Process For Sorting Dispersed Colloidal Structures

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OTHER INFORMATION

KEYWORDS

Sorting, Cell sorting, biostructures, nanoprinting, microcontact printing, colloidal, colloidal particle, diagnostic, biomarker, biomedicine, nanomedicine, custom-shaped

CATEGORIZED AS

- **Biotechnology**
  - Health
  - Other
  - Proteomics
- **Medical**
  - Diagnostics
  - Disease: Blood and Lymphatic System
  - Research Tools
  - Screening
- **Research Tools**
  - Other
  - Screening Assays

RELATED CASES

2009-059-0

SUMMARY

Researchers from the Chemistry and Biochemistry department at UCLA have developed method of separating and/or sorting specific target structures from other non-target structures in a complex mixture using custom-made target-specific colloidal particles.

BACKGROUND

New methods for making custom-shaped colloidal particles offer unique opportunities for capturing and separating specific molecular, particulate, and cellular species in soft colloidal materials that contain a complex variety of components. An example of a soft colloidal material is human blood, which can contain a wide variety of proteins, complexes, and cells in an aqueous solution at a well-regulated pH. Among the current challenges in the fields of biomedicine and nanomedicine, it is important to develop methods of efficiently separating different components and cell types in human blood with a high degree of shape and size specificity. Diagnostic methods that rely on detecting very small numbers of abnormal cells in blood are also highly desirable. Separation of small numbers of abnormal cells in a viable state would be a major breakthrough.

INNOVATION

Researchers from the Chemistry and Biochemistry department at UCLA have developed a new method of separating and/or sorting specific target structures from other non-target structures in a complex mixture. These target structures and non-target structures are typically objects having maximum dimensions in the range of a few nanometers to hundreds of micrometers that are dispersed in a complex aqueous solution. This is achieved by using custom-designed shape-complementary colloidal particles to specifically separate target colloidal structures from non-target colloidal structures based on differences in attractive interactions.

APPLICATIONS

- Separating red blood cells from whole blood
- Organelle isolation from lysed cells
- Separation of macromolecules from complex solution
- Biomarker isolation and detection

ADVANTAGES

- Custom-designed shape-complementary particles allow for greater target specificity
- Designs are specified to bind targets while not binding non-targets
- Custom-shaped particles can be mass produced using existing methods, including spatially patterned radiation and relief deposition templating.
- Custom-shaped particles can contain fluorescent dyes and, surface charge, and attached polymers for further more specific detection and separation.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,377,307	02/19/2013	2009-059

RELATED MATERIALS

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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Measuring Size Distributions of Small-Scale Objects
- ▶ Process For Recycling Surfactant In Nanoemulsion Production
- ▶ Method of Making Multicomponent Nanoemulsions
- ▶ Novel Multi-Scale Pre-Assembled Phases of Matter
- ▶ Ultrastable Nanoemulsions In Disordered And Ordered States
- ▶ Mechanical Process For Creating Particles Using Two Plates
- ▶ Shape-Controlled Particles Having Subparticle Geometrical Features

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