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Method for Separation of Algae Biomass from Freshwater or Marine Culture

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Inventors

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Invention Description

Algal biofuels are a promising area of research in the field of alternative energy. A major drawback of the currently available methods of algae cultivation is the lack of an economical and efficient method to harvest the biomass; recovery of the algae biomass from the culture medium may contribute 20-30% of the total cost of culture.

Recovery and concentration of biomass using membrane technology is very promising, as the water and residual nutrients can be reused. However, fouling of the membrane remains an issue.

Researchers at Arizona State University have developed a cross flow membrane system that harvests and dewaters the algae, while simultaneously purifying and recycling the water. The system characterizes the foulants, models the flux decline, and optimizes the operational parameters, including the membrane backwash/declogging protocol. In this way the algal biomass can be concentrated 50-200x and subsequently processed for biofuels or bioproducts.

This system has the potential to drastically reduce the difficulty, cost, and energy associated with harvesting and dewatering algae for biofuel or bioproduct production.

Potential Applications

- harvesting and dewatering of algae for production of
  - biofuels
  - bioproducts

Benefits and Advantages

- dual function:
  - algae harvesting and dewatering
  - water/wastewater purification and recycling
- minimizes filtration membrane fouling
- operational protocol can be updated to always maximize the separation efficiency of the algae from the culture medium

Intellectual Property Status:

Patent Pending

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