

## Silver Lining: How Covid-19 Pushed A 150-Year Old Thread Maker To Pivot From Anti-Stink Clothes To Virus Fighting

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Silver rush in Scranton: COVID-19 has breathed new life into small textile maker Noble Biomaterials, whose antimicrobial silver threads have long been used to kill odor in athleticwear. Pictured here is cofounder Joel Furey.  
NOBLE BIOMATERIALS

Joel Furey has spent most of his career peddling silver yarn. Fifteen years ago, he persuaded Lululemon founder Chip Wilson to put silver yarns in its athletic clothing to ward off odor. He got NASA to put the threads in astronaut base layers for the same reason, since space was tight and showers nonexistent. He signed on Johnson & Johnson to use it in bandages to fight infection.

In the last eight months however, his phone has been ringing off the hook. Companies of all stripes are suddenly eager to use the high-tech fabric, interwoven with metallic silver, because it automatically

attacks and kills bacteria. Their bet is that a pandemic-weary public will soon be demanding protective fabrics in all aspects of daily life. The coronavirus known as SARS-CoV-2 is transmitted primarily through droplets in the air when someone coughs, sneezes or shouts, but a study published in the New England Journal of Medicine found that it can live on surfaces for up to three days.

“This is really about reducing risk,” says Furey, cofounder and chief commercial officer of Scranton-based Noble Biomaterials. “If I’m going to be out in the world, I want the things that are touching me to be clean.”

Since March, Furey has brought on 34 new customers, each eager to make and market anti-microbial face masks, gloves, scarves, hospital scrubs, hospital linens and more. Revenue in its healthcare division surged 350% in the first six months of the year, and the company, which only makes yarn, is on track to do over \$40 million in estimated sales this year. He’s betting it’s just the start. For instance, United Airlines recently tapped the company to help make gloves for employees, and he could see more hotels and airlines putting the material in high-touch surfaces to coax back anxious travelers. Ford’s CEO even suggested that cars of the future may be designed with virus-resistant surfaces.

“What’s incredible is that there’s now this awareness of microbes that didn’t exist before,” says Furey.

It’s not as if silver is a new invention. In 5th century B.C., Cyrus the Great only let his troops go to war if they carried water in silver vessels, which would keep it safe to drink. At the turn of the century, silver was considered the first antibiotic and foil was used as a wound dressing. Today, silver is widely used in healthcare products like bandages, burn care treatment and catheters to stave off infection.

That’s because silver ions attack any bacteria that approaches, quickly entering the cell to disrupt respiratory function, cell division and replication. The bacteria is effectively neutralized, no longer capable of reproducing or mutating.

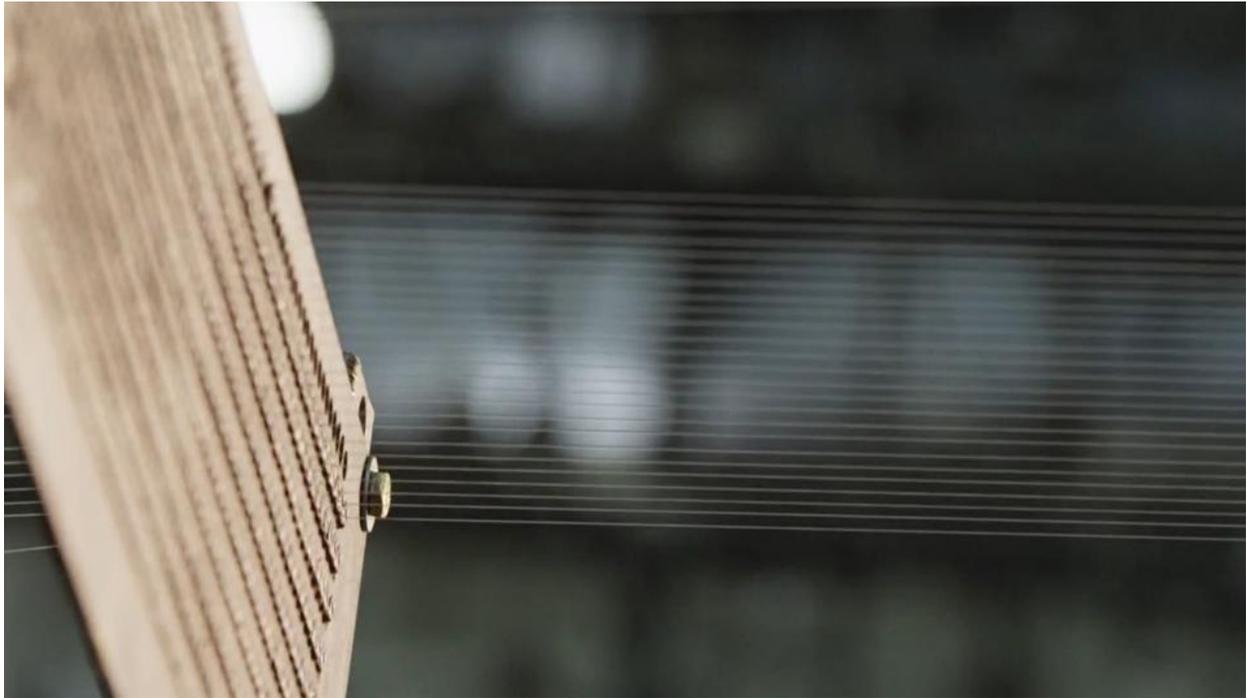
In a recent test commissioned by Noble, it found that a common strain of the coronavirus ceased to be viable on its treated fabric after about four hours, which is roughly six times faster than on regular clothing.

The company’s origins trace back to 1873, with the opening of a silk textile mill in Scranton. During World War II, the company (then known as Sauquoit) aided in war efforts by supplying parachutes and sutures, which relied on the strong but lightweight nature of silk. In 1947, it became the first company tapped by DuPont to manufacture a new, cutting-edge synthetic fiber called Nylon. It also started making polyester, popular at the time in carpeting, but customers kept complaining about the static electricity. So in 1977, it started putting silver around the yarn – it only took about 0.1% of the material coated with silver for it to be anti-static. It was a hit.

However, in the 1980s, textile manufacturing was going overseas. Owner Rohm and Haas was looking to get out of the business, and agreed to a management buyout. With sales languishing at about \$1.5 million, the new owners began looking for new ways to market their core product: Silver-coated yarns. They had heard that silver was anti-microbial and began talking to university researchers about whether that was the case. But it never went anywhere.

Then Furey came along. The Boston native, who had been skiing since he was a toddler and competed in giant slalom at the Division 1 program at Williams College, was always dismayed at how much his base

layers smelled. After graduation in 1994, he began researching innovative technologies that could be used to fight odor. He heard about a little company called Sauquoit, which manufactured silver threads, and asked them if they ever thought about creating anti-odor textiles. “They said, ‘Yeah, we thought of that. It’s never going to work. It’s too expensive. It’s too hard to do,’” recalls Furey. He kept pestering. Eventually, they put him in touch with Bill McNally, one of the owner’s sons, who had been asking the same question for years. In 1997, they decided to start their own company to explore the idea.



The metallic silver threads can be permanently bonded or embedded into a fabric, or added as a topical.  
NOBLE BIOMATERIALS

It was then that Noble Biomaterials was born. They contracted Sauquoit to do their manufacturing and began pounding the pavement, sales brochures in hand. Furey quickly maxed out five credit cards ordering prototypes, doing clinical testing and getting regulatory approval. In 1999, they had their first big break. Osage, Iowa-based sock manufacturer Fox River tapped it to make anti-stink hiking socks. Right away, it earned the Backpacker Magazine Editors’ Choice award. “This put us on the map,” says Furey. Even though Noble was just a supplier, it put giant tags on every pair with its own “X-Static” branding, similar to the approach taken by Gore-Tex. Sales started flowing. Noble started supplying materials to other outdoor brands, like Pearl Izumi, Spyder and Salomon.

At the 2002 Winter Olympics in Salt Lake City, athletes wore uniforms made with its threads. In 2003, the military was soliciting bids for socks that reduced blisters. Furey sent 20,000 samples for soldiers to test. While they weren’t convinced it reduced blisters, they liked that it reduced odor and athlete’s foot. The sock became standard issue for soldiers serving in Operation Iraqi Freedom. The same year, it began supplying Johnson & Johnson with wound care dressings for hospitals, which were useful because they could stop dangerous hospital-acquired infections dead in their tracks. “We were growing so fast we couldn’t keep up,” says Furey.

In 2006, it took outside capital for the first time, raising \$10 million from Philadelphia-based TL Ventures. That gave it enough cash to buy their manufacturing facility, finally gaining control over its own production. Furey also agreed to bring on another CEO and transition to chief commercial officer.

The company went on to corner the anti-stink market. In 2005, Furey met Lululemon founder Chip Wilson at a trade show. They started putting the silver threads in workout shirts and socks. Brands like Nike, Adidas, The North Face, Ralph Lauren and Athleta followed. Besides socks, the military put them in underwear and sleeping bags. NASA started using the material in its base layers for astronauts. "It's pretty challenging to bathe in space and do laundry," says Furey.



A pair of Mack Weldon Silver underwear, which retails for \$38.

MACK WELDON

In 2014, Mack Weldon began putting the silver material in its underwear after an employee tested it by running three miles a day for a week in the same pair of underwear. "There are so many benefits. Not just smell, but cleanliness," says Matthew Congdon, creative director at the men's clothing company. Its underwear sales have grown every year, and it has now expanded the line to include shirts and socks. The innovative technology helps set them apart from the competition, says Congdon, who was previously the design director for men's underwear at Calvin Klein. "The innovation there was how big you could get Calvin Klein on the waistband."

Meanwhile, Noble was struggling to convince hospitals to replace bedsheets, privacy curtains, scrubs, surgical gowns and gloves with its anti-microbial version. Hospitals mostly resisted because they didn't have the budget.

Then the pandemic hit. Noble quickly rebranded X-Static as Ionic+, touting its ability to fight microbes on a range of soft surfaces, whether it's workout clothes, jeans or linens used at a hospital. Fifteen of its existing customers expanded their product line in response to the pandemic. It also attracted three dozen new customers, including United Airlines and several luxury fashion brands. The most common request: Masks, with an extra layer of protection that didn't need to be washed as often.

"I think this is our moment in many ways," says Furey.