

Can microbial electrochemical systems accelerate degradation of recalcitrant contaminants?

Microbial electrochemical system (MES) technology has been widely investigated for organic degradation. However, the removal of recalcitrant organic contaminants remains a great challenge. By utilizing an anode electrode as an electron acceptor, organic compounds in a wastewater can be degraded via an oxidative pathway. Some organic contaminants containing halogen-, nitro-, and azo- groups are resistant to the anodic degradation and may be degraded in a reductive pathway, in which by utilizing a cathode electrode as an electron donor. Incomplete degradation often occurs and the residual organics (e.g., phenol and aniline) can still be hazardous and need further treatment. Therefore, there is a need for exploring a more effective approach to maximize the degradation of these compounds in an MES. This presentation aims to provide an introduction of MES-based degradation, explore relevant mechanisms, identify the key challenges, and give perspectives on future research.