

Effects of Methane Contents on the Dynamic Behavior of Type II Methanotroph in Chemostat Culture

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Recently, biological methane conversion by methanotrophs attracted much attention since there has been a growing interest in C1 gas as a promising alternative to petroleum. Comprising three phases, gas substrate, liquid media, and solid microorganisms, the cultivation of methanotrophs is so complex and it is difficult to design appropriate biocatalysts as well as bioprocesses. In particular, methanotroph needs oxygen for conversion of methane and thus the dynamic behavior is more complicated with the composition of feed gas. In this study, chemostat culture of type II methanotroph was carried out to investigate the effects of feed gas composition on the cell growth and the gas consumption characteristics. When the steady state is reached, the specific growth rate and the dissolved gas concentration are kept constant for a given dilution rate, and it is easy to handle the biological system and the physiological behavior can be understood.