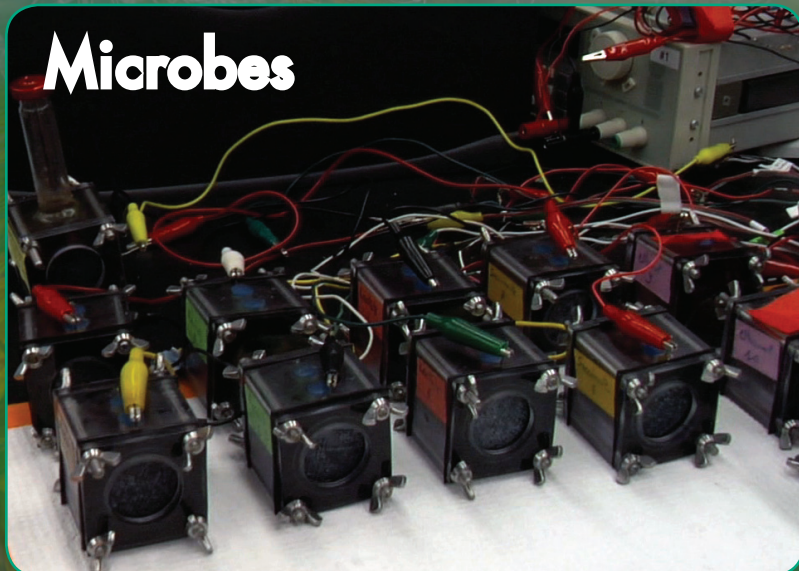


Microbes



About the Series

Coming up with better ways to get where we need to go and power the lives we live requires development of new technologies, along with research to help us minimize the impact of these technologies on our environment. The overall goal of this series is to encourage people to ask questions and look beyond fossil fuels for innovative solutions to our ever-growing energy needs. Interest in science and technology provides the necessary foundation for our future in a world powered by clean energy. The series also provides insight into what careers in science, engineering and other topics related to clean energy technologies are really like.

In this Episode

Lisa Van Pay of the National Science Foundation (NSF) talks to Bruce Logan, an environmental engineer at Penn State University who studies bioenergy technologies related to water treatment.

In Bruce's lab researchers are working on developing microbial fuel cells (MFC) that can generate electricity while accomplishing wastewater treatment. In a project supported by NSF, they are researching methods to increase power generation from MFCs while at the same time recovering more of the energy as electricity. Through their research projects, Logan's team has already proven that they can produce electricity from ordinary domestic wastewater, as well as wastewaters generated by animals, farms, food processing and industry. Virtually any biodegradable material can be used to produce power. The lab is currently working to improve on the technology and demonstrate it at [larger scales](#). To find out more about this and other hydrogen and fuel cell research at Penn State, visit the H2E Center [web page](#). If you'd like to try building an MFC yourself, see the [Make one!](#) page. You may also wish to visit the international MFC Web site at: www.microbialfuelcell.org

Concepts

- Chemical elements form molecules that interact to form the basic functions of life
- Electrical systems generate, transfer and distribute electricity
- Bioengineering technologies explore production of devices to improve our health and daily lives

Content Standards

Biology/Physics/Technology/Engineering
High School*

- 1.1 (Bio) Biological organisms are composed of very few elements
- 5.5 (Phys) Electric current is a flow of charge caused by a potential difference
- 7.2 (Tech/Eng) Describe adaptive and assistive bioengineered products