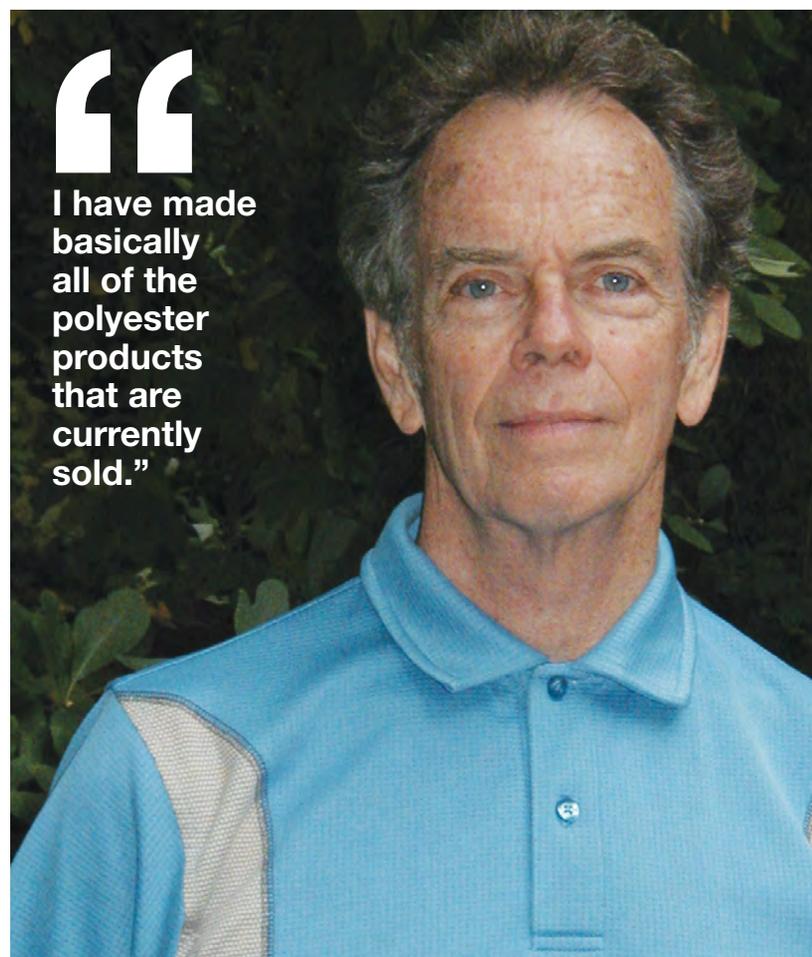
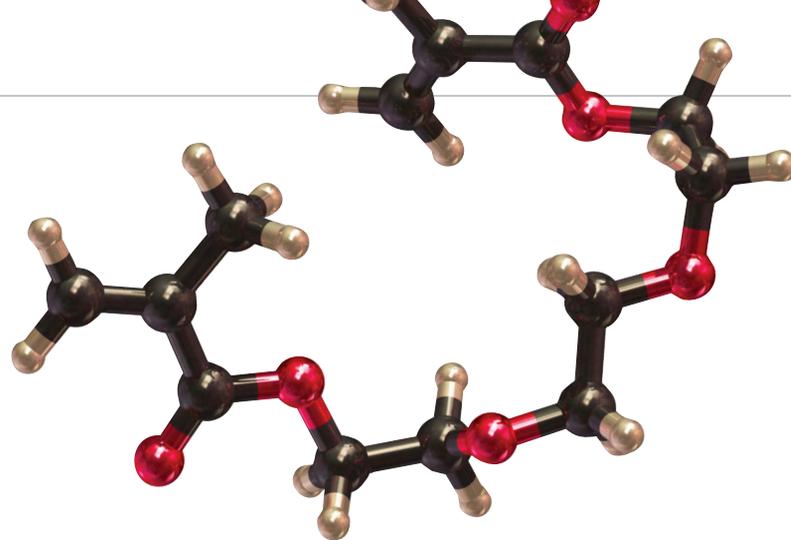




Fabric Guru Dr. Fred Wilson

# On the Front Lines of The Revolution in Specialty Synthetic Fibers



“

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**D**r. Frederic Wilson was a string technician in DuPont’s Dacron Polyester lab back in the 1960s. With lay-offs looming, he was hired away in 1979 by the then unknown, Bill Gore. The next 11 years were spent in Elkton, MD, working as part of the team that perfected the venerable membrane, allowing it to spread across specialty markets and change the way we think of performance outerwear to this day. He eventually created a new technical standard with eVent and spent a seven year stint with BHA/GE. Most recently he has parked his lab table with the Cocona group, where he is director of research and development and again creating innovative polyester fabrics. The circle is complete, and along its circumference Dr. Wilson has witnessed the ground floor development of specialty synthetic fibers, the creation of exceptional outerwear fabrics and the advancement of micro particle composite fiber. In our field, Dr. Fred, as he is affectionately known, has seen us go from covered wagons to jet planes. We caught up with him, received a quick lesson in chemistry, and got to hear a couple of stories.

Dr. Wilson recounted several memorable development stories including one about a single fiber stronger than Kevlar and more fire retardant than Nomex; both those development teams shared lab space with his group.

**What is your favorite space age fiber story?**

“At DuPont I was hired into what was a James Bond kind of factory, all stainless steel, and it made Dacron polyester. DuPont had trained me to make fiber and I became very skilled as a string mechanic. I have made basically all of the polyester products that are currently sold. (We) did some really cool things. I was part of a team that made a fiber that was suppose to replace cotton. What happened was it was a technical success but a business catastrophe. It came out to have the same cost as cotton. Why would you make a synthetic product to replace cotton? Basically what we did was really impossible to do. We managed to make a melt extruded fiber, which had pores in it, basically a gas-filled fiber, very porous and it was melt spun fiber, which means it had high productivity... pounds per hour. We were making a cotton substitute — it acted like cotton, absorbed humidity. Marketing looked at the cotton substitute, and ... (he just shrugs).

**Why wouldn’t someone pull this off the shelf and use it today?**

“Well, DuPont is out of the fiber business.”

**Would you provide us with an explanation of the difference between two of the four waterproof/breathable fabrics you developed?**

“Gore is basically a polyurethane. They use polyurethane to protect the oriented, expanded PTFE. Original Gore-Tex – expanded PTFE – was not durably waterproof. So they discovered a way of coating the PTFE with polyurethane. This is the oliophobic coating. The reason Gore-Tex is better than other polyurethanes was that Gore’s chemists figured out a way to make the polyurethane more breathable and a way to use the expanded PTFE as a lattice to cast very thin layers of polyurethane onto. But it reduced the moisture vapor transmission rate ... by half.

**The difference between eVent and Gore-Tex is that eVent doesn’t have any polyurethane on it.**

“eVent was the product of my understanding of what Gore-Tex was. I didn’t invent it, I discovered it. The difference between eVent and Gore-Tex is that eVent doesn’t have any polyurethane on it. The (Gore) polyurethane is reinforcement for the surface, and an oil barrier. eVent uses a different approach; they use a flouro-chemical treatment to impart additional oil barrier properties to the expanded

PTFE. It’s an oil repellent treatment that retains the air permeability but acts as an oil barrier. It has a moisture vapor transmission rate that is easily twice as good as Gore-Tex. It’s a different kind of product; it’s not bomb proof, its good solid comfortable product — it’s air permeable.” ●