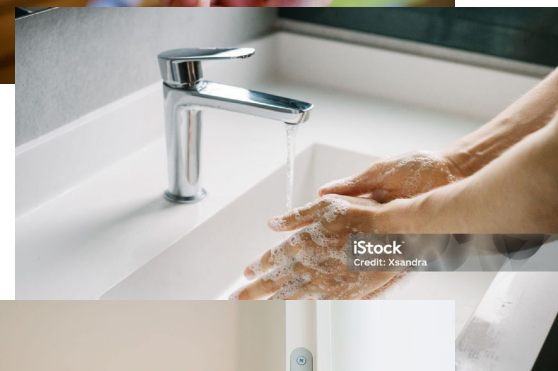




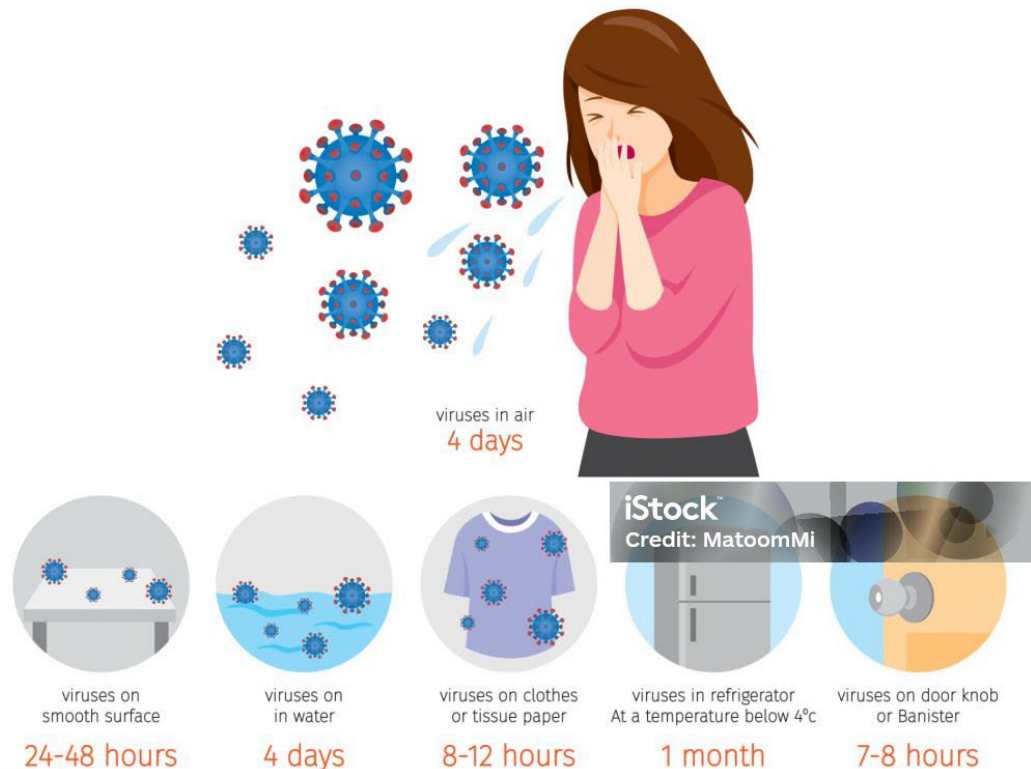
How to Stop the Surface-mediated Transfer of Pathogens

Dr. Mihyun Lee, Scientist
Laboratory for Biointerfaces
Empa, St. Gallen

What we have learned from pandemic



Surface contamination by SARS-CoV-2 was indeed confirmed





Commercial antimicrobial coatings



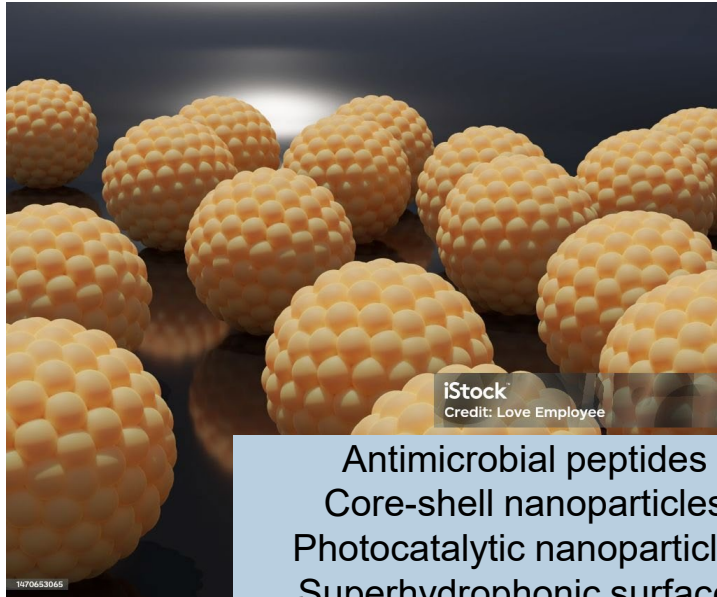
Commercial products:

- Silver-based product
- Copper-based product
- Quaternary ammonium-based product

Limitations to be overcome:
Insufficient antimicrobial activities
Coating instability
Only short-term effect
Dermal irritants, toxicity
High cost

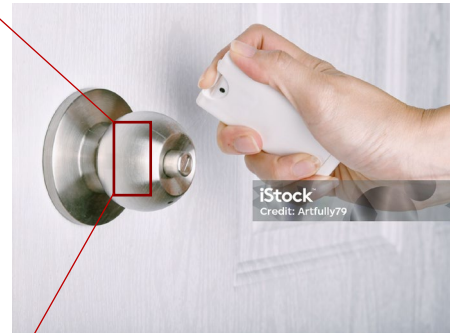
Nanomaterials to reduce transmission of pathogens via high touch surfaces: EU project

A consortium comprising scientists and industrial partners from 14 EU countries along with Switzerland collaborates to advance the development of antimicrobial coatings and pioneer novel standard testing methodologies.



iStock
Credit: Love Employee

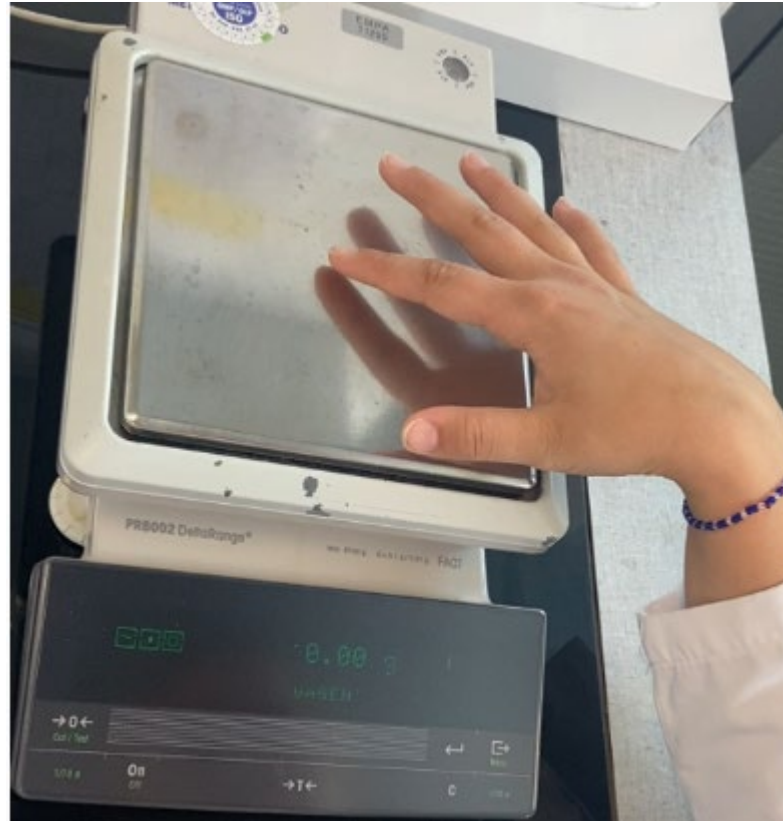
Antimicrobial peptides
Core-shell nanoparticles
Photocatalytic nanoparticles
Superhydrophobic surfaces



iStock
Credit: Artfully79



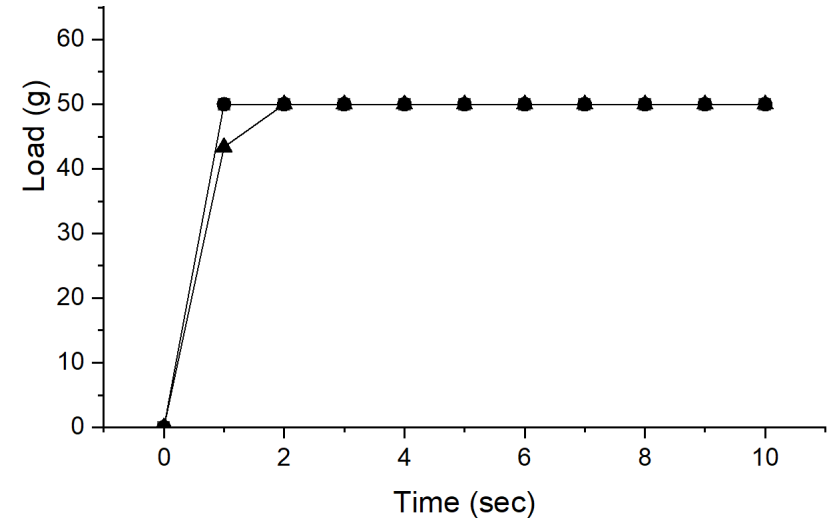
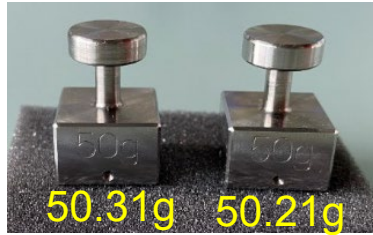
How to quantify transmission of pathogens via surfaces?



A new method with reliable loading and realistic testing condition



prototypes

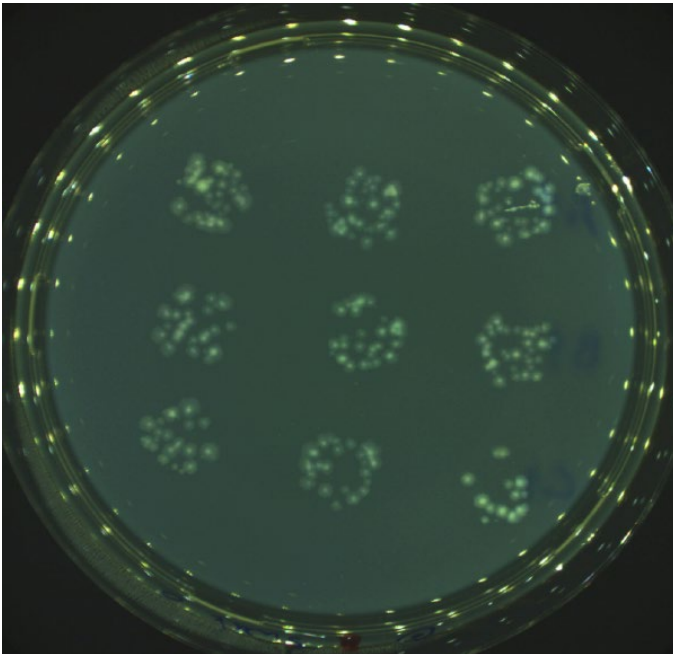


Metal holders were fabricated by Jörg Gschwend @Empa workshop.

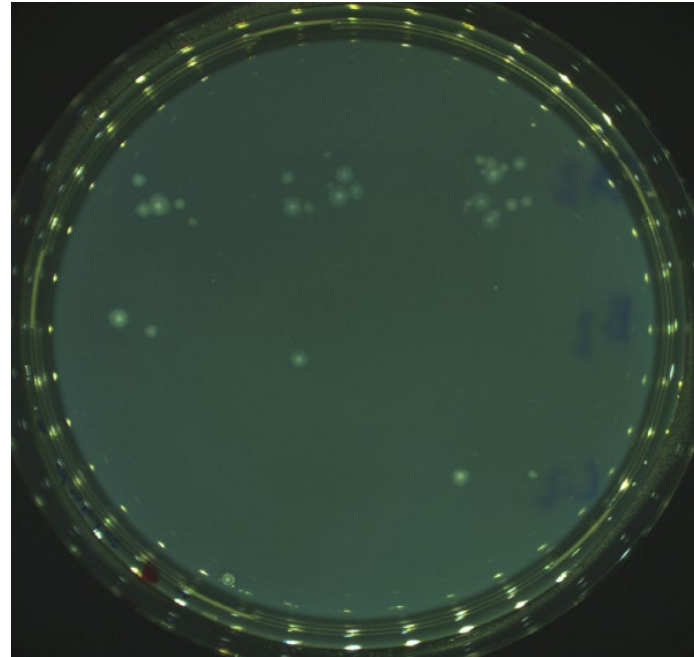
Low transmission rate on silver coating was confirmed!



Stainless steel



Silver coating



Take home messages



- Surface-mediated transfer of pathogens represents a crucial mechanism for the spread of infectious diseases.
- In collaboration with EU partners, Empa is pioneering the development of innovative antimicrobial coatings tailored for high-touch surfaces, offering significant potential in mitigating pathogen transmission
- Furthermore, a novel testing methodology has been developed, which enables accurate assessment of the anti-transmission performance of antimicrobial coatings.

