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Effect of Biochar on Bio-electrochemical Dye degradation and Energy Production**Carmalin Sophia Ayyappan¹, V.M. Bhalambaal¹, Sunil Kumar^{2,*}**

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Abstract

The effect of coconut shell biochar on dye degradation in a microbial fuel cell (MFC) was investigated in the present study. Two different doses of biochar (0.5 g and 1 g) and one control without bio-char were studied. The highest COD removal efficiency was about 77.7% (0.5 g biochar), maximum current (1.07 mA) and voltage (722 mV) were obtained with 1 g biochar. Biofilm optical microscopy characterization revealed the micro colonies intricate plate-like structures. High adsorbent dosage might provide a high surface area for biofilm to generate electricity. BET results of coconut shell biochar showed the maximum surface area of 0.9669 m²/g and macroporosity (0.0032 cm³/g). The overall results highlighted the possibility of using biochar as an additive in MFC for efficient dye degradation.

Keywords: biochar, methylene blue, microbial fuel cell, biodegradation, bioelectrochemical

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