

# New copper coating could be the next superbug fighter

July 28 2022

---



Credit: Pixabay/CC0 Public Domain

A new copper coating that kills bacteria quicker and in greater amounts than current formulations could soon be available for hospitals and other high-traffic facilities.

Although current formulations made of pure [copper](#) are antibacterial and self-sanitizing, they kill certain types of bacteria with a thicker [cell wall](#) (Gram-positive bacteria), more slowly than bacteria with a thinner cell wall (Gram-negative).

A team of UBC researchers led by Dr. Amanda Clifford, an assistant professor in the department of materials engineering, have designed a nano-copper [coating](#) that includes bacteria-killing nanoscale features and zinc. The nanoscale features are tiny bumps that can kill bacteria by rupturing their cell wall. Zinc, which is also antibacterial, selectively oxidizes in the presence of copper and helps kill bacteria more quickly compared to pure copper alone.

"Use of our coating could significantly reduce the incidence of contracting bacterial infections from high-touch surfaces in [healthcare facilities](#), such as doorknobs and elevator buttons, since it kills [bacteria](#) using multiple approaches," says Dr. Clifford. "As it contains less copper than other existing coatings or whole copper parts, it would also be cheaper to make."

The team found that the material took just one hour to kill 99.7 percent of *Staphylococcus aureus*—a Gram-positive pathogen commonly responsible for [hospital](#)-acquired infections—compared with two hours for pure copper.

"Not only does this coating kill pathogens faster than pure copper, it helps ensure antibiotics remain effective," said Dr. Clifford. "By using this new formulation, we're killing pathogens before patients become infected and need to use antibiotics against them, slowing the rise of antibiotic resistance."

The researchers have filed a provisional patent for the coating and fabrication process, which is described in a new paper in *Advanced*

*Materials Interfaces.*

"This is currently targeted for hospitals and health care settings because these locations are where the antibiotic-resistant pathogens, such as methicillin-resistant Staphylococcus aureus (MRSA), are an issue. We also don't want to be at a place where we can't use antibiotics," says Dr. Clifford.

The team plans to further evaluate the material against other pathogens, such as viruses, with hopes to eventually commercialize their work.

**More information:** Davood Nakhaie et al, An Engineered Nanocomposite Copper Coating with Enhanced Antibacterial Efficacy, *Advanced Materials Interfaces* (2022). [DOI: 10.1002/admi.202201009](https://doi.org/10.1002/admi.202201009)

Provided by University of British Columbia

Citation: New copper coating could be the next superbug fighter (2022, July 28) retrieved 25 April 2024 from <https://phys.org/news/2022-07-copper-coating-superbug-fighter.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.