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Propagation and Dissolution of CO_2 bubbles in Algae Photo-bioreactors SRINIVAS KOSARAJU, Northern Arizona University — Research grade photo-bioreactors are used to study and cultivate different algal species for biofuel production. In an attempt to study the growth properties of a local algal species in rain water, a custom made bioreactor is designed and being tested. Bio-algae consumes dissolved CO_2 in water and during its growth cycle, the consumed CO_2 must be replenished. Conventional methods use supply of air or CO2 bubbles in the growth medium. The propagation and dissolution of the bubbles, however, are strongly dependent on the design parameters of the photo-bioreactor. In this paper, we discuss the numerical modeling of the air and CO_2 bubble propagation and dissolution in the photo-bioreactor. Using the results the bioreactor design will be modified for maximum productivity.

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