

Improved Methods for Deriving Green Adhesives from Biowaste



There is little doubt that clean technology will revolutionize our planet. The current employment of microorganisms, including algae, for industrial purposes including, biofuels productions, CO₂ sequestration and wastewater recondition is one such example. However, the primary obstacle to broad utilization of these technologies is the cost. If marketable, value-added co-products can be made from residual biowaste, this would serve to dramatically increase the economic attractiveness of clean technologies. This is esp true of the tonnage of proteinaceous algae “cake” waste let over from biofuel production. Researchers at the University of Louisiana at Lafayette (UL Lafayette) have discovered such a solution: converting biowaste into bio-adhesives or binders for composite materials. Unique to this process is the absence of any polymer purification steps – the entire biowaste is utilized.

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 patent pending technology.

UL Lafayette understands the value of this research and technology to the clean technology sector. Moreover, we understand that for successful commercial implementation, significant industry acumen & perspective will be needed. Accordingly, we currently seek a commercial partner interested in licensing and/or sponsored-research opportunities. To learn more about this research and/or partnership opportunities please contact UL Lafayette’s Office of Innovation Management via the information provided below.

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