

ISMET news

Quarterly newsletter

No. 1 - Mar 2013

Welcome from the President

The meetings in the USA, Belgium, and China were all a great success, and demonstrate the high level of interest in our young organization



Starting an organization like ISMET takes a tremendous amount of effort by many, many people. I am happy to say that so many of the members are helping and the evolution of the organization is proceeding very well. We have a website with information on our members, an email list for sending out announcements, and now this Newsletter! Thanks to all our members for participating last year in our three meetings in the USA, Belgium, and China. These were all a great success, and they demonstrate the high level of interest in our relatively young organization and they help to showcase the work of our members.

In September of 2013, we will hold our first "official" international ISMET-sponsored meeting in Cairns, Australia. This meeting is called the MFC4 meeting, following the MFC designations of the three previous MFC International Conferences. At that meeting we will announce three new ISMET Board of Directors, as there will be three outgoing members that include me, Cesar Torres, and Ashley Franks. This will be the first rotation of the board of directors who in the future will serve 3 year terms, allowing three new members to be elected to the board each year. Only active members are eligible for nomination and election.

Two of our local meetings already have designated locations (but not dates) for 2014: NA-ISMET, Penn State, State College, USA; and EU-ISMET, University of Alcalá, Madrid, Spain. We are now soliciting proposals for the PA-ISMET meeting. If you are interested in hosting that meeting, send a short proposal outlining venue, expected registration costs per person, whether you will be able to obtain travel funds for speakers, and any other relevant information to me (blogan@psu.edu). As our organization grows in many different parts of the world, it may be possible to even expand this list to other sections, but for 2014 we are planning just these three meetings.

There are many ongoing activities right now by ISMET. For example, you will soon be receiving a call for nomination of awards for best papers (scientific and applied) published in this past year (2012). We are also working to put enhanced features and content on the webpage accessible to only members, and we will be holding an election for the new board members. Be sure to make sure you are listed on the webpage and that your profile is complete, so that our members can contact you as needed.

In the meantime, stay tuned, and see you at the next local or international meeting!

Bruce Logan

President, ISMET (2011-2013)

First Asia-Pacific ISMET meeting

Microbial electrochemical systems have been developed in Asia-Pacific region to convert soluble contaminants to energy

The First Asia-Pacific ISMET Meeting was held from 13 to 15 January 2013 in Harbin, China. The meeting was hosted by the State Key Laboratory of Urban Water Resource and Environment (SKLUWRE, HIT), which is a Lab of Ministry of Science & Technology of China (MOST) and located in Harbin Institute of Technology.

Prof. Yujie Feng, the Vice Director of SKLUWRE and the chairman of ISMET, chaired the opening ceremony and Prof. Dianguo Xu, Assistant President of HIT, gave the welcome speech. The meeting attracted nearly 200 scholars from over 20 countries and got a great success. Prof Bruce Logan from Penn State University, Prof Byung Hong Kim from KIST et al attended the meeting and contributed excellent speeches. During the meeting period, the attendees shared their newly acquired knowledge, their sprint of collaborations during the world famous Ice & Snow Festival.

IP-ISMET focused on "Energy from water contaminants". Even though various microbial electrochemical systems have been developed since its discovery in the last century, the most perspective use is by most believed in area of sustainable and lower energy wastewater treatment technology. In this meeting, aimed at large scale MFC reactor for wastewater treatment, over 20 talks was well presented and received. These talks covered less expensive materials, new configurations, function development, microbial mechanism as well as scale up methods, etc. The concept of "water contaminants" as resource energy was examined and thoroughly discussed in the meeting, thus establishing it new avenues for wastewater treatment.



The SKLUWRE

The State Key Laboratory of Urban Water Resource and Environment (SKLUWRE) established in 2007 is a Ministry of Science and Technology laboratory with a wide variety of scientific research for urban water systems. Located in Harbin, Heilongjiang Province, SKLUWRE is managed by Harbin Institute of Technology (HIT), and the Director is Prof Nanqi Ren. SKLUWRE has 81 employees, including 65 scientists, 6 engineers and 10 supporting staff members. In the lab, there are four members from the Chinese Academy of Engineering (CAE), five are National Distinguished Young Scholars of China, and other five are Chang-Jiang Scholar Professors.

In addition, the SKLUWRE attracted eight famous scientists as honorary or visiting professors from universities overseas. Also, there were up to 800 graduate students. Research aims featured three areas in the field of urban water: Environmental Safety, Quality Control, and Recycling.





Meeting in San Diego

The Society for Industrial Microbiology and Biotechnology (SIMB) is a US-based professional society that promotes industrial research and cross-cutting communications between various applied disciplines and the corresponding industries. The 2013 SIMB Annual meeting will be held in San Diego, California (USA) from 11 to 15 August 2013.

The annual meeting is a unique opportunity for young researchers and students to meet potential employers, as well as industry senior staff to recruit young talents and to get first-hand information on current research investigations in biotechnology. SIMB members are mostly from United States, but also from Japan, South Korea, China and many other countries.

The 2013 programme will include sessions on genomics, fermentation and cell culture, natural products, biocatalysis, and metabolic engineering. Additionally, the SIMB meeting will feature a Bioelectrosynthesis session, convened by Dr. Enrico Marsili (Dublin City University, Ireland).

The invited speakers will present their latest findings in electrochemically active biofilms, bioelectrosynthesis of organic chemicals from low-cost substrates, and metabolic engineering of bioelectrosynthetic microorganisms. Invited speakers for the bioelectrosynthesis session include Harold May (University of South Carolina, USA), Abraham Esteve-Núñez (University of Alcalá, Spain), Radakrishna Mahadevan (University of Toronto, Canada) and Kenneth Nealson (University of South California, USA). Selected poster and oral presentations will be published in a special issue of Journal of Applied Microbiology and Biotechnology.

Abstracts for presentations, posters and student oral sessions are now being accepted. For further information and to submit an abstract, visit the SIMB website at <http://www.simhq.org>.

Technical session at AEESP 2013

Microbial electrochemical technologies (METs) emerged in response of searching a sustainable approach for the remediation of contaminated sediments, the recovery of valued resources (energy and nutrients) from wastewater, and the production of biofuels. From bench scale reactors to pilot-scale testing of microbial fuel cells (MFCs) and in-situ remediation bioelectrodes, the past decade has seen a rapid evolution in METs. Although commercial applications exist, numerous challenges are faced before these technologies can reach their full potential.

According to a technical session on Microbial Electrochemical Remediation and Resource Recovery will be held at the 2013 Association of Environmental Engineering & Science Professors-AEESP Conference that will be hosted in Colorado School of Mines, Golden, CO, USA from July 14-16, 2013.

The purpose of this session is to disseminate the latest knowledge in this field, identify crucial research needs, and show how these technologies provide a unique tool-set for the Environmental Engineer of 2050.

This session invites abstracts for, but not limited to, the following topics: novel materials and reactor designs; modeling (e.g. biofilm and electrode processes); anodic and cathodic biofilm communities and ecology; pilot-scale studies; applications for developing countries; molecular insights into biofilm processes (e.g. extracellular electron transfer) and using MFCs as an educational tool.

Because research in this field has expanded across disciplines and borders, ISMET was formed with the mission of bringing together researchers in this area. In addition to holding regular conferences on METs, ISMET is organizing this session to encourage attendees of the AEESP conference to learn more about this organization and the field of microbial electrochemistry in general.

Visit www.is-met.org for more info.

Questions about this session or ISMET should be directed to the session organizers listed below.

Douglas F. Call PhD, Assistant Professor, Syracuse University, dfcall@syr.edu

César I. Torres, PhD, Assistant Professor, Arizona State University, cit@asu.edu

MFC4 to be held in Cairns, Australia

This is also the first conference to be supported and co-organised by the newly formed ISMET

After successful events organised by Pennsylvania State University (USA), Gwangju Institute of Science and Technology (Korea) and Wageningen University/WETSUS (The Netherlands) the 4th International Conference on Microbial Fuels Cells (MFC4) is also the first in the series to be supported and co-organised by the newly formed International Society for Microbial Electrochemical Technologies.

The conference will be held on 1-4 September 2013. Prof Jurg Keller, Director of the Advanced Water Management Centre, is the Chair of the Local Organising Committee.

MFC4 will be organised by The University of Queensland and held in the tropical city of Cairns in the far north of Queensland, Australia. Cairns lies in the heart of the Asia Pacific region and is fringed by the Great Barrier Reef and World Heritage Rainforest. It enjoys around 300 days of sunshine a year, and a friendly, relaxed tropical lifestyle. An international airport and multi-cultural city makes Cairns the perfect destination for international visitors. All visitors to Australia must have a valid visa before boarding their plane regardless of the length of their stay.

The conference program promises to be very high quality and exciting as ever. Social program will include tropical welcome reception (on Sunday 1st September 2013) and a relaxed conference dinner (on Tuesday 3rd September 2013).

The field that the MFC4 conference covers is now quite expansive and includes all microbial electrochemical technologies (METs). In an era of

climate change and limited resources the METs represent a potential to provide unique and innovative solutions to these emerging challenges.

The themes for the conference are:

Fundamentals of electron transfer. This theme includes extracellular electron transfer, interspecies electron transfer, mechanisms of electron conduction, process modeling, etc.

Electrode and membrane materials. This topic includes surface modifications, enhanced surface area, materials, etc.

Reactor design, scale-up and peripherals. This topic covers configuration and process design and control, lab-bench reactors, scale-up systems, etc.

Treatment of organic contaminants. This topic includes wastewater treatment, dechlorination, bioremediation, etc.

Treatment of inorganic contaminants. This topic includes metals removal, nutrients recovery, desalination, etc.

Analytical tools. This topic includes electrochemical methods, spectrochemical techniques, imaging, etc.

Microbial aspects. This topic includes microbial ecology, functional microbiology, synthetic biology,

Microbial electrosynthesis and bioproduction. This topic includes synthesis from organics and CO₂ reduction, biohydrogen, etc.

Energy production. This topic includes microbial fuel cells, sediment fuel cells, etc

Niche applications. This topic includes miniaturized systems, biosensors, etc.

This conference will be accepting two pages extended abstracts using the conference template to be considered for oral presentation until 3rd May 2013. Papers submitted after this date will be considered for poster presentation only.

It is the policy of the MFC4 committee that one person may only present one oral presentation but may present posters in addition.

For further information and to submit an abstract, visit the MFC4 website at www.mfc4.com.au



ISMET Awards to outstanding works

The awards are open to postgraduate students and postdoctoral researches within the field of METs

ISMET will be acknowledging outstanding work by postgraduate student and postdoctoral researcher members within the field of Microbial Electrochemical Technologies (METs) with two awards. These awards will recognize the best break through discovery and the scientific manuscript published in a peer-reviewed journal that has furthered the field of Microbial Electrochemical Technologies.

Winners of the awards will be announced at MFC4, the International Microbial Fuel Cell Conference in Cairns, Australia, this September.

Discovery Award for Best Scientific Paper

The aim of this award is to acknowledge the scientific manuscript published in a peer-reviewed journal that has furthered the field of Microbial Electrochemical Technologies as encompassed by ISMET. The award is open to postgraduate students and postdoctoral researches in all fields including, but not limited to: Microbiology; Electrochemistry; Engineering; Physics; Material Science, associated with microbial bio-electrochemical systems and technologies.

Candidates should be in good standing and be first author of a scientific research article in a peer-reviewed academic journal published within the specified time period. Publication date is the date the research article appears in print in the respective journal. Preprint, online before print, advance online publication dates will not be accepted. The student/postgraduate status of the first author is taken at the time of the article submission under consideration.

To be eligible for the award the nominee must be nominated by the senior academic of the manuscript for which they are nominated. Senior authors must be ISMET members of good standing, may only nominate one student or post doctoral researcher per award round for the best scientific paper award and must provide a written statement of support for the article under consideration.

Innovation Award

The purpose of this award is to acknowledge the best break through discovery within the field of METs as encompassed by ISMET. A break through discovery encompasses, but not limited to, all processes,

Guide for candidates

Nominations are to be submitted by email to the email address given with the official announcement.

Nominations must be made within the guidelines and time frame provided in the announcement. Failure to do so will make the nomination invalid.

Nominations will be judged by a panel of peers comprised of ISMET members under the directions of the ISMET board and ISMET awards chair.

The judging panel will make recommendations to the ISMET awards chair and ISMET Board. The decision of the ISMET board is final.

Award winners will be notified by email and announced at the ISMET international conference.

Call closes: 30th of June 2013.

Submission of nominations: Ashley Franks, Chair of ISMET Award Committee, a.franks@latrobe.edu.au

research, design and equipment within the field of microbial electric technologies. The award broadly encompasses new discoveries that may or may not have been published in peer review journals that are available in the public domain. The award is open to all postgraduate students and postdoctoral members who are in good standing. The postgraduate student or postdoctoral member must be recognized as the lead person on the discovery for which they are nominated. This would be the equivalent of first author on an academic publication.

The student/postgraduate status of nominee is determined at the time of the discovery announcement or discovery entering the public domain.

To be eligible for the award the nominee must be nominated by an ISMET member who has intimate knowledge of the discovery. ISMET members can only nominate one student or post graduate per award round and must provide a written statement of support for the discovery under consideration. The chair of the awards committee may determine eligibility if required.

64th Annual Meeting of the ISE

The 64th Annual Meeting of the International Society of Electrochemistry, "Electrochemistry for a new era" will take place in Santiago de Querétaro, México from the 8 to 13 September 2013. Topics covered include electroanalysis, bioelectrochemistry, corrosion, fuel cells and batteries, to microbial electrochemical systems, among others. Tutorial 2 will be presented by EU-ISMET members Korneel Rabaey (UGent) and Xochitl Domínguez-Benetton (VITO), on the topic of Microbial Electrocatalysis. Its aim will be to understand the underlying principles of microbial electrocatalysis and expand the knowledge for high-quality design, operation and characterization thereof. Also Robert Slade (ISMET member) is co-organizer of Symposium 4c "Novel Materials and Devices for Energy Storage and Conversion: Fuel and Biofuel Cells" and Xochitl Domínguez-Benetton is co-organizer of Symposium 2 "Sensing in Living Systems", where prestigious keynote and invited lecturers Christian Amatore, Bernardo Viridis, Nikhil Malvankar, Zhifeng Ding, Rui M Barbosa will be presenting. Korneel Rabaey will also present an invited lecture related to microbial electrochemical technologies. Surrounded by natural and cultural richness, Santiago de Querétaro is one of the most attractive destinations in Mexico, and a place definitely worth visiting.

Job opportunities

PostDoc, Helmholtz Centre for Environmental Research – UFZ, Germany

The Young Investigators Group in Bioelectrocatalysis and Biotechnology in the Department of Environmental Microbiology is offering a position for a PostDoc (m/f) Code-digit 12/2013. This position will be available starting 1.5.2013 and may be renewed after 18 months.

Prerequisites

- Self-driven
- Highly motivated
- Interested in fundamental and applied research
- Willing to learn experimental techniques and ability to interact with colleagues
- Ability to guide and supervise PhD and MSc candidates
- Proven experience in microbial electrochemical systems is a strong surplus.

We offer excellent interdisciplinary supervision in a motivated team that works on a multitude of aspects of microbial bioelectrochemical technology and an excellent infrastructure.

For further information please contact Dr. Falk Harnisch.

Tel. ++49-(0) 341 235 1337

E-Mail: falk.harnisch@ufz.de

PhD students, CEMES-AWMC – The University of Queensland, Australia

The Centre for Microbial Electrosynthesis (CEMES) is looking for three PhD students to work on two exciting projects:

Two PhD students opportunities focus on the development of biotechnological production of aromatics in bacteria using cheap carbon sources and electricity. The positions are part of an international collaboration with the Institute of Biochemical Engineering at the Technical University of Munich, Germany. Part of the program will be a student exchange for at least 3 months during. High achieving applicants, preferably with previous publications and with a strong background in microbiology/metabolic engineering/bio-electrochemistry and/or systems biology, are encouraged to apply.

One PhD opportunity focuses on the application of Raman Microscopy to the study of electron conduction in biofilms. The successful candidate should have a strong background in microbiology/bioelectrochemistry and/or vibrational spectroscopy, preferably with a publication record and experience with pure culture electroactive biofilms.

Further information: www.awmc.uq.edu.au/cemes

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