

Biological Fuel Cells

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Abstract

Stimulated by the depletion of fossil fuels and the threat of global warming, the scientists are trying to develop new technologies that can make future energy production more sustainable. In the theory, large amounts of renewable energy can be produced from organic matter. Bio-electrochemical conversion processes provide new ways of utilizing this resource as they are the bases of the working principles of biological fuel cells. A biological fuel cell is a device that directly converts biochemical energy into electricity [1]. The basic principle is that the process of substrate oxidation by microorganisms or enzymes in the fuel cell offers electrons for electrical energy production. Since the conversion is not restricted by the Carnot cycle, the theoretically efficiency can be as high as 90%. This paper contains a brief introduction to biological fuel cells, by describing their history, working principles, structures and applications.