

# Painless Particles®

Global Newsletter  
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A DIVISION OF POLYSCIENCES, INC.

**B E A D S ● A B O V E T H E R E S T™**

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You're Invited to...

## The Latex Course™ 2006

**What:** The Latex Course™ 2006 is a microsphere education event. Experts in various life sciences fields will share their knowledge with attendees through organized lecture, discussion, and exhibits. Topics will include microsphere applications, assay development, and reagent manufacture. Visit the website for specific details at [www.bangslabs.com/LatexCourse](http://www.bangslabs.com/LatexCourse).

**Where:** Disney's Contemporary Resort, *Walt Disney World®* Resort, Florida

**When:** October 1-4, 2006

**Fee:** \$1475 (purchase orders, VISA, and MasterCard accepted). Fee includes: reception, conference dinner, breakfasts, and lunches. Attendees will also receive the 2006 Latex Course Book (copies of all lectures).

**Registration:** Space is limited – SO HURRY! You can register online at [www.bangslabs.com/LatexCourse](http://www.bangslabs.com/LatexCourse). A brochure is available online to download (or request that one be sent to you) outlining pertinent information, such as program description, speakers and topics, hotel reservations, travel, and registration.

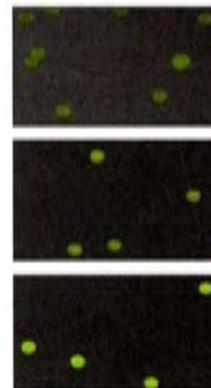


## Year of the Dragon

### New Dragon Green Intensity Standard

OK, fine, so it's the Year of the Dog. But, we're still incredibly enthused about our New Dragon Green Intensity Standard. This kit consists of five populations of ~8µm microspheres dyed with increasing amounts of our ever-popular Dragon Green fluorophore. The different intensity populations may serve as relative intensity standards for applications in fluorescence microscopy, and as internally-dyed beads, they will stand up to the rigors of imaging. Dragon Green is an excellent spectral surrogate for fluorescein, and is suitable for use with fluorescein filter sets.

The beads may also serve as very bright relative intensity or linearity standards for flow cytometry; ask about our QuickCal® Linearity Template if this is your interest.



Dragon Green Intensity Standard populations 3-5.

Catalog Code  
**DG06M**

Description  
**Dragon Green Intensity Standard**

**NEW FREE LITERATURE**

### ISAC CD-ROM

ISAC XXIII International Congress was in May of 2006; but, the CD-ROM from this show is being distributed by Bangs Labs. Contact us to receive your copy.

### FLOW CYTOMETRY SUPPLEMENT

Bangs Labs now has a Flow Cytometry Supplement (technical guide and catalog) available. In preparation for our upcoming full catalog, we were excited with the completion of the Flow Cytometry section and wanted to share it with you right away. Contact us to receive your electronic copy today!

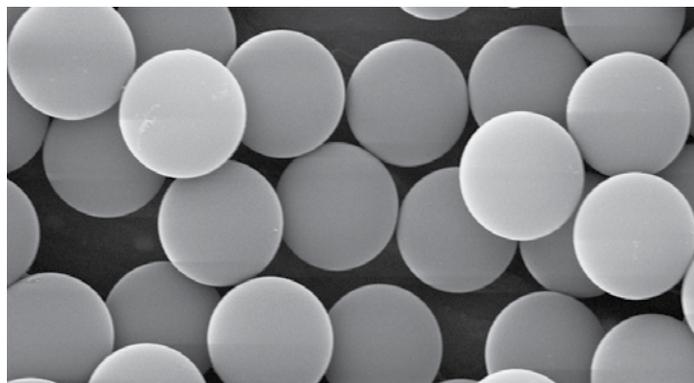


## Functionalized Silica Offering You Even Greater Flexibility

You all know by now the beauty of using silica microspheres and that this inorganic support offers the combined benefits of working with a bead platform and the unique properties of a silica substrate. If you choose to use a silica support, we now have standard offerings of ~0.5 $\mu$ m, ~1.0 $\mu$ m, and ~5.0 $\mu$ m silica microspheres with carboxyl, amine, or streptavidin functionality. Antibodies may be covalently coupled to functionalized supports (TechNote 205), or biotinylated antibodies may be immobilized to streptavidin-coated spheres (TechNote 101).

Our current offerings can be located within the catalog codes identified below. View our online catalog or call for specific lot information.

<u>Catalog Code</u>	<u>Product Description</u>
SC03N	Silica Carboxyl 0.50-0.99 $\mu$ m
SC04N	Silica Carboxyl 1.00-2.49 $\mu$ m
SC05N	Silica Carboxyl 2.50-5.00 $\mu$ m
SA03N	Silica Amine 0.50-0.99 $\mu$ m
SA04N	Silica Amine 1.00-2.49 $\mu$ m
SA05N	Silica Amine 2.50-5.00 $\mu$ m
CS01N	Silica Streptavidin



"IF WE DIDN'T DO SO WELL IN THE EASY BOX, THEY WOULDN'T HAVE GIVEN US THIS COMPLICATED BOX."

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



## You Dirty Rat Anti-Rat beads for your Quantitative Needs!

For the newest addition to our Quantum™ Simply Cellular® line of quantitative kits, we introduce QSC anti-Rat IgG. The kit consists of 5 bead populations: one unlabeled bead population and four populations labeled with anti-Rat IgG antibody, designed to bind calibrated amounts of your rat monoclonal antibodies. Like its QSC anti-Mouse IgG and anti-Human IgG counterparts, the kit allows you to establish a standard curve that may be used to directly quantitate antibody binding capacity (ABC) of samples.

See **NEW** Catalog No. 817 on page 11 of the enclosed Product Selection Guide.

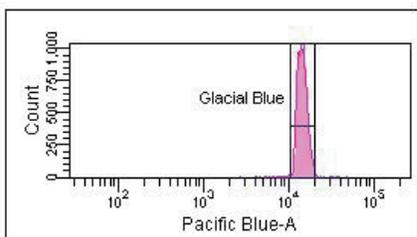
## Ask “The Particle Doctor<sup>®</sup>”



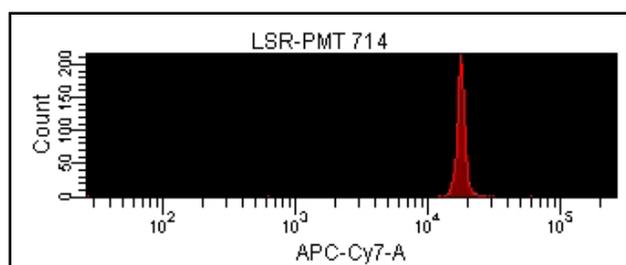
**Q** : We just purchased a customized cytometer, and need additional bead standards for the UV and violet lasers. We would also like something for the red laser with far-red detection. Can you direct us to suitable products?

**A** : Living life on the edge of the visible spectrum, eh? No problem — we’re edgy; we can help. Our line of **Fluorescence Reference Standards** includes a number of products for **UV** excitation, such as DAPI, Hoechst, Indo-1, etc. We also recently expanded our offerings to include specific products for violet lasers (**Glacial Blue**), and for excitation with red lasers for far-red emission (**APC-Cy<sup>™</sup>7 and Far-Out Red**).

Glacial Blue may be excited using a violet (405nm) laser, with detection in the blue region of the spectrum.



Our new surface-labeled **APC-Cy<sup>™</sup>7** standard is our first dedicated standard for red excitation with far-red emission



Single-color **Fluorescence Reference Standards** may be used to QC a specific path of the optical system (laser/filter/PMT), to optimize filter and mirror sets for fluorophores, and to establish a test-specific Target Channel Value for instrument set-up.

Catalog Code	Description
<b>FC06F / 6952</b>	<b>Glacial Blue Microspheres</b>
<b>914</b>	<b>APC-Cy-7 Reference Standard</b>

**Q** : I am developing a bead-based assay for use in our laboratory and other clinical research laboratories, and could use some

pointers on quality assurance and standardization. Where can I find information?

**A** : Our new **Flow Cytometry Supplement**, including a technical reference guide, outlines a basic program for quality assurance and standardization in the flow cytometry laboratory, and provides some references that pertain to the clinical research laboratory in particular. (Supplement available for download from our website.) The Clinical and Laboratory Standards Institute ([www.nccls.org](http://www.nccls.org)) and the International Society for Analytical Cytology (ISAC, [www.isac-net.org](http://www.isac-net.org)) are excellent sources for information. If you're not already a subscriber, you might also sign up for the Purdue University Cytometry mailing list, which is basically an email forum for all things cytometric. You may submit questions regarding protocols, products, instrumentation, regulatory issues, etc., which will be zealously addressed by “flow-ers” from all over the world (<http://www.cyto.purdue.edu/hmarchiv/cytomail.htm>). Email archives are also available for searches.

**Q** : We are a contract lab that receives many requests for magnetic particle-based DNA isolation services, particularly for genomic DNA from whole blood. We need a product that will provide exceptional yield, and is amenable for use on our high throughput automated platform. Can you help?

**A** : Our **SNARE<sup>™</sup> Whole Blood Genomic DNA Purification System (Catalog Code BP691)** features our patent-pending DNA Separation Particles for the efficient isolation of dsDNA. We offer protocols for both manual (microcentrifuge tube) and automated (96-well plate) formats so that you may scale up with ease. Both protocols result in exceptional yield, 20µg DNA / 200µL tube whole blood, or 5-20µg DNA per well (100uL lysate from fresh or frozen whole blood, WBCs or MNCs). Protocols are provided in **Product Data Sheets 691** (microcentrifuge tubes) and **691A** (96-well plate).

We also offer two other DNA purification systems (see below), as well as variety of rare earth magnetic separators for use before scale-up to a high throughput system. Our separators are designed to accommodate a complete range of magnetic separation applications, including cell sorting, mRNA and DNA isolation, and purification of biomolecules.

Catalog Code	Description
<b>LS001</b>	<b>1.5mL Magnetic Separator</b>
<b>MS002</b>	<b>BioMag<sup>®</sup> Multi-6 Microcentrifuge Tube Separator</b>
<b>MS003</b>	<b>BioMag<sup>®</sup> 96-Well Plate Separator</b>
<b>MS004</b>	<b>BioMag<sup>®</sup> Flask Separator (40% off regular price)</b>

"Nothing in life is to be feared. It is only to be understood." – Marie Curie

**Technical References – See our website ([www.bangslabs.com](http://www.bangslabs.com)) for "downloadable" TechNotes and Product Data Sheets or ask for copies by mail or fax. We continually update and add new TechNotes and Product Data Sheets to our website.**

### Product-Specific TechNotes:

101. **ProActive® Microspheres** – Handling tips plus protocols for streptavidin, Protein A, and goat anti-Mouse coated microspheres.
102. **Magnetic Microparticles** – Characteristics, handling tips, and applications for superparamagnetic particles.
103. **Fluorescent/Dyed Microspheres** – Applications, fluorescence spectra, and product descriptions. Plus QuantumPlex™ microspheres for multiplexing, flow cytometry, and confocal microscope standards.
104. **Silica Microspheres** – For immunoassays, nucleic acid capture, velocimetry (LDV, PIV), flat panel display spacers, and others.
105. **Microsphere Size Standards** – Beads for cell size estimation, filter challenge, and instrument checks and calibrations. NIST-traceable standards from 0.27µm to 25µm.
106. **Confocal Standards** – Using our three, bright, single-label 60nm fluorescent beads in confocal microscopy.

### Handling-Specific TechNotes:

201. **Working with Microspheres** – Choosing, cleaning, characterizing, coating beads, etc.
202. **Microsphere Aggregation** – Preventing, detecting, and reversing aggregation. Chemicals and equipment sources.
203. **Washing Microspheres** – Variety of methods for cleaning microspheres; advantages/disadvantages of methods; suppliers of equipment.
204. **Adsorption to Microspheres** – Adsorbing protein onto particles; use of "surface diluents" (blockers); recipes and references.
205. **Covalent Coupling** – Chemical attachment of proteins, nucleic acids, etc. to various types of surface-functionalized microspheres; recipes for buffers, blockers; miscellaneous coupling ideas, vendor information, and references.
206. **Equations** – For calculating particles/mL, area/g, "parking area", settling velocity @ 1G and in centrifuge, etc.
208. **Microsphere Sizing** – Various manual and automated methods are described and discussed, with references and supplier list.

### Application-Specific TechNotes:

301. **Immunological Applications** – Review of commercial applications of microspheres.
302. **Molecular Biology** – Overview of purification and solid phase separation methods.
303. **Lateral Flow Tests** – Putting dyed particles on membranes so they will move properly.
304. **Light-Scattering Assays** – Turbidimetric and nephelometric applications of microspheres.

### Reprints:

402. **Microspheres, part 1: Selection, cleaning, and characterization, and part 2: Ligand attachment and test formulation** – LB Bangs & Mary Meza, *IVD Technology (in Medical Device & Diagnostic Industry)*, **17**, #3, 18-26, March, and #4, 20-26, April, 1995. (Note that you can download these papers at the IVDT website: [www.devicelink.com/ivdt/archive/95/03/009.html](http://www.devicelink.com/ivdt/archive/95/03/009.html) and [.../95/04/006.html](http://www.devicelink.com/ivdt/archive/95/04/006.html)).
403. **New Developments in Particle-Based Immunoassays** – Leigh B. Bangs, *Pure & Appl. Chem.*, **68**, #10, 1873-1879 (1996). Review of 40 years of diagnostic uses of microspheres – from LATs to biosensors.
405. **Applications of Magnetic Particles in Immunoassays** – Mary Meza, Ch. 22 (pp. 303-309) in *Scientific and Clinical Applications of Magnetic Carriers*, U. Häfeli, *et al*, Eds., Plenum Press, New York, 1997.
406. **Measuring Microsphere Binding Capacity** – JM Duffy, JV Wall, MB Meza, LJ Jenki, *IVD Technology*, **4**, #7, 28-34 (1988). (No reprints are available; you can download from our website.)
407. **Bead-based HTS Applications in Drug Discovery** – MB Meza, *Drug Discovery Today: HTS Supplement*, **1**, #1, 38-41 (2000).

**Flow Cytometry Standards?** See the "flow" portion of our website for lots of technical information about flow cytometry standardization in general and our expanding line of flow cytometry standards products in particular.

**If you aren't able to locate answers to your microsphere application or handling/use questions (within our TechNotes, Product Data Sheets, FAQs, References, or Product Brochures, we invite you to call us directly, or to contact "The Particle Doctor®" through our website.**