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## **GREENER PLASTICS TO GROW AT DOUBLE-DIGITS**

Biopolymers are breaking the mold of environmentally unfriendly plastic materials and fueling future growth, says Lux Research

Boston, MA – July 29, 2009 – Petroleum-based plastics have helped create thousands of products from personal care to automotive to packaging. In the process, however, they've depended on petroleum, shown risks of toxicity, and become a burden on the environment. Now, according to a new report from Lux Research, a new generation of biologically derived materials and processes promises to break that mold by delivering many of the traditional benefits of plastic materials while closing the ecological loop.

"Where conventional plastics come from nonrenewable feedstocks and end as pollution, we're now seeing polymers that derive from a sustainable source and end as a biodegradable material," said Mark Bünger, Research Director at Lux Research and the report's lead author. "Biopolymers are turning the lifecycle for conventional plastic products into a true lifecycle: from dirt to dirt."

Titled "Growing Tomorrow's Green Materials," the report notes that biopolymers currently represent only 1% of global plastics revenues and perhaps 0.1% in terms of volume. However, biopolymer initiatives have become a top priority at major chemical companies like Dow Chemical, Bayer, and BASF. As dozens of start-ups and even major agricultural players like Cargill have entered the arena, today's \$1 billion biopolymer market will see double-digit growth in the coming years. However, the report counsels caution as well, noting that biopolymers must be effective and economical, not just ecologically sound, to see widespread adoption.

Lux Research's report provides a guide for forecasting biopolymer adoption in various material applications. Based on analysis of industry literature, material data sheets and primary interviews with key developers, the report assigns composite scores for traditional polymers and biomaterials. Its scores reflect how each material compares in terms of performance, economic competitiveness and ecological profile. Among its notable conclusions:

- **Effective performance is a secondary consideration.** Many plastic products – such as toothbrush handles, product packaging and printer cartridges – are over-engineered, which increases cost and reduces biodegradability. This creates an opportunity for biopolymer suppliers to work with buyers to target the optimal level of performance, while offering more ecologically sound products that appeal to consumers.
- **Near term, the cost of biopolymers will limit them to niche applications.** Although the performance of some biopolymers like polylactic acid (PLA) stacks up against their petroleum-based counterparts, these materials cost nearly twice as much, as long as oil is below \$100/barrel. Even if oil prices rise, increasing plant feedstock costs may sap the relative benefit of renewable materials.

- **Chemical makers will form technology partnerships with academics and startups.**  
Genetic and metabolic engineering offer radically new platforms for manufacturing polymer materials, and this has already spawned cross-industry partnerships. But as smaller players like GreenFuel reel from the collapse of oil prices and the financial crisis, incumbents could go bargain hunting to acquire new technologies on the cheap.

“Growing Tomorrow's Green Materials” is part of the Lux Biosciences Intelligence service. Clients subscribing to this service receive ongoing research on market and technology trends, continuous technology scouting reports and proprietary data points in the weekly Lux Research Biosciences Journal, and on-demand inquiry with Lux Research analysts.

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