

# Making Biofuel Profitable: Deriving Green Value-Added Products from Algae-Cake



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The development of biofuel from algae offers promising economical and societal benefits, because it simultaneously addresses the global issues of waning supplies of fossil fuels and climate change. The primary obstacle to the utilization of this biofuel is the cost. At present, biodiesel from algae has a cost 2-3 times greater than conventional diesel fuel. However, biofuel extraction from algae also produces tons of proteinaceous algae “cake” waste. If marketable, value-added co-products can be made from algae-cake, then biofuel production would become profitable and economically viable, ushering in a whole new era in biofuels. The work of Dr. William Chirdon at the University of Louisiana at Lafayette (UL Lafayette) is discovering such a solution: converting algae-cake into bio-adhesives or binders for composite materials.

## EXAMPLES OF DERIVED BIO-PRODUCTS



Wood-composite using algae-cake derived bio-adhesive as binder, which may be used as the next generation of paper, particleboard, plywood, or similar materials.



Algae / sand composites which may be used as substitutes for brick, mortar, concrete, asphalt, and other civil engineering applications.



Tough, light-weight composite of recycled paper with algae-cake derived bio-adhesive as binder. May be employed in drywall, ceiling tiles, or similar applications.

## KEY ASPECTS OF THE TECHNOLOGY:

- Nominal costs associated with material, methods & machinery for deriving Green bio-adhesive from algae-cake;
- No purification of algae-cake necessary; streamlined process utilizes entire algae-cake substrate;
- Derived bio-adhesives yield robust performance as composite binders independent of VOCs (*e.g.*, formaldehyde);
- Bio-adhesive performance can be tailored with the use of additives and cross-linking agents;
- Demonstrated applications include Green “bio-crete,” “bio-adhesive,” and “bio-wood composites”;
- Process based on University-owned patent pending technology.

The University understands the value of this line of research to various industries. Moreover, we understand that for successful commercial implementation, significant industry acumen will be needed. Accordingly, we aim to establish industry-academic partnerships at this early stage of R&D to focus and guide the development of this technology. To learn more about this research and/or partnership opportunities, please contact Seth Boudreaux, UL Lafayette Technology Manager, via the info provided below.

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