

Virus Capture



UNIVERSITY OF
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Office of Technology Transfer

Capture and Release of Viruses through Amino-functionalized Silica Particles

Pat. 7,960,180

Background

A new virus capture/release strategy for the concentration of viral particles in water is reported. The method is an improvement to traditional approaches that rely exclusively upon electrostatic attractions between a charged substrate and charged viral particles, which can only be reversed under extremely acidic or alkaline conditions to effect surface charge reversal and subsequent release of captured viruses.

Technology

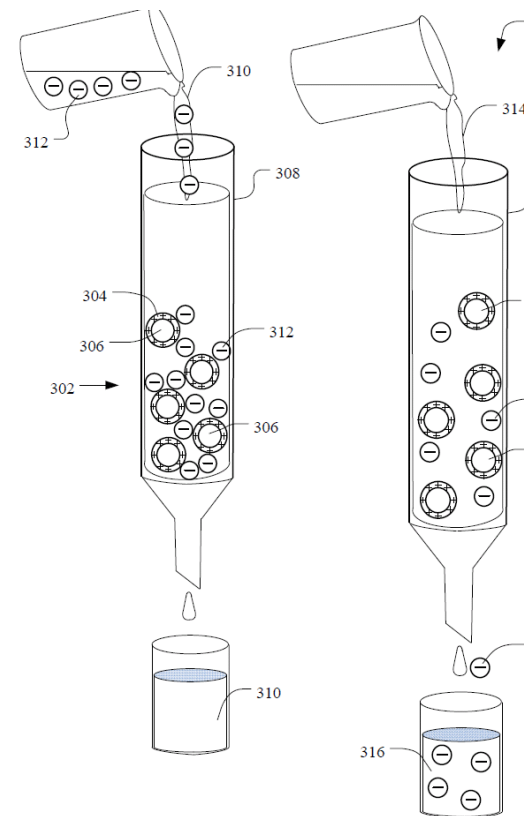
The nanobead virus capture and release technology is useful for concentrating viruses in a complex matrix, as opposed to prefiltering.

The patented method utilizes negatively charged silica beads functionalized with amino-groups using defined length spacer molecules to yield particles with a surface density that is optimized for efficient virus capture. Following capture, viruses can be released using soluble proteins or amino acid-based alkaline eluents.

Beads are functionalized with 3-(ethylenediamino)propyl surface (EPS), 3-(diethylenetriamino)propyl surface (DPS), 3-aminopropyl surface or Lupamin surface treatments, all which have a measureable affinity to viruses.

Advantages

- Virus capture efficiencies that exceed 95%
- Capture viruses in a wide range of concentrations and solution pH ranges
- Effective in large volume, high flow through applications



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this technologies made possible by the efforts of students, researchers and faculty at . . .

UNIVERSITY of NOTRE DAME Department
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Center for Microfluidics and Meidcal Diagnostics

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TO: Tim Joyce, Licensing Associate

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