

CATCHING VIRUSES WITH MOLECULARLY IMPRINTED POLYMERIC NANOPARTICLES

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ABSTRACT

Viruses are infectious agents to all organisms from animals and plants to archaea and bacteria, causing many diseases in the world. With the success of protein imprinted polymeric nanoparticles at recognizing and capturing target proteins, this project extends the previous application to imprinting bacteria viruses or bacteriophages onto the surface of polymeric nanoparticles in an effort to 'catch' the phages and prevent them from infecting bacteria. Surface-imprinted polymeric nanoparticles are synthesized using redox-initiated mini-emulsion polymerization. Subsequently, effectiveness of the virus-imprinted polymeric nanoparticles at capturing viruses is assessed through bacteria culture experiments with the FR phages and nanoparticles. The viability of the polymeric nanoparticles is determined through quantifying viral plaques after experimental cultures. Success in using these nanoparticles to capture bacteriophages most probably mean that human viruses can be targeted on in the future, helping mankind overcome the various viral diseases that plague us today.