

## Nanochemistry for Medicine

Nanotechnology represents one of the most significant scientific advances of the 21st century, with nanoparticles offering unique physicochemical properties due to their high surface area-to-volume ratio. As the demand for efficient drug delivery systems increases, nanomaterials have emerged as promising tools, particularly in addressing challenges like antimicrobial resistance (AMR). Phage therapy, a potential alternative to antibiotics, faces several pharmacological barriers before reaching widespread clinical application. This research project aims to synthesize and characterize silica nanoparticles of varying diameters and investigate their interaction with a UN bacteriophage. Specifically, we assess whether co-incubation with nanoparticles affects the phage's plaque-forming ability. This study represents an initial step toward enhancing phage therapy through nanotechnology-based approaches.

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