

Power Generation from Animal Wastewater Using a Single-chamber Microbial Fuel Cell (Advanced Studies on Sustainable Animal Production: Interrelationships among Human, Animal and Environment, 8th International Symposium of Integrated Field Science)

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3-3. Power Generation from Animal Wastewater Using a Single-chamber Microbial Fuel Cell

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Microbial Fuel cells (MFCs) are bioreactors, which generate power directly from dissolved organic substrate, such as sugars, organic acids and biomass by using electrogenic organisms as biocatalyst. The concept of MFCs has been known since about 100 years ago, however it hadn't attracted much attention because current and power production was very small. For these 10 years, the current and power production of MFCs has been advanced significantly, and MFCs has attracted attention as a sustainable power production technology. Especially in the field of wastewater treatment, practical application of MFCs is strongly desired because MFCs can achieve both sanitization of water and power generation at the same time. Furthermore, wastewater theoretically contains several times higher potential energy than the required energy for its own treatment. Except MFCs, there already have existed wastewater treatment processes which can achieve energy recovery such as methane fermentation. However, compared to methane fermentation, MFCs have some advantages. In the field of animal industry, the treatment of great amount of animal manure has been a big problem because it requires a lot of energy. However, to say reversely, animal manure contains great amount of potential energy. The increase of construction of methane fermentation plant shows the high interests in the energy recovery in this field. In this presentation, recent trial of MFCs, mainly animal wastewater treatments are reviewed.