

Biotechnology and Healthcare

Title

Bilateral asymmetric particles, tetrahedral polymer structure with bilateral asymmetric particles, manufacturing method of bilateral asymmetric particles and method for detecting biomolecules

Abstract

This invention relates to a submicron bilateral asymmetric magnetic sphere, a preparation method thereof, and a method for concentrating, detecting, and quantifying live viruses using the invented technology. Attaching antibodies to bilateral asymmetric magnetic spheres to confer immune activity, and also attaching fluorescence resonance energy transfer (FRET) donor fluorescent dyes to the spheres; attaching fluorescence resonance energy transfer (FRET) to the virus (to be tested) with Receptor Fluorescent Dye. The bilateral asymmetric magnetic spheres with immunological activity are mixed with viruses and undergo a co-self-assembly reaction in an aqueous solution to form a specially co- self- assembled polymer structure.

Benefits

The existing detection methods have a high rate of false positives (unable to determine the life and death of the virus), and cannot be quantified (the number of viruses cannot be measured) which need to do polymerase chain reaction (PCR) for further testing, resulting in increase if the detection time (PCR, more than 4 - 5 hours).

Benefits:

1. Rapid detection (within half an hour)
2. The occurrence rate of false positives is low (can determine the life and death of the virus)
3. Quantification of the number of viruses can be done

Industry Categories

1. Rapid clinical screening virus biotechnology industry
2. Medical product manufacturing industry
3. Aquatic water quality testing industry

Keywords

Self-assembly, co-self-assembly, bilateral asymmetric spheres, mesoporous spheres, fluorescence resonance energy transfer, biosensors

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