Scanning tunneling microscopy of self-assembled viral nanostructures

BENJAMIN ANACLETO, NAT STEINSULTZ, PRASHANT SHARMA,
Department of Physics, Suffolk University, Boston, MA — We use scanning tunneling microscopy to investigate self-assembled monolayers of M13 bacteriophages on graphite surface. The bacteriophages we use have gold binding peptide motifs on their outer protein coat (\(\sim 1\text{\,\mu m}\) long, \(\sim 10\text{\,nm}\) diameter) allowing us to self-assemble gold nanoparticles on graphite. Using scanning tunneling microscopy we are able to resolve sub-molecular structure of the protein coat of M13 bacteriophage. Scanning tunneling spectroscopy allows us to study the binding of gold nanoparticles to the peptide motif on the bacteriophage.