

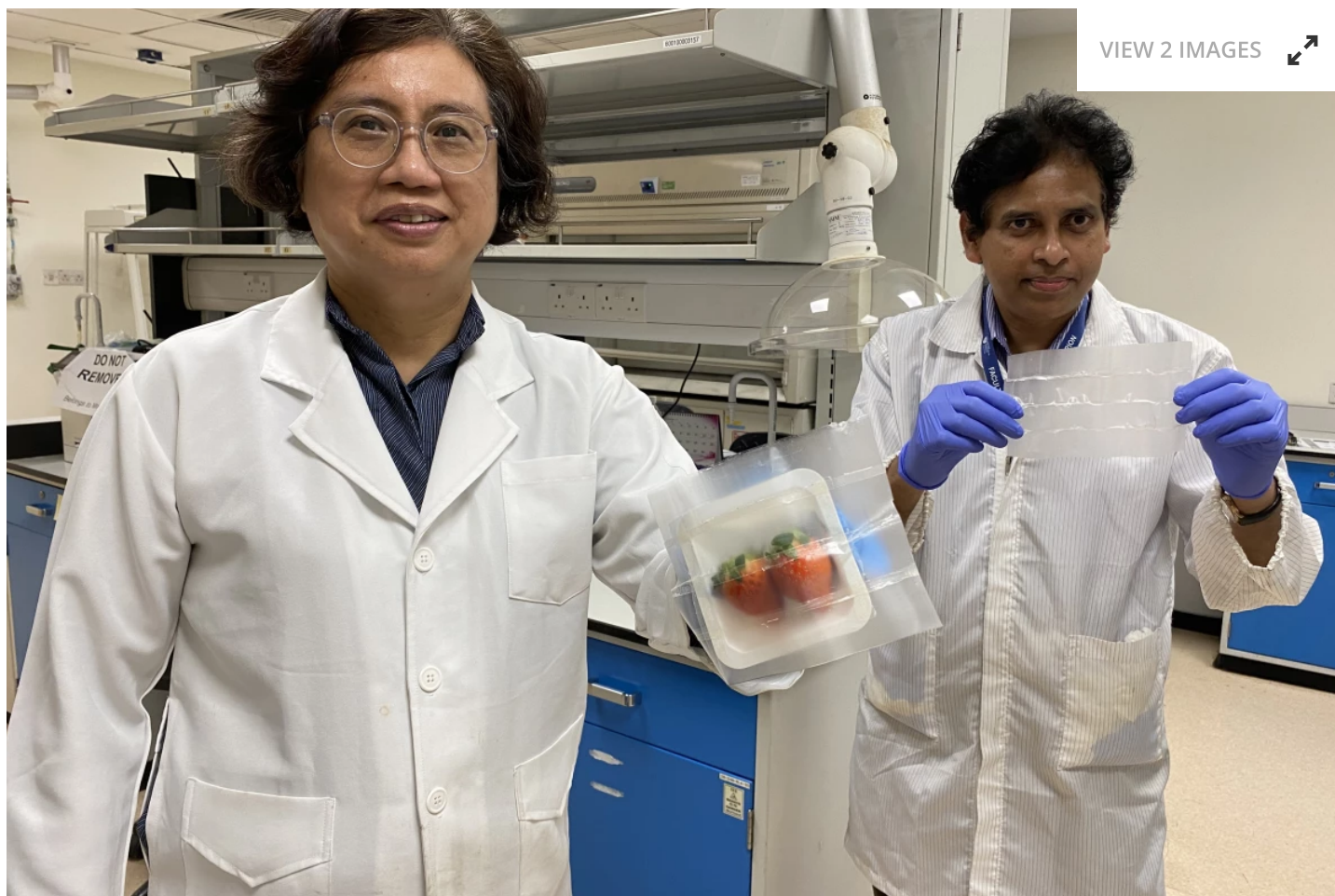
MATERIALS

# Corn-based biodegradable film shown to help fresh foods last longer

By Ben Coxworth  
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*Prof. Mary Chan (left) and Dr. Suresh Kumar Raman Pillai, with samples of the antibacterial film* Nanyang Technological University

It's ironic that even though many people are starving, a great deal of food gets discarded because it spoils before it can be eaten. A new natural-source packaging material could help, by making foods last longer – plus it's biodegradable.

Developed by scientists at Harvard University and Singapore's Nanyang Technological University (NTU), the material takes the form of a transparent film.

Made via an [electrospinning](#) process, its base fibers consist of a corn protein known as zein, along with starch, cellulose and other naturally derived polymers. Those fibers are infused with natural antibacterial compounds such as thyme, citric acid and acetic acid.

When the film is initially placed around a food item like meat, fish or fresh produce, the antibacterial compounds remain within the fibers. If the humidity rises or if certain enzymes are produced by harmful bacteria, however, those compounds are automatically released – they then proceed to kill the bacteria along with any fungi that may be present, keeping the food from spoiling.



*Strawberries wrapped in the film lasted three days longer than a control group kept in baskets* Nanyang Technological University

In lab tests, fresh strawberries that were wrapped in the film lasted seven days before developing mold, as compared to four days for strawberries which were kept in regular fruit baskets.

Additionally, as mentioned, the material fully biodegrades once discarded. It should also be noted that the zein is obtained from corn gluten meal, which is a waste by-product from the production of ethanol – this means that corn crops wouldn't have to be grown solely for use in the film.

It is hoped that the material may be commercialized within the next few years.

"The sustainable and biodegradable active food packaging, which has inbuilt technology to keep bacteria and fungus at bay, is of great importance to the food industry," says NTU's Prof. Mary Chan. "It could serve as an environmentally friendly alternative to petroleum-based polymers used in commercial food packaging, such as plastic, which have a significant negative environmental impact."

A paper on the research was recently published in the journal *ACS Applied Materials & Interfaces*.







Source: [Nanyang Technological University](#)

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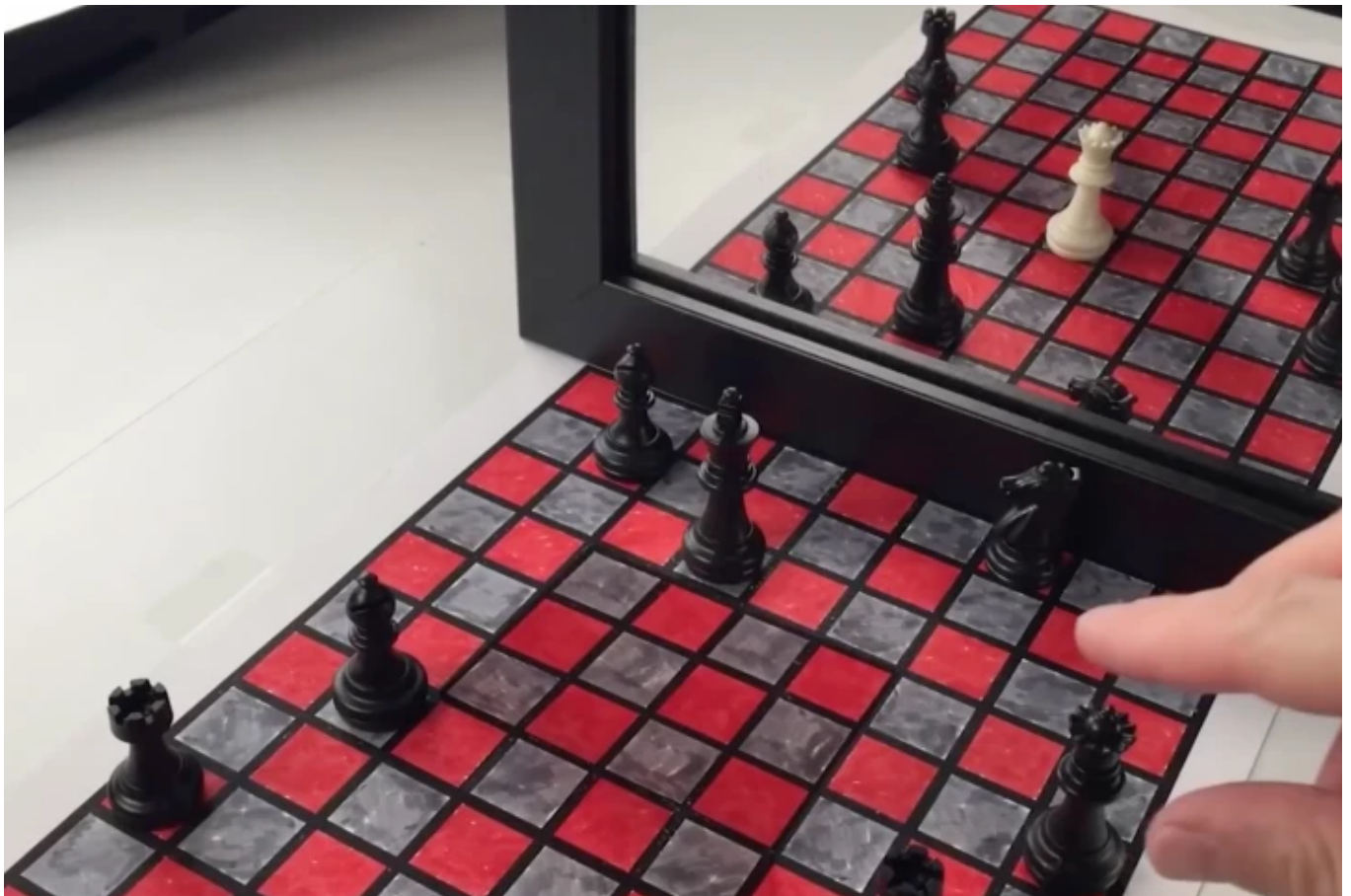




## Ben Coxworth

Based out of Edmonton, Canada, Ben Coxworth has been writing for New Atlas since 2009 and is presently Managing Editor for North America. An experienced freelance writer, he previously obtained an English BA from the University of Saskatchewan, then spent over 20 years working in various markets as a television reporter, producer and news videographer. Ben is particularly interested in scientific innovation, human-powered transportation, and the marine environment.

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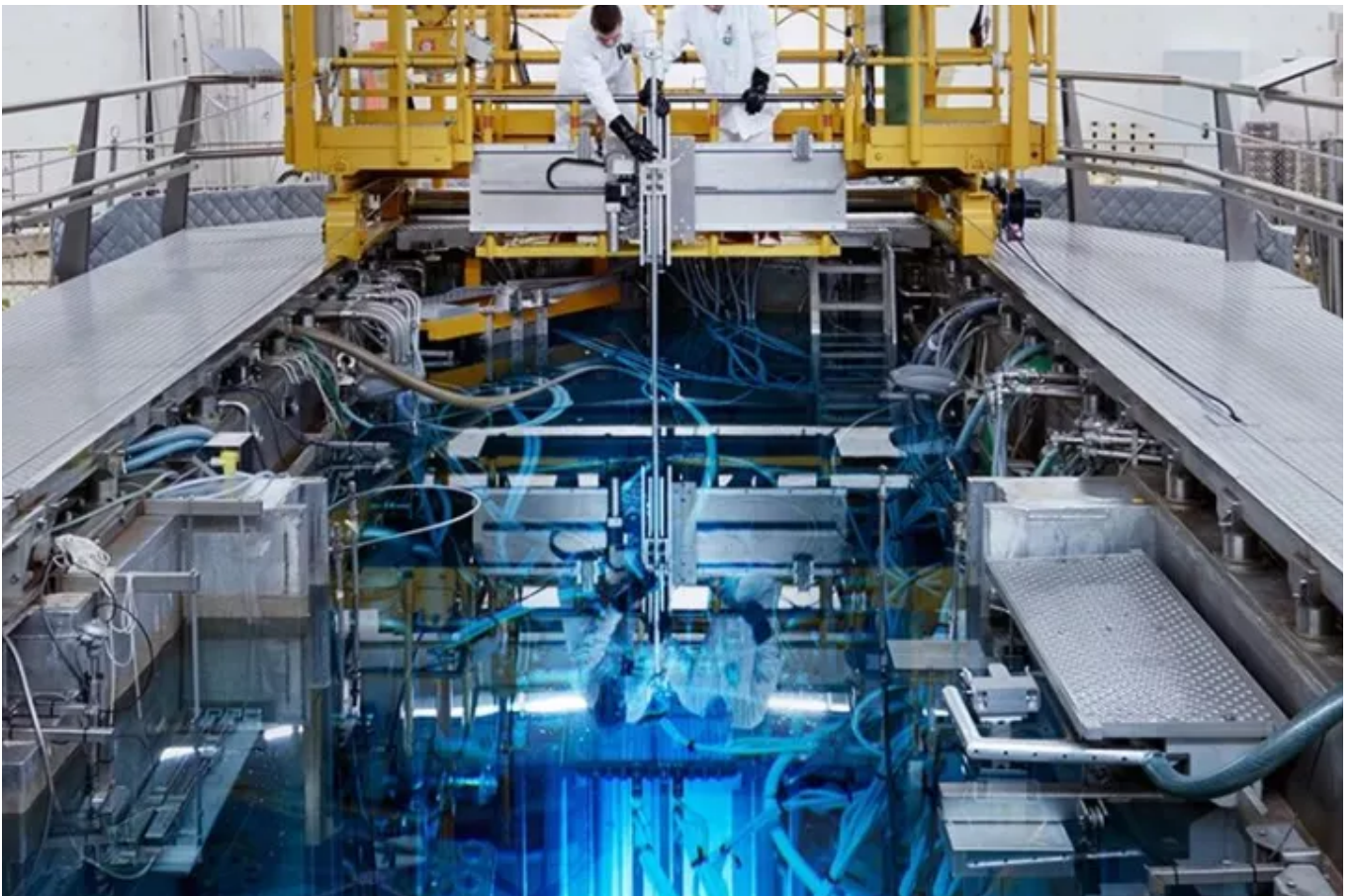
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