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## Ithaca company turning carbon dioxide into plastic

### Novomer's process gets state investment

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ITHACA -- Pollutants that once belched out of power plant chimneys may soon make an appearance in our refrigerators and reduce our dependency on petroleum, thanks to the pioneering work of an Ithaca company.

Researchers at Novomer at the South Hill business complex have discovered a way to harness the harmful greenhouse gas carbon dioxide (CO<sub>2</sub>) and transform it into a plastic that is not only biodegradable and more energy efficient to produce, but also remarkably durable and light-weight.

They have now teamed up with Kodak and the Rochester Institute of Technology to manufacture products using the plastic and send them into various industries for commercial testing.

Applications of the new technology are almost endless, according to Mike Slowik, strategic planning and analysis manager for Novomer.

The polypropylene carbonate (PPC) material, which was developed out of the work of Geoff Coates at Cornell University, could provide a safe alternative to Bisphenol A (BPA) bottles, and its improved oxygen barrier makes it a good candidate for food packaging because it can maintain freshness longer and prevent spoilage.

It can also be used as a coating for films, or on wood, metal and glass surfaces to protect from scratches, Slowik said, leading to applications in the automobile industry.

Whereas plastic is currently made with 100 percent petroleum chemicals, the Novomer process uses half as much of the fossil fuel, replacing it with a concentrated form of catalyzed CO<sub>2</sub>. That CO<sub>2</sub> could come from industrial sources like the scrubbers from the top of power plants, which capture the gas in super-concentrated form.

PPC plastic can also be produced affordably, and its improved performance allows less material to be used for the same applications, which could ultimately reduce energy and transportation costs throughout the supply chain, Slowik said.

Currently, 10 percent of oil in the United States is used for plastics manufacturing and packaging, and Novomer CEO Jim Mahoney said his company's ability to reduce petroleum usage by at least 50 percent while also converting CO<sub>2</sub> from pollution into valuable materials has the potential to transform the plastics and materials landscape on a global scale.

The New York State Energy Research and Development Authority (NYSERDA) is equally excited about the possibilities for green job creation, and is investing \$800,000 in the project. It had previously awarded Novomer a \$150,000 grant to investigate the commercial feasibility of the technology, and that phase was completed in May.

"In the first phase of the project, Novomer's homegrown innovations from the remarkable work at Cornell performed exceptionally well," said Francis J. Murray Jr., NYSERDA president and CEO. "We are very excited for this next phase and for the large-scale potential it represents for New York and the world."

Slowik said he has already had requests from several Fortune 500 companies wanting to use the materials on a large scale.

The first run of manufacturing, which is expected to take place in Rochester and last about a year, will be limited to batches of about 10 to 30 pounds and will likely involve 12 employees. But if successful products are launched as a result, hundreds of additional jobs could be created, including in Ithaca, where Novomer recently added 9,000 square feet to its research and development hub.

"We have been working very diligently to get to this point, and we are excited about the prospect of getting the product into the customers' hands so quickly," Slowik said.

## Additional Facts

About the company

Novomer is a new materials company that builds on the work of Cornell University researcher Geoff Coates to create sustainable plastics, polymers and other chemicals from carbon dioxide and other renewable feedstocks. Founded in 2004, it has 23 employees, most of whom work in research and development at its South Hill business campus hub in Ithaca. The company also has an office in Boston, and has received more than \$35 million in funding from equity investors Flagship Ventures, Physic Ventures, OVP Venture Partners, DSM Venturing and KensaGroup, as well as support from the U.S. Department of Energy, National Science Foundation and the State of New York.

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