



Università degli Studi di Napoli Federico II

PhD in Biotechnology - 37th cycle

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**Enhanced Wastewater Treatment/Power
Production Using Carbon Nano Structures/Metal
Oxide modified Anodes in Microbial Fuel Cells**

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Resources depletion due to the increasing human needs has been a rising concern, two of the most critical of those assets, that may hinder human development, are water and energy. Hence, finding sustainable energy resources and ensuring water sustainability became a must. In this aspect, renewable energy resources and innovative wastewater treatment are required to ease the current situation. One of the solutions that can address both aspects is to produce energy while treating wastewater, and few systems have this capability, including biofuel cells such as microbial fuel cells (MFCs). MFCs are fuel cells that use organic matter as fuel and bacteria as a catalyst. MFCs are fuel cells that use organic matter as fuel and bacteria as a catalyst. MFCs are fuel cells that use organic matter as fuel and bacteria as a catalyst. Microbial fuel cells proved to be promising when investigated in treating domestic wastewater [1], animal waste [2], and food waste [3].

MFCs require conductive, corrosion resistive, high specific area electrode materials where electrons can efficiently be transferred from the bacteria enhancing electrical current production. Thus, fabricating conductive durable porous anodes with high surface roughness and conductivity can enhance MFCs performance.

References

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