

# IDENTIFICATION OF METHANOL PRODUCTION BY ELECTROCHEMICAL REACTION IN CU-CATALYZED BIO-ELECTROCHEMICAL ANAEROBIC DIGESTION (BEAD)

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**R**ecently, Bio-Electrochemical Anaerobic Digestion (BEAD) is being actively researched as a technique to increase the yield and content of methane by electrochemical and biological reactions. At reactor using BEAD, the improvement of the methane production efficiency is highly increased. And the research on the Archaea community structure are actively proceeding. Previous research achieved fast stabilization rate and high methane content in BEAD and BEAD with Cu catalyzed graphite carbon as cathode. In these studies, Methylophilic methanogen dominated regardless of substrate. Methylophilic Methanogen uses methanol as substrate more than other methanogens, and needs low Gibb's free energy to convert methanol to methane. So they can make methane easily than other methanogens comparatively. As a result, Cu catalyzed BEAD has produced more methane yield than AD(anaerobic digestion), as the environment favorable for the growth of methylophilic methanogen was established. Therefore, this study will compare the methanol and methane production of Cu catalyzed BEAD with AD as a control group and study the reaction mechanism in BEAD without Cu addition.

## Biography

HyeLin Park is in the Master program in the Department of Environmental Engineering at Chungbuk National University in Republic of Korea, and she is studying microbial electrolysis cells (MECs) to improve existing anaerobic digesters. She has obtained her bachelor's degree in Department of Environmental Engineering at Chungbuk National University, and she is observing the effect of electrochemical reactions on anaerobic digestion. And she is also studying about various pretreatment methods to increase Methane production and contents. Her areas of interest is electrochemical reactions, and she has researched them continuously. She is analyzing the relevant mechanisms and application directions for practical use.

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