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Scientists in China use nanoparticles to kill bacteria

August 25, 2017 | News

Researchers used magnetic nanoclusters to immobilize bacteriophages and pull them into biofilms where they killed the harmful bacteria.



Magnetic nanoparticle clusters have the power to punch through biofilms to reach bacteria that can foul water treatment systems, according to scientists at Rice University and the University of Science and Technology of China.

Biofilms can be beneficial in some wastewater treatment or industrial fermentation reactors owing to their enhanced reaction rates and resistance to exogenous stresses. In the present study, researchers used magnetic nanoclusters to immobilize bacteriophages and pull them into biofilms where they killed the harmful bacteria.

The phages were combined with nanoclusters of carbon, sulfur and iron oxide that were further modified with amino groups. The amino coating prompted the phages to bond with the clusters head-first, which left their infectious tails exposed and able to infect bacteria.

The lab is working on phage “cocktails” that would combine multiple types of phages and antibiotics with the particles to inhibit resistance.