

High-efficient Photobioreactor Design for Biological CO₂ Fixation Using Microalgae

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CO₂ reduction and sequestration is the emerging issue all over the world because of global warming. Although Carbon Capture and Storage (CCS) technology is a typical technology of many CO₂ reduction and sequestration technologies, it costs enormous expense because CO₂ should be stored to safe space after captured and recovered from exhaust gas. However, biological CO₂ fixation process using microalgae is possible to recover CO₂ directly from exhaust gas without additional CO₂ separation process. In addition, biomass from microalgae is available for producing useful materials such as biodiesel and feed additives. For this process to be more feasible economically, the development of a high-efficient photobioreactor is essential. In this study, we designed a high-efficient photobioreactor for CO₂ fixation and investigated the optimal culture conditions in the photobioreactor.