

Antibacterial Nanoparticles Inhibit Biofilm Growth on Ceramic Surfaces

Hypothesis:

- ▶ Nanoparticles can create a durable microenvironment (niche) that controls association and proliferation bacteria during biofilm growth. This is important for the performance of ceramic filters used in drinking water systems and medical devices.

Outcomes:

- ▶ Collaboration with microbiologists has shown that different species of mycobacteria have widely varying resistance to silver nanoparticles (AgNP). Resistant mutants have been cultured.
- ▶ AgNP inhibit growth of biofilms but not surface attachment to ceramics.
- ▶ Pitt Ceramic Filter Project employs undergraduate service learning projects to provide training and product development for low-cost ceramic water filters produced in communities suffering from extreme poverty.

Environmental bacteria are commonly present as surface biofilm, the most resistant stage of the bacteria lifecycle.

