

Toward clothes that fix their own rips (w/ Video)

August 10 2016

Ripped pants or a torn shirt usually means a trip to the tailor or a garbage can is in one's future. But scientists could be closing in on a new solution. They report in the journal *ACS Applied Materials & Interfaces* a fabric coating made of squid proteins that allows rips in cotton, linen and wool to "heal" themselves.

Damage to a variety of surfaces, ranging from biomedical implants to clothing, can limit a product's usefulness. So for years scientists have been working on self-repairing films that could be placed onto products to boost their lifetimes. One approach has been to coat surfaces with multiple layers of polyelectrolytes of opposite charges. When scratched, these molecules diffuse through the film toward the defect and repair it, usually with the help of a little water or a dilute saline solution. But while existing coatings can work quickly, they are often limited. For example, some types crack under warm, dry conditions. Walter J. Dressick, Melik C. Demirel and colleagues wanted to find a more versatile material to use.

The researchers incorporated proteins from squid ring teeth in their coating. These proteins are tough and elastic under both wet and dry conditions. When pressed together in water, cut pieces of cloth that had been dipped in the new coating reattached. In addition to having applications for everyday self-healing clothing, the researchers say the substance could be used as a "second skin" barrier that would protect wearers from chemical and biological warfare agents.

More information: David Gaddes et al. Self-Healing Textile: Enzyme Encapsulated Layer-by-Layer Structural Proteins, *ACS Applied Materials & Interfaces* (2016). [DOI: 10.1021/acsami.6b05232](https://doi.org/10.1021/acsami.6b05232)

Provided by American Chemical Society

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