

Start It Up

Itaconix cleans up with bio-based polymers

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Launched by former professor Yvon Durant '96G, Itaconix is an example of how UNH-developed ideas and technology can have larger-world implications.

A glittering row of glass jars in the lobby of Stratham, N.H.-based Itaconix contains the secret to the company's success. A few contain white substances resembling raw sugar or flour; others gleam with an amber liquid. They're all forms of polyitaconic acid, a nontoxic, biodegradable polymer originally developed in a UNH laboratory by former materials science professor Yvon Durant '96G. With the support of UNHInnovation (UNHI), Durant, Itaconix's chief technology officer, licensed the bio-based polymer in 2008, bringing the product out of the lab, then producing and selling it commercially to

international producers of laundry and automatic dishwasher detergents, water softeners, hair and skin care products, among others. The startup is UNHI's first success story, an example of how UNH-developed ideas and technology can have larger-world implications.

"We're trying to create an ecosystem where it's possible to invest in and create these new businesses," says Marc Sedam, vice provost for innovation and new ventures and UNHI's managing director. "They mean a lot to the vibrancy of New Hampshire's, and the nation's, economy."

PROFITABLE POLYMERS

Durant's work on polymers began as part of a joint project between UNH and the University of Maine in the early 2000s, a collaboration funded by a grant from the EPA. While studying applications for itaconic acid, a material fermented from corn and other sugars, he discovered that a higher percentage of itaconic acid in polymers makes them more effective in cleaning applications and can replace petroleum-based polymers. In 2007, after several rounds of grant funding, Durant went to UNHI (then the Office of Intellectual Property Management) to apply for a patent. After one of Durant's students, Ming Cao '08G, developed the initial technology to produce the polymers and won a prize in UNH's Holloway Innovation-to-Market Competition, John Shaw, a guest at the competition, recognized the product's potential. He and Durant co-founded Itaconix in 2008; Shaw is now CEO.



UNH ALUMNI AND ITACONIX EMPLOYEES ANITA AUGUSTYNIAK '11G (PH.D., MATERIALS SCIENCE), JOHN FERNALD '18 (CHEMICAL ENGINEERING), YVON DURANT AND BO JIANG '12G (PH.D., MATERIALS SCIENCE).

Remaining in his UNH lab for several years after Itaconix was established, Durant researched applications and production processes for new polymers, supported by grants from the New Hampshire Innovation Research Center. In 2009, the company opened a production facility in Dover, N.H., with a staff of 10. They were selling product by the end of the year — a big achievement for a small startup. "Their scale-up time was short because they created the chemistry to make polyitaconic acid commercially viable," says Sedam. "They were already talking to customers who could use it."

Itaconix polymers are now found in major brands such as Greenworks, method and Resolve.

KEEPING A UNH CONNECTION

Durant has long employed UNH students, alumni and interns. Even now, after relocating to Stratham in 2012, the company relies on Wildcat talent, including research scientists Anita Augustyniak '11G, Bo Jiang '12G and John Fernald '18. "We also have a long history of UNH interns and graduates who work in a variety of roles from sales to development and product support," says Durant. "It's a small company so we wear many hats, which makes it a valuable experience for students."

There are advantages to retaining academic talent in a startup like Itaconix, Sedam says, not least because it helped pioneer the technology. "The data around keeping that talent in the mix is pretty compelling," he says. "According to our research, one in two university startups are still operating, which is much higher than the national average." Sedam says 73% of all university-based startups are operating in the county where they were formed. "You can imagine what an economic development strategy could be with those numbers," he says.



Did You Know?
73% of all university-based startups are operating in the county where they were formed.

Itaconix's success supports those statistics. The only manufacturer of polyitaconic acid in the world, the company was acquired by and merged with Revolymer, a British chemical company, in 2016 and became publicly traded (the company retained the name Itaconix). The acquisition, the first of any UNH startup, enabled the company to expand internationally; its strongest market is Europe, where there is increased interest in high-quality, bio-based products. Agreements signed in the past three years with European chemical companies Croda and Nouryon have led to increased production and expanded product lines. "We're an international business," says Durant. "Early on less than half our revenue was from the U.S."

All of Itaconix’s production and distribution is out of its N.H. production facility (the company also has a warehouse in Belgium that enables it to get product to European customers within 48 to 72 hours). The facility, which includes a lab that Durant visits daily, generates no hazardous waste or emissions. “It’s very green,” Durant says. “Everything used to make our product is part of the finished products.”

The company continues to grow. Durant estimates they have the capacity to launch one or two new products a year. And that’s exciting to Sedam. “We’re always talking about how to create more startups like Itaconix so that faculty can see how they can commercialize their ideas,” he says. “UNH is the largest importer of talent and diversity in New Hampshire. We want to create those new businesses that contribute to the vibrancy of our economy and build the economy of tomorrow.”

itaconix.com

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