

Research Reporter

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Successfully translating research from the laboratory to industry

Paul Zelisko
Department of Chemistry

Most people, when they hear “silicon,” think of either breast implants or bathroom caulking. Paul Zelisko has to combat the popular fear of silicon, the product of media attention given to the fallout from faulty breast implants of a few decades ago. For Zelisko, silicon and silicones are the basis of a wide-ranging field of research. Despite silicon’s lingering reputation, his enthusiasm is infectious.

After all, silicones are all around us – in shampoo, deodorants, antiperspirants, cosmetics, and as an anti-foaming agent in laundry detergents, soft drinks and beer. As Zelisko says, “nobody wants to be in a situation like in the old cartoons where bubbles are taking over your house.”

“That’s the irony with the fear of silicon. When I go to conferences and speak to people who actually make biomedical devices, they’re afraid. If it’s silicon, they don’t want to hear about it, they don’t want to put it in the human body, but the fact is if you’ve had a beer or a pop that day, you’ve consumed it.”

Silicon’s ability to “breathe” has led Zelisko to explore several new biomaterials from medical devices to wine corks to military protective gear. “That’s one of the nice things about these materials, whether they’re used as coatings or the actual solid devices themselves, they breathe very well with oxygen.”

With best practices for external wound care shifting toward exposing the healing skin, silicon is just what the doctor now orders. The new silicon bandages can deliver medication while still allowing the oxygen in the air to help speed the healing process.

Arguably a more appetizing application for Zelisko’s research may be in the wine industry. “In order for a bottle of wine to age



Paul Zelisko in his Chemistry laboratory at Brock University

properly, you need oxygen to get at it, but you don’t want other junk from the cork or the environment tainting the wine,” he says. Collaborating with Andy Reynolds from the Cool Climate Oenology and Viticulture Institute (CCOVI), Zelisko has developed a silicon coating for wine corks. With financial support from the Ontario Partnership for Innovation and Commercialization (OPIC), the corks will be tested in the CCOVI laboratories, and if all goes well, the team will file for a full patent in 2008.

A new partnership is in the works with a local manufacturer. Lincoln Fabrics produces specialized fabrics used in protective clothing for police officers and fire-fighters and military personnel. Again, silicon’s “breathability” is key to this research, says Zelisko who was sought out because of his expertise in polymer chemistry. Exploring military applications for his research was unexpected. “It’s not something I ever envisioned getting into,” he says.

*written by Jeannie Mackintosh
Communications Officer, Office of Research Services*