Indo-Belgium

Workshop on

Upscaling and field scale application of bio-electrochemical systems for wastewater treatment and bioenergy recovery

(*26th and 27th February 2020*)

Organized by

School of Environmental Science and Engineering

Indian Institute of Technology Kharagpur

&

PK Sinha Centre for Bioenergy and Renewables

Sponsored by

Scheme for Promotion of Academic and Research Collaboration

Contact: iitkgp.sparc.2020@gmail.com,
Mobile No.: +91-8981309455

Scheme for Promotion of Academic and Research Collaboration

Universiteit Antwerpen

vito vision on technology

Indian Institute of Technology Kharagpur, India welcomes you to the specialized **Indo-Belgium** joint workshop on **"Upscaling of Bio-electrochemical Systems for Wastewater Treatment and Bioelectricity Recovery"**. This workshop is scheduled to be held on **26th and 27th February 2020** at IIT Kharagpur campus, Kharagpur, India. We are looking forward for your active participation.

Background of the workshop

Bioelectrochemical system is an innovative approach that combines the principles of biological and electrochemical systems for the abatement of pollution with concomitant generation of value added products like bioelectricity or organic compounds. Microbial fuel cell (MFC) is a special kind of bioelectrochemical system where wastewater treatment can be facilitated with simultaneous bioelectricity generation. For the past two decades, extensive research has been focused in this field to take this technology from lab-scale to a successful field scale demonstration. The major bottlenecks in scaling-up of this novel technology include development of low-cost electrode material and electrocatalysts, lower power output for large scale setups and enriching the population of electrogens in the anodic chamber.
From the economic and life cycle assessment point of view, although recent developments in power production are encouraging, important discoveries in electrode materials, innovative and integrated process configurations along with sharing experience of pilot scale operation are urgently required to determine the real potential of the MFC technology to offer sustainable and energy-positive wastewater treatment. These issues need to be addressed by carrying out performance optimization and operating lab-scale and field-scale MFCs. Hence, the research community is continuously in the look-out for circumnavigating these bottlenecks to make this technology ready for the field-scale implementation.

About the workshop

In this workshop, the recent progress in the field of bioelectrochemical systems will be showcased by invited and keynote speakers and research scholars across the globe. The hurdles that need to be overcome for the successful field-scale application of bioelectrochemical systems will be the major theme of the workshop. Numerous prominent researchers from round the globe, in the field of bioelectrochemistry, will share their experience in the subject matter. Thus, budding researchers and research scholars working in this field will get an opportunity to gather invaluable knowledge from the workshop, which will aid them in the future to make substantial contribution in this field. Interaction with these leading edge researchers/mentors can also lead to various multi-national collaborative projects, thus leading to a symbiotic

Contact: iitkgp.sparc.2020@gmail.com,
Mobile No.: +91-8981309455

association between the research groups. A brainstorming session at the end of the workshop is also scheduled, which would focus on the challenges faced by various researchers to scale-up this novel technology of bioelectrochemical system and methods that should be adopted to circumnavigate these bottlenecks.

1500 litre field scale bioelectric toilet at IIT Kharagpur

At IIT Kharagpur, we are already operating a 1500 L field-scale MFC based wastewater treatment system for more than 2 years, titled bioelectric toilet, which is treating real human waste generated from toilets. This workshop will also provide opportunity to visit this largest 'bioelectric toilet' installed at IIT Kharagpur and understand working of it.

Workshop themes

Microbial Fuel Cell (MFC)

- Application of different biocatalysts
- Low-cost electrode materials
- Novel electrocatalysts
- Novel membranes and separators
- Innovative architectures and configurations
- Electrochemical analysis
- Statistical and mathematical modelling
- Life cycle analysis

Other Bioelectrochemical systems

- Microbial desalination cell
- Microbial carbon capture cell
- Plant microbial fuel cell
- Wetland microbial fuel cell
- Microbial electrolysis cell
- Microbial electrosynthesis cell

Field-scale application of Bioelectrochemical systems

Language:

Workshop will be conducted only in English. No translation service will be provided.

Programme overview

Invited speakers and other delegates will be sharing their research findings through oral presentations. Moreover, space will also be allotted at the conference venue for displaying posters and exhibits. A technical tour will also be arranged for the demonstration of 'bioelectric toilet' and other field scale bioelectrochemical setups installed at IIT Kharagpur.

Contact: iitkgp.sparc.2020@gmail.com,
Mobile No.: +91-8981309455

Call for abstracts

Abstracts of papers (not exceeding 300 words) on the above workshop topics are invited latest by 14th December, 2019 and the acceptance of the abstracts will be notified by 20th December, 2019. The abstract pertaining to the workshop themes should be uploaded through the following abstract submission link (https://forms.gle/7uopNeUB7cDBMyMY9). A single participant cannot present more than one oral/poster presentation. However, interested participants can also attend the workshop as an attendee without submitting an abstract for the workshop. **Also, the selected papers will be considered for publication in the special issue of the Process Biochemistry (Elsevier) after following the regular peer-review process. The authors of the selected abstract for publication in Process Biochemistry will be notified and they will be asked to provide the full papers by March 2020.**

Dates to remember

- **December 14, 2019:** Last date for abstract submission
- **December 20, 2019:** Abstract acceptance notification
- **January 2, 2020:** Last date for the submission of the registration form along with the transaction details of the payment of registration fees
- **February 26-27, 2020:** Workshop
- **March 2020:** Submission of full paper to be published in Process Biochemistry

Registration fee

Students (IIT Kgp)	INR 3000
Students (Non-IIT Kgp)	INR 4500
Faculty	INR 6000
International participants	INR 7000
Industry	INR 15000
Exhibitor/Sponsors	INR 30000

Note – The registration fee includes complimentary lunch and snacks on both the workshop days and a dinner on the first day. However, **the registration fee doesn't include the cost of accommodation at institute guest houses (except for the industrial participants)**. Arrangements will be made for accommodation at institute guest house from 25th February to 27th February 2020, which will be charged from the participants (except for the industrial participants). As there are limited number of rooms available in the institute guest houses, rooms will be awarded on first come first served basis by noting the date and time of workshop registration. Availability of guest houses rooms beyond 27th February 2020 for participants willing to stay beyond the completion of workshop cannot be guaranteed and solely depends on the availability of guest house rooms beyond the workshop dates.

Contact: iitkgp.sparc.2020@gmail.com,
Mobile No.: +91-8981309455

Accommodation charges at institute guest houses

Technology Guest House (All AC rooms) – Rs 750 per day per person (Double occupancy), Rs 1000 per day per person (Single occupancy)
Sir Ashutosh Mukherjee Guest House (AC rooms only) – Rs 350 per day per person (Double occupancy) and Rs 500 per day per person (Single occupancy)
Visveswaraya Guest House – Rs 300 per day per person (Double occupancy, AC), Rs 150 per day per person (Double occupancy, non AC) and Rs 150 per day per person (10 bed dormitory, non AC)

Registration procedure

1. The applicant will be notified and will be provided with an abstract ID when we receive their submitted abstract. The abstract ID will be used for further correspondence.
2. If the submitted abstract is accepted for oral or poster presentation in the workshop, the participants need to pay the workshop registration fees (mentioned above) to confirm their participation.
3. Registration fees need to be paid by the participants by creating a profile and then choosing the workshop through the following link of CEP portal: https://erp.iitkgp.ac.in/CEP/courses.htm. The details regarding the registration process and payment in CEP portal can be found here.
4. After successful registration in the CEP portal and application for the workshop, the participants will receive a confirmation email from us for the activation of payment link in their respective profile in the CEP portal.
5. Upon successful payment of the registration fees, please note down the transaction ID and save the receipt of the payment which will be needed in the next step.
6. Now to enter the details about accommodation and few other details, participants need to fill the following registration form: https://forms.gle/QDcTg4Awnbj8kkTT9.
7. After submitting the above forms, the participants will be in notified about the allotted guest house for accommodation and the mode of presentation (oral or poster) in the workshop.

Important links

Abstract submission form: https://forms.gle/7uopNeUB7cDBMyMY9
Payment of registration fees: https://erp.iitkgp.ac.in/CEP/courses.htm
Payment and registration procedure at CEP portal: http://shorturl.at/tDGT6
Registration form: https://forms.gle/QDcTg4Awnbj8kkTT9
Homepage of Process Biochemistry: https://www.journals.elsevier.com/process-biochemistry

Contact: iitkgp.sparc.2020@gmail.com,
Mobile No.: +91-8981309455

Location

By Air

The nearest airport to Kharagpur is the Netaji Subhas Chandra Bose International Airport (CCU), Kolkata. You can get a flight to Kolkata airport on regular basis. It is widely connected to almost all the major destinations of the country. From Kolkata Airport taxi stand you can take a cab to Kharagpur which takes around 2.30 hours to complete the distance of 150 km. It costs roughly Rs. 3000/- (depending on the taxi type) or you can take a cab and reach Howrah railway station (UBER and OLA are also available) paying a fare of Rs. 300. It takes around 1.30 hours (if you are stuck in Traffic Jam) to reach Howrah station from CCU. There are regular Express (Fare Rs 90 to Rs 1500) and Local trains (Fare Rs 25) from Howrah to Kharagpur. It takes around 2 hours by an express train to reach Kharagpur. The Institute is 5 km from Kharagpur railway station. (Kharagpur Railway station to IIT campus: Taxi fare Rs. 150/-, Auto rickshaw Fare Rs.100/-, Rickshaw Fare Rs. 60/-).

By Train

Kharagpur is well connected to most major cities of India by rail. There are frequent trains to Kharagpur. Check *http://www.indianrail.gov.in* for train details. Alternatively, you can reach the Howrah Railway station and take a local or express train to Kharagpur or book a cab to reach Kharagpur via road. The distance is almost 140 km. The travel time is approximately 2.30 hours for local train.

Selected notable speakers

Dr Ludo Diels, Research leader, Institute for Environment & Sustainable Development, University of Antwerp, Prinsstraat 13, 2000 Antwerpen, Belgium.

Dr Deepak Pant, Senior Scientist, Separation & Conversion Technology, Flemish Institute for Technological Research (VITO), Boeretang 200, 2400 Mol, Belgium

Dr Ioannis Ieropoulos, Professor - Bioenergy and Self-sustainable Systems, FET-Engineering, Design and Mathematics, University of the West of England, Bristol

Dr Pascal Saikaly, Associate Professor, Environmental Science and Engineering, Division of Biological and Environmental Science and Engineering, 4700 King Abdullah University of Science and Technology, Thuwal 23955-6900, Kingdom of Saudi Arabia.

Dr Narcis Duteanu, Faculty Member, CAICAM, Politehnica University of Timisoara, Timişoara, Romania.

Dr Krishna P Katuri, Research Scientist, Division of Biological and Environmental Sciences and Engineering, 4700 King Abdullah University of Science and Technology, Thuwal 23955-6900, Kingdom of Saudi Arabia.

Dr S. Venkata Mohan, Principal Scientist, CSIR-Indian Institute of Chemical Technology Uppal Road, Tarnaka, Hyderabad - 500 007, Telangana, India.

Dr Sunil A. Patil, Assistant Professor, Environmental Sciences, Indian Institute of Science Education and Research, Mohali, India.

Dr Debabrata Das, Professor, Department of Biotechnology, Indian Institute of Technology Kharagpur, Kharagpur, India.

Contact: iitkgp.sparc.2020@gmail.com,
Mobile No.: +91-8981309455

Dr Makarand M. Ghangrekar, Head, School of Environmental Science and Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India.
Dr Amreesh Chandra, Associate Professor, Department of Physics, Indian Institute of Technology Kharagpur, Kharagpur, India.

Contact details

Organizing committee

Convenor
Prof. Makarand M. Ghangrekar
Head,
School of Environmental Science and Engineering,
Indian Institute of Technology, Kharagpur
Kharagpur - 721302, India
E-mail: ghangrekar@civil.iitkgp.ac.in,
Phone - +91-3222- 283440 (O)

Co-Convenor
Prof. Amreesh Chandra
Associate Professor,
Department of Physics,
Indian Institute of Technology, Kharagpur
Kharagpur - 721302, India
E-mail: achandra@phy.iitkgp.ac.in,
Phone - +91-3222- 283820 (O)

Workshop Secretariat
Mr. Sovik Das
Research Scholar,
Department of Civil Engineering
Indian Institute of Technology, Kharagpur
Kharagpur - 721302, India
E-mail: dassovik@gmail.com
Phone - +91-8981309455

Workshop Co-Secretariat
Mr. Indrajit Chakraborty
Research Scholar,
Department of Civil Engineering
Indian Institute of Technology, Kharagpur
Kharagpur - 721302, India
E-mail: indrajit.civdgp@gmail.com
Phone - +91-9432103018