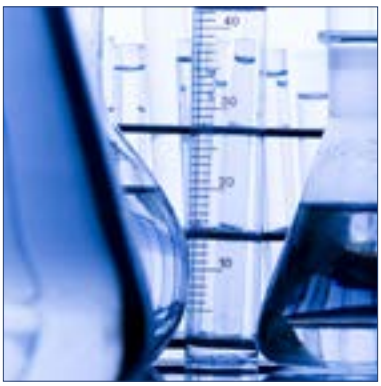
Keynote Forum
April 04, 2018

ChEMEN 2018



Annual Spring Conference and Expo on

Chemical Engineering: From Materials Engineering to Nanotechnology

April 04-05, 2018 | Miami, USA

allied academies
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Davis L Ford

University of Texas at Austin, USA

The past and future of oil and gas extraction in the United States

The role of science in developing enhanced oil & gas resources, being environmentally sound, and protecting water use

- Global transformation with fossil fuel as primary source
- All time high extraction of tight natural gas and oil
- Record pace of pipeline construction
- Supply refineries and terminal ports
- Pronounced effect on GDP
- Profound interest in extraction of natural gas and oil
- European Community, India, China, Brazil, Chile, Argentina and Mexico all have proven reserves.

Speaker Biography

Davis Ford is a practicing environmental engineer with over fifty years of experience in the field. In addition, he serves on the faculty at The University of Texas at Austin as an Adjunct Professor and a Visiting Professor of Petroleum Engineering at Texas Tech University. He has published hundreds of technical papers, has co-authored or contributed to ten textbooks, written several biographies, and also co-authored a children's book. Dr. Ford lectures extensively throughout the United States, Europe, South America, and Asia. Dr. Ford received his bachelor's degree in Civil Engineering at Texas A&M University and his master's and doctorate degrees in Environmental Engineering from The University of Texas at Austin. He is a Distinguished Engineering Graduate of both Texas A&M University and The University of Texas as well as a Distinguished Alumnus of Texas A&M. Dr. Ford was elected to The National Academy of Engineers (affiliated with the National Academy of Science and the National Academy of Medicine) in 1997. In 2005, he was inducted into The Academy of Medicine, Engineering, and Science at Texas. He is an Eagle Scout.

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Ibrahim Katampe

Central State University, USA

Bioactive polymers and composite materials for use in medical and food packaging applications

Plastics from fossil –based chemicals are used for almost all of medical and food packaging application and to minimize spoilage, additional preservative is enclosed therein. To minimize food loss for instance during packaging as a result of bacterial or fungal activity, we synthesized plastics from starch-based sources (bioplastics). These polymers were reacted in-situ with anti-microbial active colorant from both synthetic and natural sources. The resultant bioplastic materials were found to have improved resistance to microbial activity. There is an increasing use of fossil-based chemicals for the production of polymers and with the ever-increasing use of synthetic polymers in materials application, the dependence on fossil-based sources which leads to environmental pollution is ever increasing. The rising concerns about the use of fossil-based chemicals have led to searches for alternative source. Sustainability or long-term viability, and the need to avoid the adverse environmental consequences of fossil-based resources have been very key in the search for design and production of polymers from renewable sources that have the needed performance properties and limited carbon dioxide (VOC's) emissions. However, such biopolymers can be susceptible to lipid oxidation and microbial growth, the main cause of spoilage of a great variety of nutritional foods and product integrity. In order to reduce our dependence on fossil fuel, environmental impact as result of pollution and waste management and to minimize food loss during packaging, we synthesized several bioplastics from starch-based sources. By integrating these innovative and sustainable interdisciplinary scientific approaches, the research will advance the understanding of the field of biopolymers and composite materials in the design and development of films and plastics for use in the emerging field of "active" food packaging and biomedical technology.

Speaker Biography

Dr. Ibrahim Katampe, an Associate Professor of Chemistry is currently the chair of the department of Natural Sciences at Central State University. He is published in several academic journals and is an inventor with over 6 patents. Dr. Katampe earned his PhD in 2000 from Open University, Milton Keynes, United Kingdom where he was investigating on synthesis and reactions of silyl-heterocylic compounds. Dr. Katampe is an active member of both the University and the Dayton community; he is a member of the board of trustees of the Dayton Area Chamber of Commerce, board of trustees of the Montgomery County Workforce Development and Investment Board. He is a recipient of several awards including the prestigious Planet Africa Science and Technology Award by the planet Africa Group, Canada and also the SOIN award for Technology Innovation by the Montgomery County, Ohio, USDA capacity building grant. Professor Katampe's research interests include: Biopolymer and composite material synthesis, biosensor development, renewable and bio energy crops.

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Norman Munroe

Florida International University, USA

Assessing the biocompatibility and hemocompatibility of biomaterials

Metallic materials are the most widely used for implant devices. However, their usage is always shrouded by the concerns of corrosion, inflammation and thrombus formation that eventually lead to medical complications. This presentation is focused on analytical techniques for assessing biocompatibility and hemocompatibility of implant materials in an attempt to provide an anti-thrombotic interface. Biocompatibility assessment involves electrochemical techniques such as electrochemical impedance spectroscopy (EIS) and potentiodynamic polarization corrosion analysis. Surface characterization includes contact angle measurement, X-Ray photoelectron spectroscopy (XPS), Scanning Electron microscopy (SEM)/Energy dispersive spectroscopy (EDS), Fourier transform infrared spectroscopy (FTIR) and X-ray diffraction (XRD). Hemocompatibility assessment includes platelet adhesion studies in a closed loop system, cell growth and cytotoxicity analyses.

Speaker Biography

Dr. Munroe holds a BS - Chemistry/Physics; M.Phil. - Mineral Engineering, MS -Metallurgical Engineering and Ph.D. - Chemical Metallurgy. Academic positions held include: Department Chairman, Associate Dean, and Director of the Applied Research Center at FIU. He has served as the Major Advisor of 26 doctoral and master's students and a member of 120 graduate dissertation committees. Dr. Munroe has published over 210 Journal articles/Proceedings/Presentations. He has received the FIU Excellence in Teaching award and the Legacy Magazine award for "Top Black Educators", 2016.

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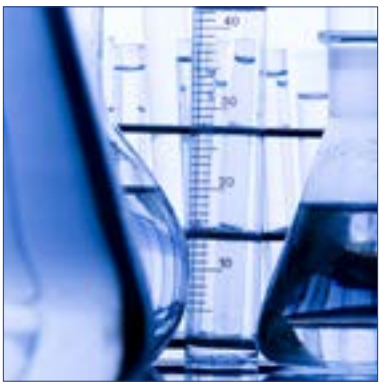

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Su-Il In

Daegu Gyeongbuk Institute of Science and Technology, South Korea

Materials science & engineering for carbon dioxide (CO_2) utilization

Photocatalytic reduction of CO_2 to fuel offers an exciting opportunity for helping to solve current energy and global warming problems. Although a number of solar active catalysts have been reported, most of them suffer from low product yield, instability, and low quantum efficiency. Therefore, the design and fabrication of highly active photocatalysts remains an unmet challenge. In the current work we utilize hydrogen-doped, blue-colored reduced titania for photocatalytic conversion of CO_2 into methane (CH_4). The photocatalyst is obtained by exposure of TiO_2 to $NaBH_4$ at 350 °C for 0.5 h. Sensitized with Pt nanoparticles, the material promotes solar spectrum photoconversion of CO_2 to CH_4 with an apparent quantum yield of 12.40% and a time normalized CH_4 generation rate of 80.35 µmol g^{-1} h^{-1}, which to the best of our knowledge is a record for photocatalytic-based CO_2 reduction. The material appears intrinsically stable, with no loss in sample performance over five 6 h cycles, with the sample heated in vacuum after each cycle.

Speaker Biography

Professor SU-IL IN has been working at DGIST since 2012. He served the Dean of External and International Affairs at DGIST (Daegu Gyeongbuk Institute of Science and Technology) in 2016~2017. He received his Ph.D. in Chemistry from the University of Cambridge in 2008. He then became a postdoctoral research associate at the Technical University of Denmark in 2010. He also joined the Department of Chemistry at Pennsylvania State University as a postdoctoral fellow before joining DGIST. Professor In's current researches include synthesis and analysis of functional nano (bio)-materials for environmentally friendly renewable energy such as photovoltaic, heterogeneous catalysis and biocatalysts. A central goal of this work is relating surface structure/properties, size and composition to the catalytic activity and microbial fuel cell (MFC).

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