

Environmental Electrochemistry

Overview

The world-wide awareness to environmental protection and preservation as well as the demand for developing new water resources calls for an interdisciplinary effort in developing new technologies and adopting well established methods for efficient and cost-effective approaches. This course is aimed at presenting electrochemical methods as tools for coping with environmental related problems. Students will study the basics of electrochemistry in order to provide the necessary background. As the course is developed, they will be exposed to electrochemical methods in water treatment: metal precipitation, purification of industrial wastes, electrochemical treatment of organics and production of oxidants. Electrodialysis – an electrochemical membrane water treatment will be discussed in broad. In addition the students will learn the fundamentals of electrochemically-based measuring/monitoring methods and devices such as pH, ORP, reference electrodes, dissolved O₂ etc. Also, different types of fuel cells including microbial fuel cells will be discussed. Course participants will learn these topics through lectures and hands-on experiments. Also case studies and assignments will be shared to stimulate research motivation of participants.

Modules	Environmental Electrochemistry : 20th June to 29th June 2016 Number of participants for the course will be limited to fifty.
You Should Attend If...	<ul style="list-style-type: none">▪ This course is designed for B.Tech / M.Tech / PhD students of Civil, Chemical Engineering, Environmental Engineering, Material Science, Biotechnology and Chemistry students, who are likely to be benefited by learning the fundamental and applicative aspects of electrochemical system as related to Environmental issues.▪ Faculty members and Research Associates from reputed academic institutions and technical institutions are welcome as well.▪ Industrial participants working in electrochemical processes for water and wastewater treatment
Fees	The participation fees for taking the course is as follows: Participants from abroad : US \$500 Industry/ Research Organizations: Rs. 30000 Academic Institutions: Rs. 10000 The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty



Prof. Yoram Oren, is Emeritus Professor at Department of Desalination and Water Treatment, Zuckerberg Institute for Water Research, Ben-Gurion University of the Negev, Beer-Sheva, Israel. Most of Prof. Oren's past scientific activity focused on electrochemical-related issues. Within these

activities it is possible to identify three different directions: studies in electrochemical methods in relation to treatment of water and waste-water, investigating mass transfer in electrochemical processes and investigating hydrogen transport to metals using electrochemical tools. Within the area of electrochemical water treatment processes, unique and pioneering work was conducted on understanding the electrochemistry of carbon and graphite electrodes, in particular, the double-layer behavior of these materials. Electrosorption of bacteria and colloidal particles and removal of heavy metals on these electrodes were also investigated.



M.M. Ghangrekar, Professor, Department of Civil Engineering, Indian Institute of Technology Kharagpur, is B.E. Civil Engineering, M.Tech. Environmental Engineering and Ph.D. Environmental Science and Engineering. He had been visiting Scientist to Ben Gurion University, Israel and

University of Newcastle upon Tyne, UK under Marie Curie fellowship by European Union and had stint as faculty of various capacities in renowned engineering colleges and research institutes. He has been working in the field of anaerobic wastewater treatment, bioenergy recovery during wastewater treatment in microbial fuel cell.

Course Co-ordinator

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