

Silica Microspheres

For Research and Diagnostic Use



BEADS • ABOVE THE REST



Bangs Laboratories' Silica Microspheres are offered with excellent quality, uniformity, and reproducibility.

Description

Inorganic supports, such as silica microspheres, have become increasingly important for a variety of applications. They offer the combined benefits of working with a bead platform and the unique properties of a silica substrate:

- Flexibility (coat any number of bead populations with a biomolecule of choice);
- Large specific surface area;
- Improved binding kinetics over planar surfaces;
- Robust statistics;
- Flexible silanization chemistries;
- Unique refractive index and density;
- Low autofluorescence;
- Low nonspecific binding of many biomolecules;
- Hydrophilicity;
- Easy manipulation.

Nucleic Acid Isolation

The utility of silica has been demonstrated for the isolation of nucleic acid. Negatively charged biomolecules, such as nucleic acid, will bind to silica in the presence of divalent cations (e.g. Ca^{2+} , Mg^{2+}). Protocols have also been developed for the adsorption of nucleic acids to siliceous supports in the presence of salt and chaotropes (1,3). Newly developed protocols for binding of DNA to glass surfaces may be adapted for use with silica microspheres (2,4).

Cells and Biomolecule Purification

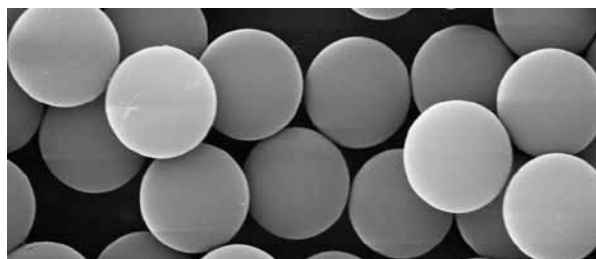
With its high density, silica has also been utilized as an alternative to other supports (e.g. magnetic particles) for the separation of cells or biomolecules. An antibody or other suitable capture molecule is first bound to functional silica. The coated silica microspheres are then mixed with sample to bind the targeted cell population(s) or analyte(s). Centrifugation or simple settling may then be utilized to isolate the targeted cells or biomolecules.

Our silica microspheres have been utilized for these applications and many others. See our collection of TechNotes (www.bangslabs.com) for protocols and additional references.

We offer a range of bead sizes (from $\sim 0.2\mu\text{m}$ – $8\mu\text{m}$) to meet the requirements of a variety of applications. If we don't have a suitable product, we would be glad to discuss with you our capabilities for customization.

Functionalized and Coated Silica

Carboxyl, amine, and streptavidin silica are available in our standard offerings and in three standard diameters: $\sim 0.5\mu\text{m}$, $\sim 1.0\mu\text{m}$, and $\sim 5.0\mu\text{m}$.



Scanning Electronic Microscopy image of Bangs Laboratories' ($4.14\mu\text{m}$) silica microsphere.

PLAIN SILICA

Cat. # Product Description

SS02N $\leq 0.49\mu\text{m}$

SS03N 0.50-0.99 μm

SS04N 1.00-2.49 μm

SS05N 2.50-4.99 μm

SS06N $\geq 5.00\mu\text{m}$

AMINE SILICA

Cat. # Product Description

SA02N $\leq 0.49\mu\text{m}$

SA03N 0.50-0.99 μm

SA04N 1.00-2.49 μm

SA05N 2.50-5.00 μm

PLAIN SILICA

Cat. # Product Description

SC02N $\leq 0.49\mu\text{m}$

SC03N 0.50-0.99 μm

SC04N 1.00-2.49 μm

SC05N 2.50-4.99 μm

STREPTAVIDIN SILICA

Cat. # Product Description

CS01N Silica / Streptavidin

References

1. Boom WR, Adriaanse HMA, Kievets T, Lens PF. Process for isolating nucleic acid. 1993. US Patent 5,234,809.
2. Dederich DA, et al. Glass bead purification of plasmid template DNA for high throughput sequencing of mammalian genomes. Nucleic Acid Res 2002; 30(7):e32.
3. Engelstein, M, et al. An efficient, automatable template preparation for high throughput sequencing. Microbial and Comparative Genomics 1998; 3(4):237.
4. Kumar A, Larsson O, Parodi D, Liang Z. Silanized nucleic acids: a general platform for DNA immobilization. Nucleic Acids Res 2000; 28(14):e71.



Bangs Laboratories supplies a large variety of uniform polymeric and silica microsphere products setting the standards for diagnostic, research, and flow cytometry applications. No matter the project, we have a product that serves or we'll work to custom-design a solution to fit. And that's not the half of it.

We also stand behind our products. Regardless of the size of your question or the size of your company, we offer tech support, absolutely free.

Sound interesting? Give us a call.



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