

9<sup>th</sup> World Convention on

## WASTE RECYCLING AND REUSE

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**Production of antifungal agents in a microbial fuel cell****Takashi Ano, Fukumoto Y, Yukimoto H, Ebe S, Ohike T and Okanami M**  
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World population is now increasing and the United Nations predicts that the world population will be 9.8 billion by 2050. The major concern is that this population increase will lead to food and energy shortages. A Microbial Fuel Cell (MFC) is a device that produces electric power by recovering electrons generated on an electrode when microorganisms with electrochemical activity decompose organic substances. MFCs can simultaneously perform wastewater treatment and electricity production, by using organic substance in wastewater as a nutrient source for microorganisms. To increase agricultural productivity, utilization of pesticides are necessary to solve the food shortage. In recent years, biocontrol agents are attracting attention, because of the smaller burden on the environment compared with chemical pesticides. We tried to produce electricity and antibiotics at the same time using the MFC by *Bacillus subtilis* RB14, an antifungal substance Iturin A producer. As a result, it was recognized that electricity production after the 10<sup>th</sup> day of the cultivation and an antifungal activity of the culture supernatant from the MFC against *Rhizoctonia solani* K1. It seems to be the first finding that the electricity generation and the production of antifungal substance by *B. subtilis* in the MFC and it is expected that the production of a biocontrol agent from the waste material and also the generation of electricity during the process in the same apparatus. This may open a new method for the waste material treatment and the low cost production of biocontrol agents with recovery of energy as electricity.

**Biography**

Takashi Ano is currently working as a Professor at Kindai University. He has completed his Bachelor's degree in Engineering and was awarded from Osaka University. His major fields are biocontrol agents and microbial fuel cell aimed for the sustainable society. He has published many papers in the field. He had worked in Tokyo Institute of Technology for 20 years as a Research Associate and as an Associate Professor.

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