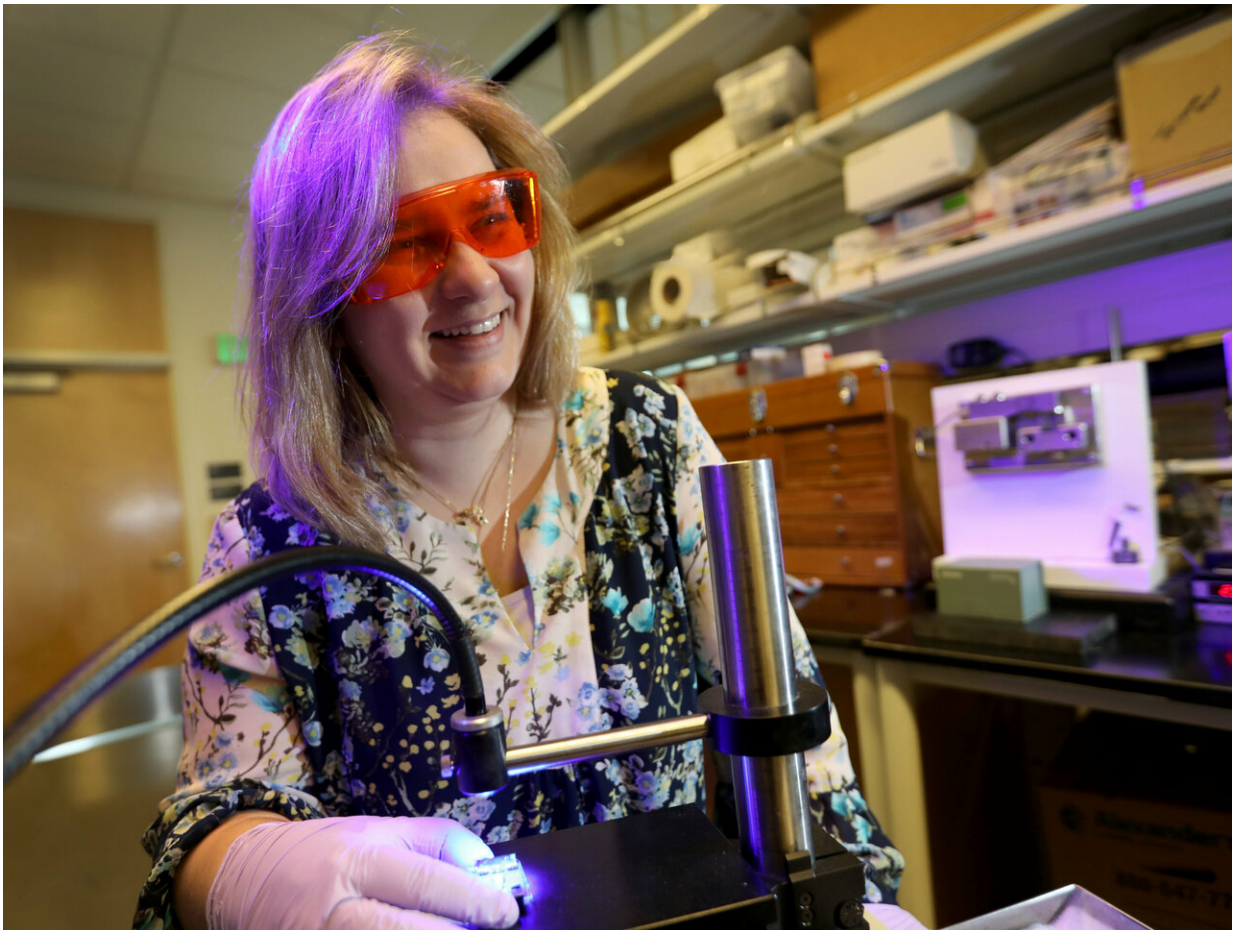


New material could mean fewer trips to the dentist's office

March 4 2019, by Franny White



Carmem Pfeifer, D.D.S., Ph.D. from the OHSU School of Dentistry is working to develop a filling material that is two times more resistant to breakage than standard fillings. Credit: OHSU/Kristyna Wentz-Graff

A compound used to make car bumpers strong and protect wood decks could prevent return visits to the dentist's office.

A team of researchers with the OHSU School of Dentistry in Portland, Oregon, have created a filling material that's two times more resistant to breakage than standard fillings, according to a study published by the journal *Scientific Reports*. The new filling uses the additive thiourethane, which is also in protective coatings for cars and decks.

The team also has developed an adhesive that's 30 percent stronger after six months in use than adhesives that are currently used to keep fillings in place. This new adhesive was described in a recent study published in the journal *Dental Materials*.

Combined, the new adhesive and the composite are designed to make longer-lasting dental restorations.

"Today's dental restorations typically only last seven to 10 years before they fail," said Carmem Pfeifer, D.D.S., Ph.D., corresponding author of the studies published in *Scientific Reports* and *Dental Materials*. Pfeifer is an associate professor of restorative [dentistry](#) (biomaterials and biomechanics) in the OHSU School of Dentistry.

"They crack under the pressure of chewing, or have gaps form between the filling and the tooth, which allow bacteria to seep in and a new cavity to form," Pfeifer said. "Every time this happens, the tooth under the restorations becomes weaker and weaker, and what starts as a small cavity may end up with root canal damage, a lost tooth or even life-threatening infections.

"Stronger [dental materials](#) mean patients won't have to get fillings repaired or replaced nearly as often," she said. "This not only saves them money and hassle, but also prevents more serious problems and more

extensive treatment."

The adhesive described in the Dental Materials study uses a specific kind of polymer—known as (meth)acrylamides—that is much more resistant to damage in water, bacteria and enzymes in the mouth than standard adhesives currently used in dentistry. The composite material described in *Scientific Reports* uses thiourethane, which holds up much better to chewing.

More information: Ana P. Fugolin et al. Use of (meth)acrylamides as alternative monomers in dental adhesive systems, *Dental Materials* (2019). [DOI: 10.1016/j.dental.2019.02.012](https://doi.org/10.1016/j.dental.2019.02.012)

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