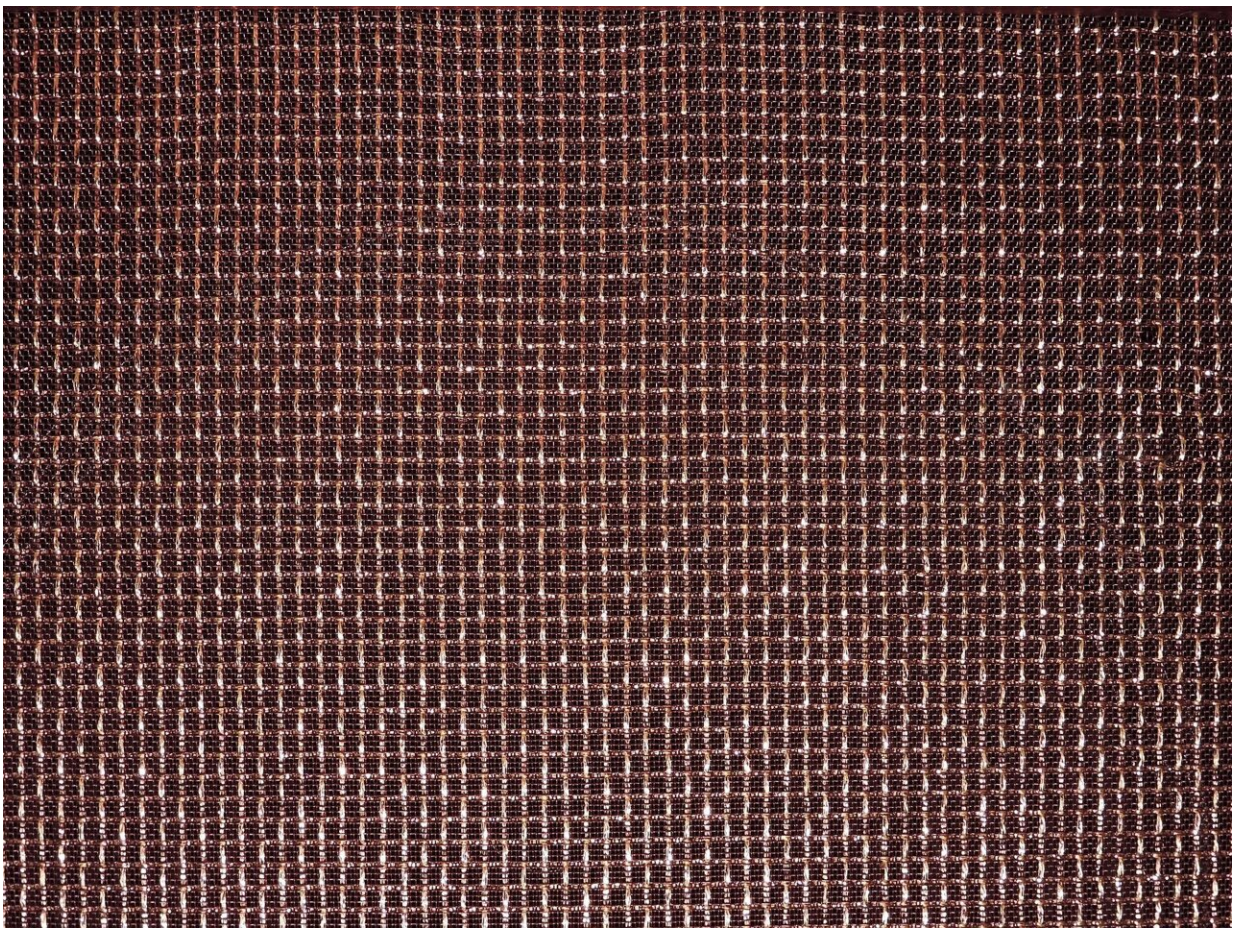


# Wearable antimicrobial copper nanomesh sticks to human skin, killing microbes nearly instantly

June 23 2022, by Bob Yirka

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Credit: Pixabay/CC0 Public Domain

A team of researchers from the University of Tokyo, the Korea Research Institute of Bioscience and Biotechnology and the Center for Emergent Matter Science & Thin-Film Device Laboratory RIKEN 2-1 Hirosawa has developed a wearable antimicrobial nanomesh material that sticks to human skin, killing microbes nearly instantly. They have published their creation in *Proceedings of the National Academy of Sciences*.

Humans have known of the antimicrobial properties of [copper](#) for thousands of years. Ancient Egyptians, for example, used it to treat wounds to prevent infections. In modern times, copper has been applied to counters and tabletops to kill bacteria in homes and hospitals. In this new effort, the researchers took a new approach to using copper to fight infections: making it nearly invisible.

Copper is heavy and can be ungainly when used as an antimicrobial material. To make it easier to use, the researchers created tiny copper strands and spun them together randomly, creating a mesh. They then applied pressure to flatten the mesh. At three microns thick, the result is so thin that it cannot be seen by the human eye or felt when touched. But it is bendable and stretchy, which means it can be used in a variety of ways to kill viruses and bacteria.

One of the main applications the researchers foresee for their nanomesh is as a surface cover for smartphones and tablets. Testing has shown that the nanomesh does not affect the performance of such devices. The goal would be to apply the mesh to surfaces that serve as bacteria and virus transfer sites, for example, doorknobs, light switches and the inside of materials used to create clothes. One possibility, a coated glove so thin the user is unaware of its presence, could perhaps provide the best protection of all, since so many microbes are transferred via the hands.

The researchers suggest their nanomesh is superior to copper films

already in use because it is more potent—the mesh has more [surface area](#), giving it more opportunity to kill microbes.

**More information:** Jae Joon Kim et al, Antimicrobial second skin using copper nanomesh, *Proceedings of the National Academy of Sciences* (2022). [DOI: 10.1073/pnas.2200830119](https://doi.org/10.1073/pnas.2200830119)

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