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Development of Bio-Electrochemical Systems for Waste Exploitation: A Multipurpose Technology for Increasing Circularity and Environmental Sustainability

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Deadline for manuscript submissions:
closed (30 June 2023)

Message from the Guest Editors

Bio-electrochemical systems (BESs) take advantage of the metabolic processes of collective microbes for wastewater treatment, energy generation and resource recovery. BESs are categorized into four main types: microbial fuel cells (MFCs), microbial desalination cells (MDCs), microbial electrolysis cells (MECs) and microbial electrosynthesis (MES). MFCs are mainly used for wastewater treatment and electricity generation, and MDCs are used for ion desalinization, whereas MECs are mainly used for H_2 or CH_4 production (bio-gas upgrading) and MES for chemical production. According to the scope of the technology, several systems with different designs and construction materials have been proposed. Although several bio-reactor designs have been investigated with both expensive and cheap materials and under different operating conditions, BESs are still in their infancy.

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Message from the Editor-in-Chief

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Journal Rank: JCR - Q2 (*Environmental Studies*) / CiteScore - Q1 (Geography, Planning and Development)

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