

An eco-friendly research on conversion of cassava wastewater to energy for tropical application

Associate Professor

Department of Environmental Engineering, Faculty of Engineering,
Chulalongkorn University, Bangkok, Thailand

Chavalit Ratanatamskul

I attended the 49th Annual Conference of Japan Society on Water Environment (JSWE) held in Kanazawa from 16 to 18 March 2015. It is my great honor to win the JSWE-IDEA Water Environment International Exchange Award. I would like to thank to JSWE committee for giving me a chance to present the lecture on our research work in the conference.

My recent research works are related to waste-to-energy and wastewater reuse for tropical application. At present, water scarcity and energy crisis problems have been recognized as urgent environmental issues. Up to now, I have developed various prototype systems for the purposes of energy saving and energy recovery from wastewater treatment.

In the 49th Annual Conference, I gave a presentation entitled "Effects of Substrate Loading Rate and Temperature on Power Generation From Cassava Wastewater Treatment by A Single-chamber Microbial Fuel Cell". The objective of this research was to enhance the performance a single-chamber microbial fuel cell system (SCMFC) for power generation from cassava wastewater treatment by optimizing the operating conditions as substrate loading rate (SLR) and temperature range. In this presentation, the efficiencies of SCMFC treatment were discussed in terms of power generation, COD removal efficiency, coulombic efficiency (CE) and also illustrated by the polarization curves. Indeed, evaluation of these factors can explore potential of

SCMFC for direct electricity generation from cassava wastewater treatment. To sum up overall results, the power density could be enhanced with an increase in the SLR for treatment of cassava wastewater. However, % COD removal and % CE decreased when increasing the SLR. Therefore, the optimal SLR can be considered as an important design criteria for operating the SCMFC system.

By attending the 49th Annual Conference of JSWE, I could have chance to exchange my research activities to Japanese experts from many universities. This can promote research exchange activity between Japan and Thailand. Since 1991, I had the chance to visit Japan by winning the Monbusho scholarship for studying master degree, followed by Ph.D. program for 5 years at Department of Urban Engineering, The University of Tokyo. I could have a good experience to attend a JSWE conference and presented our paper related to wastewater reuse topic, supervised by Prof. Kazuo Yamamoto and Prof. Shinichiro Ohgaki.

Finally, I would like to express my sincere thanks to JSWE organization for excellent arrangement of the 49th Annual Conference. I believe that this conference can successfully contribute knowledge and experience to many researchers. Moreover, we might use this opportunity to promote research collaboration between Japan and Thailand in the near future. I am looking forward to attend the conference arranged by JSWE again next time.