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**High surface area electrode for high efficient microbial electrosynthesis** HUARONG NIE, Department of Polymer Science & Engineering, University of Massachusetts,Amherst, MENGMENG CUI, HAIYUN LU, Department of Polymer Science & Engineering, University of Massachusetts, Amherst, TIAN ZHANG, Department of Microbiology, University of Massachusetts, Amherst, THOMAS RUSSELL, Department of Polymer Science & Engineering, University of Massachusetts, Amherst, DEREK LOVLEY, Department of Microbiology, University of Massachusetts, Amherst — Microbial electrosynthesis, a process in which microorganisms directly accept electrons from an electrode to convert carbon dioxide and water into multi carbon organic compounds, affords a novel route for the generation of valuable products from electricity or even wastewater. The surface area of the electrode is critical for high production. A biocompatible, highly conductive, three-dimensional cathode was fabricated from a carbon nanotube textile composite to support the microorganism to produce acetate from carbon dioxide. The high surface area and macroscale porous structure of the intertwined CNT coated textile ?bers provides easy microbe access. The production of acetate using this cathode is 5 fold larger than that using a planar graphite electrode with the same volume. Nickel-nanowire-modified carbon electrodes, fabricated by microwave welding, increased the surface area greatly, were able to absorb more bacteria and showed a 1.5 fold increase in performance

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