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Application of *Saccharomyces cerevisiae* for enhance electricity generation during domestic wastewater treatment via microbial fuel cell technology

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The need for viable, cost-effective and energy-efficient solutions for wastewater treatment remains an enduring concern. Microbial Fuel Cell is among those elegant solutions. Microbial fuel cell (MFC) is an electrochemical system that converts chemical energy of organic compounds viz. pure compounds or wastewater into electricity through the catalytic activities of microorganisms. MFCs are a promising method for wastewater treatment due to removal of contaminants from wastewater while at the same time producing electrical power. The wastewater, which is a source of enumerable extremophilic microbial flora, is used as inoculum in many recent studies. But wastewater conditioning with some additional efficient microorganisms can accelerate the performance of microbial fuel cell. In present contribution, comparative analysis was made by treating the domestic wastewater by foreign microbial consortia (*Saccharomyces cerevisiae*) with raw wastewater containing only natural habitat microbes, already present in wastewater. It was observed that *Saccharomyces cerevisiae* remarkably enhanced the performance. Up to 324 mW/m² power density and 98.5 per cent of chemical oxygen demand removal was obtained during 30 days of operation.

Biography

Abhilasha S Mathuriya has completed her MTech from HBTI Kanpur and PhD (Engg.) in Microbial Fuel Cells from UP Technical University India. She always been brilliant scholar and held high positions in college and University merit list. She is Dy. Head, Biotechnology at Anand Engineering College, Agra (under flagship of SGI- Largest educational group of northern India). She has published 17 papers in high impact factor journals, has authored 5 books and has 1 patent. She is serving as member of editorial board of two international journals and is member of reviewer board of 17 journals (*Springer, Elsevier, Taylor & Francis etc.*)

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Hydraulic geometry of River Alaro, Ibadan, Nigeria

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This study focuses on hydraulic geometry of small stream basin (Alaro Stream) in Ibadan South East of Oyo State, Nigeria. In the studied stream, measurements were taken to assess the morphometric and morphologic attributes. The morphologic attributes selected are channel bankfull width (m), depth (m) and velocity (m/s). Bankfull width and depth were measured with the surveyor's tape. The width was measured across the river perpendicular to stream flow, while depth was taken at regular intervals along the channel cross-section. Velocity was estimated using Valeport Current Meter, and river discharge was determined using velocity-area technique (m³/S). The relationship among the variables selected was expressed in power function in order to derive the exponent values b, f, and m which were calculated as: 0.56, 0.31 and 0.12, respectively. The exponents derived for the studied stream (Alaro Basin) showed that $b > f > m$. These results further showed that width increases more rapidly with discharge while velocity increases with the discharge. The b value (0.56), with $R^2=0.96$ showed also that width has been found to be the most important predictor compared to channel depth and velocity. The values of the three hydraulic exponents derived were >0.5 . This indicated that Alaro stream had a 'well developed' hydraulic geometry. The product moment correlation coefficient obtained showed that significant relationship between cross-sectional area and discharge (with value $r^2=0.73$).

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