

Effect of electromethanogenesis for biogas upgrading based on the bioelectrochemical system

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Anaerobic digestion has been reportedly utilized to reduce organic contaminants and recover renewable energy (i.e. bio gas). Biogas is a renewable energy carrier gas consisting mainly of methane (CH₄, 40–75%) and carbon dioxide (CO₂, 15–60%), which was converted by acetotrophic and hydrogenotrophic methanogens during anaerobic conversion of particulate biomass to methane. Recently, the bioelectrochemical system (BES) based CO₂ conversion provide a potential route to improve conversion efficiency and cell growth of strains for methane and/or value-added platform chemicals. In this study, we investigated the syntrophic electromethanogenesis for methane conversion from CO₂ gas based on the bioelectrochemical system in order to optimized control. As results, we obtained highly methane conversion rate and coulombic efficiency.