

CFDRC Awarded NSF Project to Design and Optimize Algae Growth Systems

Huntsville, AL – July 20, 2010 – The National Science Foundation (NSF) awarded CFD Research Corporation (CFDRC) a competitive contract to develop high-fidelity modeling and simulation tools to design and optimize microalgae growth systems. Microalgae organisms are a renewable resource being exploited for a wide range of applications including biofuels, wastewater remediation, animal feed, and health food supplements. Interest in using algae to produce a sustainable and carbon neutral alternative to petroleum-based liquid fuels is increasing, due to the promise of a positive impact on the environment and national energy security. However, the economics of algae production for biodiesel and other commodity products are challenging and new solutions are needed.

“CFDRC’s track record of using physics based modeling to deliver breakthrough solutions were a key to winning this effort,” says Dr. Ashok Singhal, President of CFDRC. Algae cultivation processes (growth, harvest, and product conversion) are fundamentally coupled fluid dynamic and biochemical phenomena. History has shown that physics based modeling and analysis can play an important role in early stage development for such processes by identifying critical technology bottlenecks, rapidly screening innovative solutions, and guiding process development.

Specifically CFDRC, in collaboration with the University of Georgia, will extend the capability of 3D computational fluid dynamics (CFD) methods by adding light propagation models and algae photosynthetic growth kinetics models. The resulting computational tools will allow, for the first time, a detailed understanding of the effect of system design and operating parameters on key factors such as growth rate, self-shading, nutrient uptake, oxygen generation, and thermal control. The tools will be applicable to both open pond and closed photobioreactor technologies. Having the ability to model and analyze these systems will allow CFDRC and industry partners to screen algae growth systems and processes quickly before selecting the most promising designs for construction and field trials.

CFDRC is strategically focusing on delivering breakthrough solutions for the nation’s clean energy industry. “CFD Research Corporation has a successful record of developing and demonstrating the value of multiphysics modeling in the fluid and chemical processing industries for over 20 years.” said Richard Thoms, Manager of Emerging Energy Technologies for CFDRC. “Utilizing that experience we will produce high-fidelity modeling and analysis tools tailored to serve the needs of the algae industry. Applying these tools will accelerate the design cycle to produce innovative cultivation technologies which will enhance yield and improve economics.”

About CFD Research Corporation: CFDRC develops and commercializes innovative technologies for government and commercial customers. The company focuses in three areas; Aerospace & Defense, Energy & Materials, and Biomedical & Life Sciences. The multi-disciplinary approach to problem solving including simulation based design combined with prototype manufacturing and experiment validation allows for improved product development cycles. CFDRC was founded in 1987 and is headquartered in Huntsville, Alabama. (www.cfdrc.com)