

Abstract Submitted
for the TSF17 Meeting of
The American Physical Society

Effects of Nickel, Multi-walled Carbon Nanotubes, and Multi-walled Carbon Nanotubes/Nickel Nanoparticles on Power Production and Wastewater Treatment of Microbial Fuel Cells (MFCs) DIANA BELTRAN, Southwestern University, JIA LIU, Southern Illinois University Carbondale — Having an abundant amount of waste water makes it necessary to find a more effective way of treating water. Microbial fuel cells (MFCs) are a clean way of treating water that in the process produces clean electricity. The problem with this is that MFCs produce very low voltage and have not been developed to a greater scale. The purpose of this experiment is to coat the cathode electrode with different nanoparticles and hopefully reduce the internal resistance of the MFC, resulting in more power and cleaner wastewater. Methods and detections used in this study include electrochemical impedance spectroscopy, polarization curves, chemical oxygen demand tests, nanoparticle production by precipitation method and SEM/EDS for characterization. The result obtained was that the internal resistance was maximally reduced by $0.74 \text{ k}\Omega$ and the power density maximally increased by 1085.524 mW/m^3 .

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Date submitted: 21 Sep 2017

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