Electro-active microorganisms and their application in Environmental Technologies”

Prof. Annemiek ter Heijne
(Wageningen University – WUR, The Netherlands)

Electro-active microorganisms can play a role in many different conversions, by exchanging chemical energy with electrical energy (and vice versa) in so-called Microbial Electrochemical Systems. In this presentation, I will explain how microorganisms and electrodes can interact to facilitate different types of conversions, with applications in resource recovery and removal of nutrients. I will focus on different applications: how anaerobic ammonium oxidation at bioanodes can be enhanced by introducing oxygen, how we can influence storage processes in electro-active biofilms on anodes, and how we can use microorganisms at the cathode to produce methane from CO_2.
I will discuss the main limitations and routes for further improvement of rate and efficiency.