich adsorption isotherm.

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| **Dinner** | **21:00** |

# Conference Venue

## Technical University of Madrid (UPM), Madrid, Spain

http://www.upm.es/



The Technical University of Madrid (UPM) was founded in 1971, although the majority of its Centres are over hundreds of years old and was founded in the 18th and 19th centuries. Each of them maintained their independence until being grouped together to form the UPM in 1971. It is no exaggeration to state that for over one and a half centuries great part of the history of Spanish technology has been written by the Schools of Architecture and Engineering of the UPM. They have been during a lot of years nearly the only and in some case actually the only school. All of the important personalities in the area of teaching and research passed through their respective centres as students or lecturers.

**How to Get Here**

You have several ways of getting to the Facultad de Inform ática by both public transport and private car.

**By taxi**

It will cost about 20-30 Euro. And show the taxi driver the information which appears in the following link: http://www.fi.upm.es/?id=comollegar&idioma=english

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Route 571: Madrid (Campamento)-Boadilla (Lomas - Bonanza)
Route 573: Madrid (Moncloa)-Boadilla (Urbanizaciones)
Route 566: Boadilla (Ronda)-Pozuelo (C. France)
Public transport map showing access to the Facultad de Inform ática
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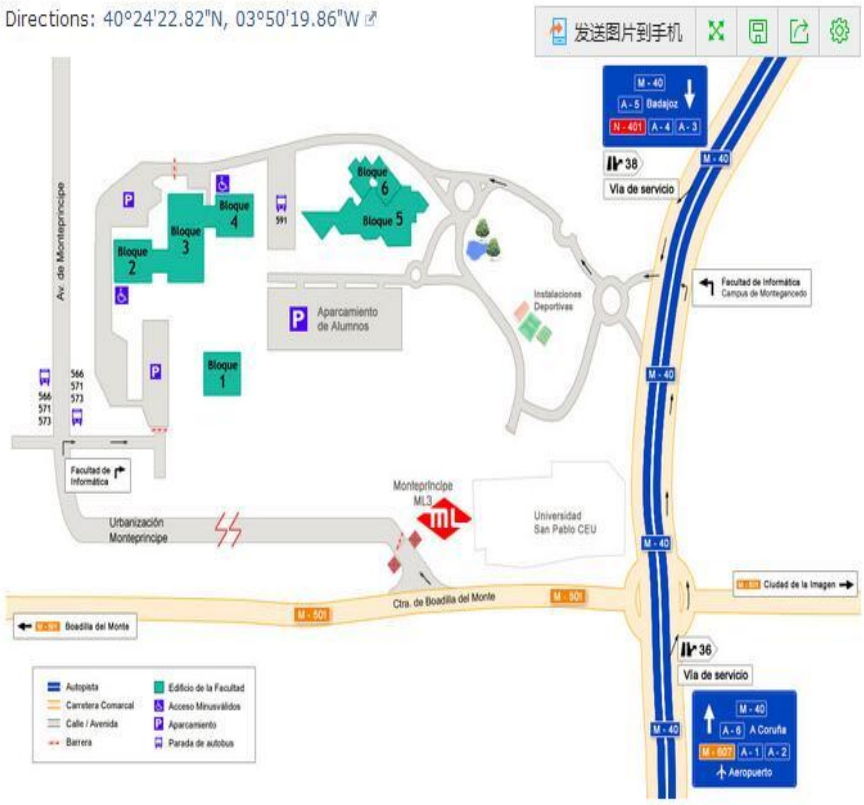


BLOQUE 1 is the building where the Conference Venue is.

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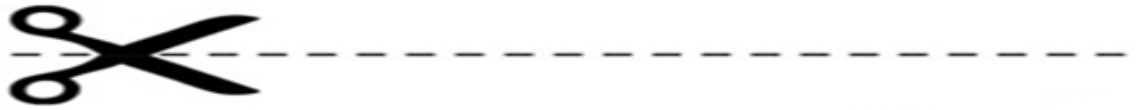

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Thank you for taking time to participate in this conference evaluation. Your comments will enable us to execute future conferences better and tailor them to your needs!