

Supplementary Information

Robust and Transparent Silver Oxide Coating Fabricated at Room Temperature Kills *Clostridioides difficile* Spores, MRSA, and *Pseudomonas aeruginosa*

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Equations Used for Calculations

Survival and killing are comparisons between the initial titer applied to the solid and the titer recovered from a sample at a time:

$$\log \text{ survival} = \text{mean} \left[\log_{10} \left(\frac{\text{sample titer}}{\text{units}} \right) \right] - \text{mean} \left[\log_{10} \left(\frac{\text{input titer}}{\text{units}} \right) \right] \quad (\text{S1})$$

$$\% \text{ survival} = [1 - 10^{-\log \text{ survival}}] \times 100 \quad (\text{S2})$$

$$\% \text{ killing} = 1 - \% \text{ survival} \quad (\text{S3})$$

Reduction compares CFU measurement for two surfaces, an uncoated and a coated surface, at the same time.

$$\log \text{ Reduction} = \text{mean} \left[\log_{10} \left(\frac{\text{uncoated surface titer}}{\text{units}} \right) \right] - \text{mean} \left[\log_{10} \left(\frac{\text{sample titer}}{\text{units}} \right) \right] \quad (\text{S4})$$

$$\% \text{ Reduction} = [1 - 10^{-\log \text{ Reduction}}] \times 100 \quad (\text{S5})$$

Half-life was calculated from a linear fit of the slope of all log (CFU)–time data for a particular coating. The half-life is:

$$t_{1/2} = -\frac{0.30}{\text{slope}} \quad (\text{S6})$$

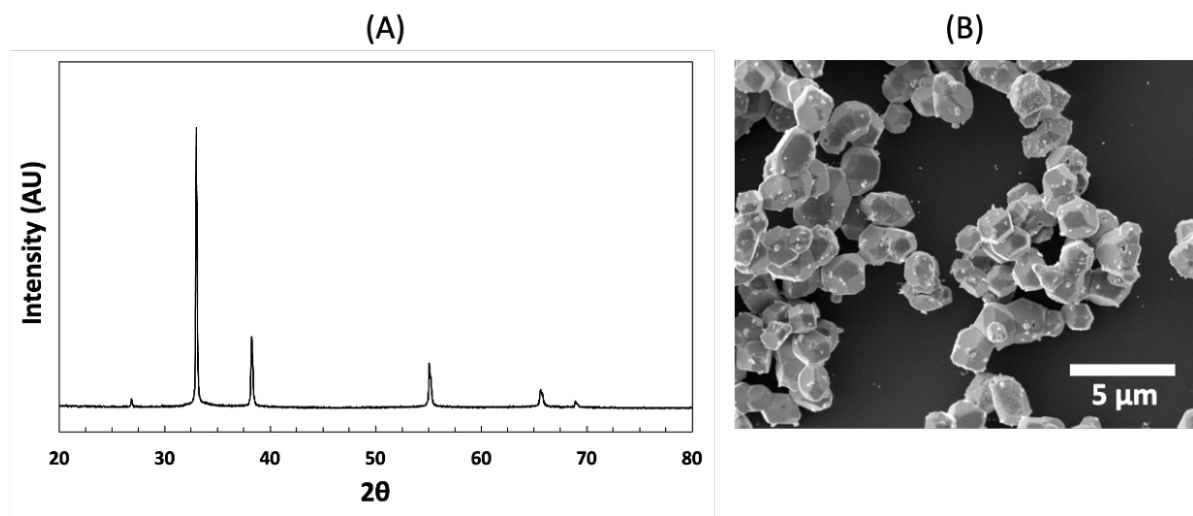


Figure S1. A) XRD pattern of the silver oxide particles demonstrating a cubic crystalline structure. B) SEM image of synthesized Ag_2O microparticles.

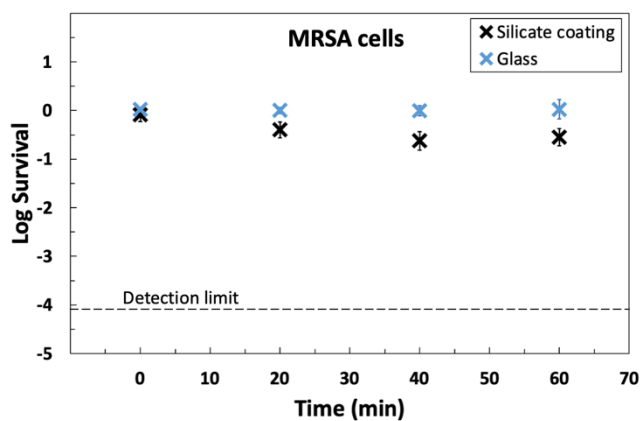


Figure S2. Survival of MRSA cells on a silicate coating with no Ag_2O compared to an uncoated glass slide. The coating was made in the same way as the antimicrobial coatings, but with no Ag_2O . A linear fit to the data for the silicate coating has a slope with a 95% confidence interval in the range -0.0165 to 0.0029, which spans zero and therefore indicates no decline in survival with time.

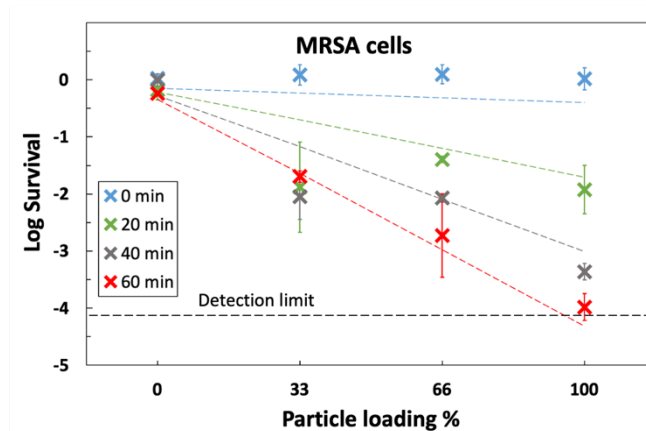


Figure S3. Effect of Ag_2O loading on antimicrobial activity. This is the same data as for Figure 5 but plotted as a function of particle loading. The lines are the plots of Equation 2, each at a fixed time indicated by the figure legend. Overall, an increase in loading led to a decrease in half life.