



IP Sustainable Biotechnology and Bioeconomy

Lecture

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Zhejiang Gongshang University, Hangzhou, China

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Development and Evaluation of Emerging Biological Technologies for Wastewater Treatment Based on Electron Neutralization

The vast majority of biological technologies for wastewater treatment was developed on the basis of a principal of electron donating or accepting. However, most of the existing technologies realize the purification of wastewater by adding electron donors (e.g. carbon sources) or electron acceptors (e.g. oxygen). How to realize the self-neutralization of electron donors and acceptors existent in the wastewater is key to reduce the cost of wastewater treatment. Bioelectrochemical systems (BES), as one of emerging biological technologies, can accomplish simultaneous wastewater treatment and resource recovery (e.g. electricity, H_2) via extracellular electron transport between microbes and electrodes. Several cases will be reported here, such as degradation of Fluoronitrobenzene by the Bioelectrocatalytic system, recovery of H_2 from organic wastes by the Microbial electrolytic system and *in situ* denitrification with carbon black as an alternative cathode material. Based on the principal of electron balance, a new, simple, and reliable methodology is established to describe the oxidation-reduction properties of wastewater, access energy recovery from wastewater, and optimize wastewater treatment processes.

Dr. Huajun Feng is professor at the School of Environmental Science and Engineering, Zhejiang Gongshang University, Zhejiang Province, China. He is a National Registered Environmental Engineer of China. His main research direction is biological wastewater treatment, bioelectrochemistry and membrane fouling control. Up to now, he has published more than 80 papers and was granted nearly 40 patents. Feng joined Zhejiang Gongshang University as a professor after PhD graduation from Zhejiang University in 2008. Between 2014 and 2015, he went to Ghent University as a visiting scholar to work on the bioelectrochemical degradation of petroleum hydrocarbons. He began to act as deputy director of Suzhou Industrial Technology Research Institute of Zhejiang University in 2015, and carried out the technology transfer of industrial wastewater treatment and sludge drying technology.

All interested colleagues are kindly invited.