Painless Particles®

Global Newsletter
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Bangs Laboratories, Inc.
A DIVISION OF POLYSCIENCES, INC.

BEADS ● ABOVE THE REST™

In This Issue

The *Book of Beads*!

The Bangs' 2008-2009 *Book of Beads* Catalog is now available for your perusing and purchasing pleasure. To receive your free copy, please contact our friendly Customer Service Department at 800.387.0672 or **info@bangslabs.com**.

What? Bargain Beads?!

Are you starting a new research project, needing some microspheres, or simply looking for a bead, but not sure which one is right for you? We suggest starting with our *Bargain Beads*. After all, you always look at the sale racks first when you shop in a store, don't you? It's the same thing in our *Bargain Beads* section.

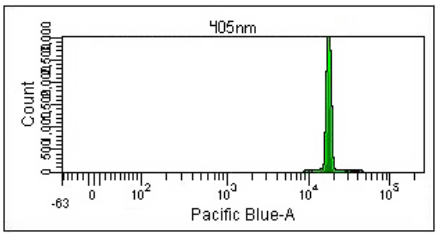
See our online list of regular Bangs beads for special prices on end-of-run, "close-outs," or left-over lots **(www.bangslabs.com)**. Many sizes, colors, and surface modifications are available. And, if you don't see what you're looking for, simply call our Customer Service Department at 800.387.0672. The list changes frequently, and they can help you find the perfect beads for your research needs. Give our *Bargain Beads* a try. Shhh! We won't tell.

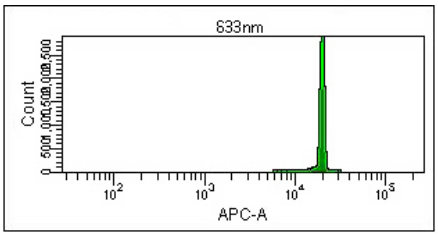
Full Service? *Full Spectrum*™

Multi-fluorescent Full Spectrum™ microspheres offer a convenient means to perform initial daily QC and set-up on the flow cytometer. Beads may be run to validate basic performance criteria on a daily basis, with channel values charted to track instrument stability over time. As a tool for instrument set-up, a reference peak may be positioned for each detector to achieve initial instrument settings.

Full Spectrum™ microspheres provide a cost-effective solution for conducting the initial daily tasks of the flow lab, and may be used with complementary products as part of a comprehensive program for quality assurance and standardization.

Catalog Code:	885
Excitation (nm):	355, 405, 408, 633
Emission:	Full Spectrum
Diameter:	~7-9µm





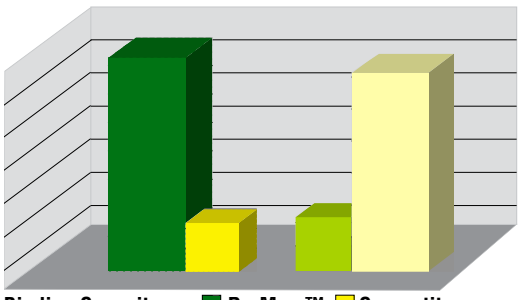
Wishing for a Star? Try ProMag™!

Developing a magnetic particle assay? Let us introduce you to ProMag™, our star performer!

- Low nonspecific binding
- High coating capacity
- Exceptional uniformity
- Rapid separations
- Excellent reproducibility
- Reasonably priced

Once you see these little beads in action, we're sure that you'll be a fan too. Don't wait! Call Customer Service today!

ProMag™ versus the Competiton



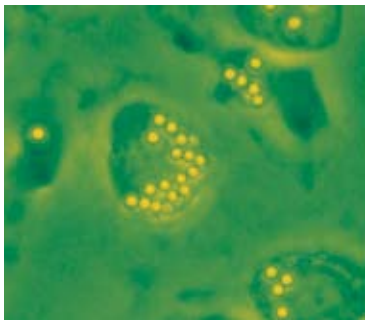
Phagocytosis

Who's Hungry?

The human immune system embodies multiple defenses against pathogens and other harmful particles, with dual systems of innate and adaptive immunity affording a continuum of protection. Phagocytosis is a vital part of innate immunity, with phagocytic cells providing the first line of defense through the ingestion of pathogens. Phagocytosis also plays an important role in inducing acquired immunity, regulating the body's immune response, and other housekeeping duties, such as apoptosis.

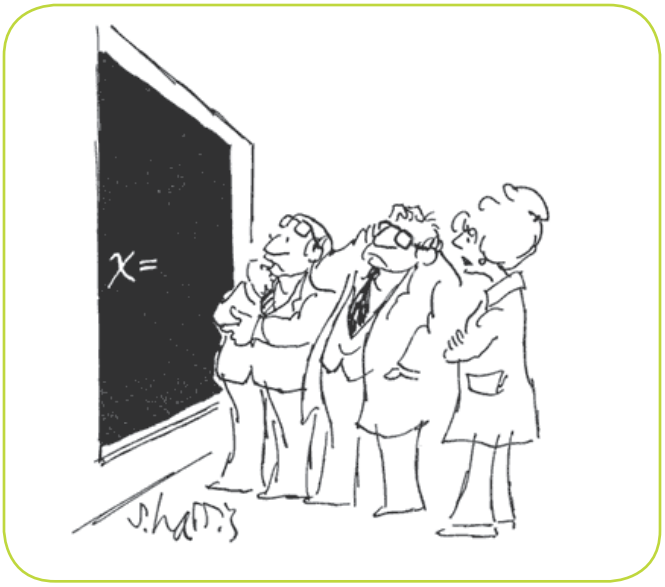
The use of fluorescent microspheres as nonbiological surrogates has permitted a deeper understanding of phagocytic cells and processes, and has furthered the development of drug targets and carrier systems to combat infection, cancer, and immune system disorders.

Bangs offers a wide selection of fluorescent microspheres that match common microscope and flow cytometer filters. These microspheres are internally-dyed, so their surfaces remain free for coating with opsonins. We additionally offer microspheres surface-labeled with FITC, which may offer advantages for flow cytometric analyses and for distinguishing internalized from surface-attached beads. Contact our Customer Service Department or consult our online Product Selection Guide for a full listing of fluorescent microspheres, and see Product Data Sheet 727 for a basic phagocytosis protocol.



Internal Fluorophores	Ex	Em	Filter
Plum Purple	360	420	DAPI
Glacial Blue	360	450	DAPI
Dragon Green	480	520	FITC
Envy Green	525	565	PE
Flash Red	660	690	Cy5

External Fluorophores
FITC



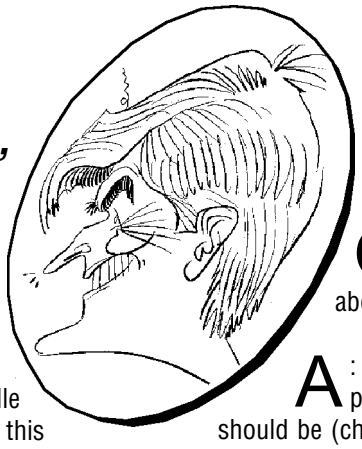
Cartoon reprinted with special permission from Sidney Harris <SHarris777@aol.com> and www.sciencecartoonsplus.com.

Mail Bonding

(Subscribers "do the 'write' thing"!)

- *Thank you very much for your prompt reply. The information that you've supplied will be very useful. A.O., CA*
- *I just recently placed an order for some Protein A microbeads and received them a couple of days later. I could not have asked for better service. It has been a pleasure dealing with your company. Thanks so much for all of your help and the info that I have received. C.N., TX*
- *Thanks for the speedy response (your customer service team is fantastic, by the way!!) A.L., CA*

Ask *"The Particle Doctor®"*



Q: I'm having problems when centrifuging microspheres. My bead counts are so low after staining and washing that I'm afraid they're being broken. Is this possible?

A: Polystyrene-based microspheres can handle the rigors of centrifugation, and we expect this separation technique to work well for spheres ≥ 0.5µm. When you hear us cautioning against overzealous centrifugation, we're most concerned about having too tight of a pellet form, i.e. irreversible aggregation of microspheres.

If spheres are disappearing, it's most likely that they are becoming more hydrophobic with successive washes (as the surfactant concentration is lowered), and are clinging to the sides of tubes. You may centrifuge them with a bit more force to sediment them, or add back in a bit of surfactant to aid in wetting.

Some general guidelines for a benchtop microcentrifuge follow (7.3cm rotation radius, 5 minute centrifugation). These may be used as a starting point for further optimization, if needed.

Uncoated Polymer

> 0.5µm	6,500 - 14,000 x G
1.0µm	3,000 - 5,500 x G
< 5.0µm	1,300 - 3,000 x G

Silica

> 0.5µm	3,000 - 5,500 x G
1.0µm	1,300 - 3,000 x G
< 5.0µm	750 - 1,300 x G

Protein Coated Polymer

> 0.5µm	8,000 - 11,000 x G
1.0µm	5,500 - 8,000 x G
< 5.0µm	2,000 - 5,500 x G

Additionally, to better understand the efficiency of centrifugation steps, you might examine samples of the supernatants under the microscope (40X objective) to determine what isn't being spun down. Also examine the tube, which may have a characteristic smear on the wall, if the beads are sticking to it.

If centrifugation isn't an ideal method, or is inadvisable due to small bead size, see the other separation methods that are described in our TechNote 203, *Washing Microspheres*.

Q: I would like to purchase a fairly large batch of polystyrene microspheres, but am concerned about stability. What shelf life can I expect?

A: We don't assign an expiration date to uncoated polymer microspheres. Polystyrene microspheres should be (chemically) stable indefinitely, provided that they are stored under suitable conditions (e.g. in their original buffer at 2-8˚C). Conditions that would be damaging to the product include freezing (irreversible aggregation), high temperatures (> ~95˚C), or exposure to organic solvents (swelling/deformation/sticking) of beads.

In general, our primary concerns for long-term storage of uncoated polymer microspheres include:

- ensuring that they do not become contaminated.
- ensuring that they are well-dispersed before use.

Though many suspensions contain an antimicrobial, they should be handled with care (aseptic conditions where possible) and stored at 2-8˚C to avoid contamination/proliferation of microbes. If contamination does occur, it may be possible to decontaminate the suspension; see PDS 726, *Decontamination of Polystyrene Microspheres.*

To ensure that spheres are well-dispersed after prolonged storage, roll the suspension for several hours (perhaps overnight). Monodispersity may be evaluated microscopically, or via an automated particle sizer. If aggregation is observed, it can often be successfully treated with the addition of surfactant; see TechNote 202, *Microsphere Aggregation.*

A periodic re-evaluation of your stored material using the same processes and criteria that you use for qualification of new shipments should provide the needed confidence for long-term storage and use. If you do encounter a problem (e.g. contamination, aggregation, etc), it should be possible to re-work and re-qualify the material.

On The Road Again!

- **ISAC (Int'l Society for Analytical Cytology)**
  May 17 - 21, 2008
  Budapest, Hungary
  www.isac-net.org

- **AACC (American Assoc. for Clinical Chemistry)**
  July 29 - 31, 2008
  Washington, D.C.
  www.aacc.org

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"All the world is a laboratory to the inquiring mind." – Martin H. Fischer

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