



BTEC 591 & BTEC 691 Seminars *

“MICROBIAL ELECTROCHEMICAL CELL TECHNOLOGY”



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13:30

Biotechnology Institute Amphitheatre-1

*** These seminar series are offered conjointly with the GTU 110 course for the entire Gebze Technical University community.**

Abstract

Electroactive microbial biofilms in microbial electrochemical cells (MECs) can transfer electrons from organic molecules to anodes. Examining the makeup and distribution of extracellular polymeric substance (EPS) in the MECs is crucial to understanding the formation of anodic

biofilms. In this work, the structure of EPS in microbial electrolysis cells from mixed cultures that were using carbon fiber fabric as an anode to create biofilm was investigated. The anode biofilm of microbial electrolysis cells that had been injected with a mixed microbial culture was used to extract EPS. 0.4 mg of EPS were obtained from the anode biofilm; of this, 51.2% was composed of humic material, 16.2% of protein, 12.6% of carbs, and 20% of unknown chemicals. Our findings showed that EPS formation in electroactive biofilms would be important for enhanced efficiency of electricity- or hydrogen-producing microbial electrolysis cells. Recent results about microbial electrolysis cell technology will also be presented.

Tunç Çatal

Tunç ÇATAL was born in Germany (1980). He finished his high school education in Uskudar Science High School and Bilfen High School. In 2001, he graduated from İstanbul University, Department of Biology with a degree and completed his master's in the same department in 2004. He completed his doctorate in Molecular Biology-Genetics and Biotechnology, İstanbul Technical University in 2008 as first graduate. In 2006-2008, he worked as a visitor researcher in Oregon State University, Department of Biology and Ecology Engineering. He has spent two years as a researcher on the doctorate for the European Union (FP6) Marie Curie the "Transfer of Knowledge" program in National University of Ireland in Galway.

He started as an Assistant Professor at Uskudar University, Department of Molecular Biology and Genetics (2012). He became an Associate Professor in the field of Biological Sciences (Biology-Biotechnology) in February 2013 and in the field of Engineering (Bioengineering-Biotechnology) in 2018. In 2018, he was appointed as the Professor of Molecular Biology and Genetics in the same Department. He served as the Deputy Director of the Institute of Natural Science at Uskudar University between 2014-2019, and is the founding Director of Istanbul Protein Research-Development and Innovation Center (PROMER) since 2017. In 2018, he established the Department of Biotechnology within Üsküdar University Institute of Science and serves as the Head of the Department. He has been serving as the chair of the Molecular Biology and Genetics (English) department since 2020. He founded the European Chemistry and Biotechnology Journal (EUCHEMBOJ) in 2024 as the founding Editor-in-Chief.