

# Painless Particles®

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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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## Never Fear...The Latex Course™ 2012 Book is Here!

Unable to attend The Latex Course™ in September? Afraid you missed out on your one chance for an amazing learning opportunity? Well, never fear... **The Latex Course™ 2012 Book** is here!

*Designing Microsphere-Based Tests and Assays* provides comprehensive information regarding practical applications of microsphere technology. This 270-page course book is comprised of manuscripts from presentations given at the last conference by speakers known as experts in the field. Tests and assays are addressed in a range of microsphere-based formats, including turbidimetry assays and immobilization strategies.

To purchase your copy of The Latex Course™ Book for only \$279, contact Customer Service at 800.387.0672 or e-mail us at [info@bangslabs.com](mailto:info@bangslabs.com). For course details, check out [www.bangslabs.com/service/the\\_latex\\_course](http://www.bangslabs.com/service/the_latex_course).

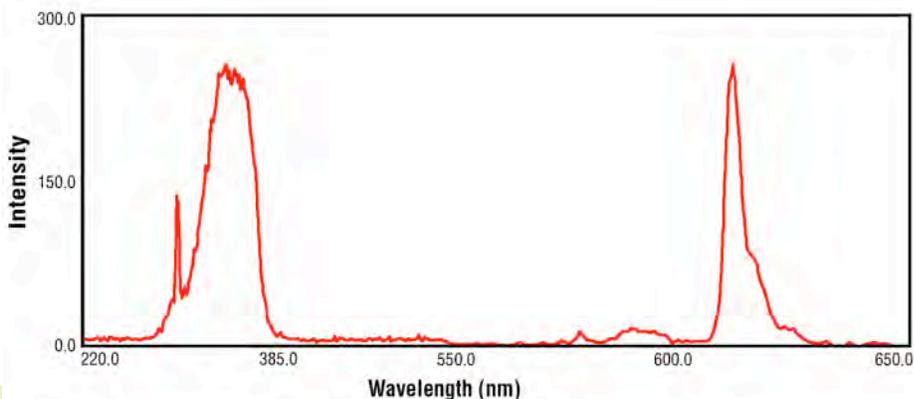
## See for Yourself...

### Why We're Totally Stoke(s)d About Europium Chelate!

Despite the popularity of traditional fluorophores, distinguishing their signal from background autofluorescence can present a challenge in applications where extremely low detection limits are required. Whereas most fluorophores have pico- or nanosecond fluorescence lifetimes, compounds such as rare earth lanthanide chelates exhibit longer (microsecond) lifetimes, allowing fluorescence decay to be monitored over time. This technique provides a means to separate "true" fluorescence signal from short-lived background fluorescence, and an opportunity to improve assay sensitivity.

These same compounds are also characterized by long Stokes shifts, or intervals between fluorescence excitation and emission maxima. This property also lends itself to low background signal, and avoids regions of fluorescence overlap with other common reporters in multicolor assays.

That sounds pretty great, doesn't it?! Well, as it so happens, we were convinced, too! So... we started working on a thing or two in the lab, and are now pleased to offer europium chelate microspheres in diameters of 0.1µm, 0.2µm, and 0.3µm to address the needs of individual assays, including immunochromatographic and microwell-based formats. Our new europium products offer extremely bright fluorescence (excitation: 365nm; emission: 610nm) and exceptional stability, in addition to well-functionalized carboxylated surfaces for the covalent attachment of ligand.



<b>Catalog Code</b>	<b>Product Description</b>	<b>Quantity</b>
FC02F	P(S/V-COOH) • Europium (365, 610)	1mL, 5mL, or 10mL

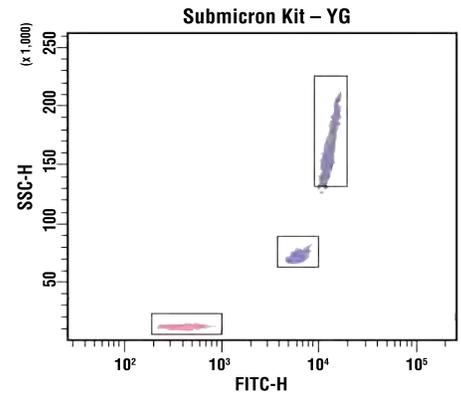
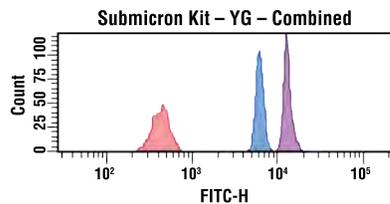
## How Low Can You Go... ?

### Testing the Limits with Our New Small Bead Calibration Kits

Current applications in flow cytometry extend far beyond traditional lymphocyte immunophenotyping, with some involving the analysis of very small particles such as platelet- and endothelial-derived microparticles, subcellular organelles, liposomes, or microbial species. While traditional flow cytometers may be used for these analyses, gating strategies are often modified to overcome the limitations of typical FSC detectors and ensure resolution of small particulates.

Our new **Small Bead Calibration Kits for flow cytometry** permit users to verify the resolution capabilities of the flow cytometer, and to establish appropriate instrument settings and population gates (e.g. SSC / fluorescence) for specific analyses. The use of appropriate bead standards is important for initial instrument qualification and validation for the intended application, and for ongoing QC purposes.

Catalog Code	Product Description
832	Submicron Bead Calibration Kit • 0.2µm, 0.5µm, 0.8µm
833	Micron Bead Calibration Kit • 1.0µm, 3.0µm, 6.0µm



## (Via)Check It Before You Wreck It

### Cell Viability Standards for Instrument QC

Is your laboratory among the fortunate that have an image-based cell viability analyzer? If so, then you've probably taken it through a thorough qualification and validation process and have graduated to the performance of routine instrument QC. Kudos to you, and we hope you've been enjoying our line of ViaCheck™ cell viability and concentration controls.

If not, well...it's never too late for a New Year's Resolution! And if resolutions aren't your thing, that's OK, we don't judge. Though perhaps you should think about taking better care of the instruments that work so hard for you. (Like our respective mothers, we've found that most people succumb to guilt.)

**ViaCheck™ Viability Instrument Standards** are just part of our extensive line of microsphere standards for instrument QC. ViaCheck™ standards can be used to validate and QC image-based cell viability instruments. These standards mimic the light scattering characteristics of live and dead cells on image based viability instruments. To match the characteristics of your cell population, the standards are available in a range of common concentrations and live / dead ratios.

So be sure to (Via)Check out our instrument standards... you'll be glad you did!

Catalog Code	Product Description	Catalog Code	Product Description
VC10B	ViaCheck™ 0% Viability Control	VC50B	ViaCheck™ 100% Viability Control
VC20B	ViaCheck™ 50% Viability Control	VC60N	ViaCheck™ Concentration Control (1 x 10 <sup>6</sup> )
VC30B	ViaCheck™ 75% Viability Control	VC70N	ViaCheck™ Concentration Control (4 x 10 <sup>6</sup> )
VC40B	ViaCheck™ 90% Viability Control	VC80N	ViaCheck™ Concentration Control (8 x 10 <sup>6</sup> )

## Ask “The Particle Doctor®”



**Q** : I have been using my own Excel® linear regression template with Quantum™ MESF beads. I am finding that my quantitative assignments to cells are different than those calculated by your QuickCal® template. Why is this?

**A** : The classic equation for linear regression ( $y = mx + b$ ) is not appropriate for this type of data analysis.

Cytometers make use of log amplifiers, and data may be displayed on a linear scale (e.g. 1024) or log scale (e.g.  $10^0 - 10^4$ ). The calculation is determined by the instrument software and type of scale selected, ultimately, the specific QuickCal® template that is selected. Templates such as 256, 1024, 4096 feature linear data display, and calculations are based upon linear / log (semi-log) regression; other templates (e.g.  $10^0 - 10^4$ , FACSDiVa) feature log data scales and the calculation is from a log / log regression. More on log amplifiers and data displays can be found in Howard Shapiro's book, *Practical Flow Cytometry*, 4th Ed. ISBN: 0-471-41125-6. Additional academic pieces can be found in the literature, e.g.:

- Gandler W, Shapiro H. (1990) Logarithmic Amplifiers (Technical Tutorial). *Cytometry*; 11:447-450.
- Snow CK. (2004) Flow Cytometer Electronics. *Cytometry A*; 57A:63-69.

For more information about using and / or troubleshooting with QuickCal®, be sure to download Product Data Sheet 819: *QuickCal® v. 2.3 Data Analysis Program*.

**Q** : Can I use ViaCheck™ standards to validate my hemocytometer counts?

**A** : As a bit of background, our **ViaCheck™ standards** include both cell viability and concentration controls. The viability controls are mixtures of undyed (live, 20µm) and dyed (dead, 10µm) microspheres suspended at  $1 \times 10^6$  beads, and the concentration controls are suspensions of undyed 10µm microspheres suspended at  $1 \times 10^6$ ,  $4 \times 10^6$ , or  $8 \times 10^6$  microspheres / mL. As part of our manufacturing and QC processes, ViaCheck™ concentrations are confirmed using both a Coulter Z2 particle counter and a Vi-CELL™ XR cell viability analyzer. (Formal Lot-specific values are provided on the Certificate of Analysis that accompanies each product.)

The spheres may certainly be used in support of manual counting methods, though we anticipate greater error and variability

with manual counts. This is due to both the far lower number of counts performed, and inherent variation in manual vs. automated methods. We recommend that ViaCheck™ be used as supplied, i.e. with no dilution that would introduce additional error/variability. As with all standards, they should allow you to understand more about the accuracy and precision of your method.

We also manufacture **SureCount™ Particle Count Standards**, which feature NIST traceable size standards supplied at a count of  $1 \times 10^6$  beads / mL (formal count provided on the Certificate of Analysis). The SureCount™ product line features undyed microspheres in diameters of 3µm, 5µm, 10µm, or 15µm. Full product details for both of these lines are provided on our website ([www.bangslabs.com](http://www.bangslabs.com)).

Catalog Code	Product Description
VC10B - VC80N	ViaCheck™ Viability and Concentration Controls (see Page 2 for specific catalog codes)
CC03N	SureCount™ Particle Count Standards, 3µm
CC05N	SureCount™ Particle Count Standards, 5µm
CC10N	SureCount™ Particle Count Standards, 10µm
CC15N	SureCount™ Particle Count Standards, 15µm



Cartoon reprinted with special permission from Sidney Harris <SHarris777@aol.com> and [www.sciencecartoonsplus.com](http://www.sciencecartoonsplus.com).



"It's not that I'm so smart, it's just that I stay with problems longer." – Albert Einstein

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