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LICENSING OPPORTUNITIES

South Dakota School of Mines Office of Economic Development is actively seeking exclusive and/or nonexclusive licensing opportunities. Joint development opportunities are also available.

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Overview

The Tomato industry in the United States generates 40 million metric tons of pomace waste on an annual basis. Researchers from SD Mines and Princeton University have discovered a breakthrough process that consists of converting tomato waste into electricity.

Description

In addition to imperfect tomatoes not suitable for grocery store shelves, waste can come from the leftovers of manufacturing processes of sauces, ketchup and other cooking products. The team's technology demonstrates the feasibility of generating electricity with culled tomatoes, or peel and seed in tomatoes, using the microbial fuel cell as a model reactor for microbial-electrochemical systems. The researchers demonstrate the use of pomace as the feedstock for electricity production in a microbial fuel cell (MFC). The putative redox-active compounds and the particulate characteristic of the pomace influenced the temporal dynamics of polarization, impedance, and voltammetry response of pomace-MFCs (pMFC). Researchers tested the defective tomatoes in a new electrochemical device built at the South Dakota Mines campus, which degrades tomato waste and then extracts electrons.

Advantages

The proposed invention provides solutions to two different challenges facing the tomato industry:

- inexpensive method for treating the tomato waste in the agricultural farms or tomato processing plants
- inexpensive method for generating direct current (DC) electricity from tomato wastes