Research Unit
Environmental Engineering and Biotechnology

ChemicalsFate

IP Controlling Chemicals‘ Fate Lecture

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Leipziger KUBUS, Lecture Hall 1CD
Permoserstr. 15, 04318 Leipzig

Bringing Microbial Electrochemical Technologies from lab to full scale

Microbial Electrochemical Technologies (METs) constitute a plethora of emerging technologies based on the fascinating capacity of some, so-called electroactive, microorganisms for establishing a direct redox interaction with electrically conductive materials. Electrons produced by the metabolism of electroactive bacteria can be transferred to an electrode, which acts as a terminal electron acceptor as any other respiratory substrate like oxygen, nitrate or Fe(III)-oxides. The electrically conductive material can also bridge electron transfer between microbial communities that are not co-localized in the same environment. This extraordinary capacity has accelerated the scaling up of MET-based bioremediation for removing pollutants from urban or industrial wastewater to market level. Three independent and successful stories for desalinating seawater, cleaning-up wastewater from an urban community or reclaiming water in the largest European brewing factory will be presented.

Abraham Esteve-Núñez is an Associate Professor in the area of Chemical Engineering at University of Alcalá, Spain. He is also an associate researcher at IMDEA Water, as principal investigator of the Bioe Group. He develops his research in the field of Microbial Electrochemical Technologies (MET) applied to remove pollutants from wastewater and soils. He obtained a PhD in Biochemistry from the University of Granada (2000). During his postdoc stay (2001-2005) at the University of Massachusetts-Amherst, he explored the physiology of electroactive microorganisms from the *Geobacter* genus. He also conducted a three-year postdoctoral stay at the Astrobiology Center in Madrid. With the aim of investigating different aspects of microbial electrochemical systems, he founded the Bioe Group in 2009. He currently participates and coordinates diverse national and European projects, among them iMETland, MIDES, ELECTRA, from Horizon2020 programme, and the LIFE-ANSWER. He is the author of more than 50 scientific publications and seven national and international patents. He is also founder and partner of two start-up companies focused on the applications of microbial electrochemistry.

All interested colleagues are kindly invited.