A systematic approach for the synthesis and optimization of microalgal biorefineries

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In this study, we present a systematic approach for process synthesis and optimization of microalgae-based biorefineries. This approach involves the development of biorefinery superstructure and the formulation of optimization problem as Mixed Integer Linear Programming (MILP) problem. The solution to the optimization formulation determines the optimal processing pathway. This method is tested to find the optimal processing route for the production of biodiesel from microalgal biomass to demonstrate its use and applicability for the synthesis and optimization of microalgal biorefineries.