2015

Algae Biofuel Enhancement Project

Joseph Berger  
*Worcester Polytechnic Institute*

Jaime Stephen  
*Worcester Polytechnic Institute*

Taylor Stephen  
*Worcester Polytechnic Institute*

Barrett Wolfson  
*Worcester Polytechnic Institute*

Follow this and additional works at: [https://digitalcommons.wpi.edu/gps-posters](https://digitalcommons.wpi.edu/gps-posters)

Part of the Architecture Commons, Arts and Humanities Commons, Business Commons, Education Commons, Engineering Commons, Life Sciences Commons, Medicine and Health Sciences Commons, and the Social and Behavioral Sciences Commons

Recommended Citation

[https://digitalcommons.wpi.edu/gps-posters/359](https://digitalcommons.wpi.edu/gps-posters/359)

This poster represents the work of WPI first-year students submitted to the faculty as evidence of completion of a course requirement for the Great Problems Seminar (GPS). WPI routinely publishes these posters on its website without editorial or peer review. For more information about the GPS program at WPI, please see [https://www.wpi.edu/academics/undergraduate/great-problems-seminar](https://www.wpi.edu/academics/undergraduate/great-problems-seminar).
Algae Biodiesel

Abstraction

Fossil fuels are a limited resource that will eventually be depleted; an alternative must be found and implemented in order to supply the world’s energy needs.[1] The high cost of growing algae with Photobioreactors (PBR) decreases it’s attractiveness as a possible alternative to fossil fuels leaving room for improvement.[2] Overall, algae biofuels offer a clean, natural form of energy that can be helpful to the environment and to humanity.[3] Algae growth removes CO2, cleans wastewater, and is able to grow extremely fast.[4] If no alternative to fossil fuels is used, CO2 levels will continue to rise exacerbating global warming.[5] To find the right system, we propose using a universal scale of comparative values that will shift the industry in the right direction.

Background

PBR systems are the most efficient way of extracting algae and the most diverse when it comes to algae strain choice.[6] Since the entire system is closed it allows the use of almost any algae and can grow the algae at a very fast rate.[7] The cost prevents the growth of algae biofuel as a whole.[8] With hundreds of PBR systems known today the possibility of creating new and more advanced systems promises a great outlook for the future of algae biofuel.[9] Therefore, our dependency on oil will simply shift from fossil fuels to algae-based renewables.

Project Method

Creating a standard, like any measurement system, starts with getting the U.S. federal government involved. The U.S. government can ensure that all PBR system collects similar data to provide comprehensive analysis with comparable values. The project will then be successful when companies and investors use the government’s report to make economic decisions. As a result, adequate investments can be made and the PBR industry can shift towards the system with the highest potential, and largest ABEP value.

Conclusions

Acknowledgments

References

We would like to thank Professor Rosbach and Professor Pfiefer for their support and advice throughout the project. We would also like to thank Dr. Jonathan Team, NASA’s OCEAN2 project advisor, for his guidance and advice. We would like to thank OCEAN2 and ARPA-E for their financial support. We extend special thanks to Professor Geoff Pfeifer, Chemistry Department, for his guidance and advice. We also thank the team at the University of Illinois and the Illinois Research Foundation for their financial support. We extend our appreciation to the team at the University of Illinois and the Illinois Research Foundation for their financial support. We extend our appreciation to the team at the University of Illinois and the Illinois Research Foundation for their financial support.