



# The Service Detail

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Surface Analysis Systems Newsletter

Spring, 2011

## In This Issue

Introducing the $\mu$ CMA Compact Auger Analyzer.....1	YouTube Video Tech Tips and Product Information.....8
9103 USB Picoammeter — External Bias Option.....4	9103 Application Note: 11-065 Emission Switch .....9
Under Development — Zero Clearance Water Vapor Desorption UV Emitter.....4	Newsletter Naming Contest .....10
New Product — C75-010 Filament .....5	Fused Silica Vacuum Viewports Now in Stock .....11
ALS Fundraising Walk .....5	Repair and Rebuild Services for PHI's and Other Manufacturers' Optics .....12
9103 Application Note: Monitoring Ion Current Stability .....6	RBD Instruments Expands Operations.....12
Follow RBD Instruments on LinkedIn.....6	Custom Coatings on Vacuum Viewports – QUICKLY!....13
Sputter Rate Comparisons.....7	New Product – 3 kV Sputter Ion Source .....13
2011 AVS Symposia and Other Exhibitions .....7	Tech Tip: Adjusting the Scale Factor in AugerScan .....14
11-010 Emission Current Noise Reduction Modification .....8	Surface Science Mailing List .....15
	RBD 147 PCIe Interface Card .....15
	Software Corner Spring 2011 .....16

## Introducing the $\mu$ CMA Compact Auger Analyzer

RBD is proud to announce the arrival of our  $\mu$ CMA (pronounced microCMA), a compact cylindrical mirror AES analyzer that incorporates a 3 kV coaxial electron gun and mounts on a 2.75" (70 mm) flange.

Compact and affordable, the  $\mu$ CMA opens up a whole new world of possibilities for AES analysis including small vacuum experiments, in-situ analysis in MBE and deposition chambers, and silicon wafer or solar film in-line surface analysis. It's now in Beta testing and will be available for sale in the summer of 2011.

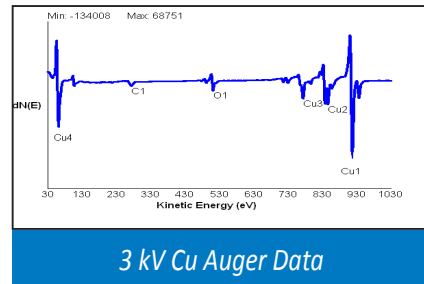
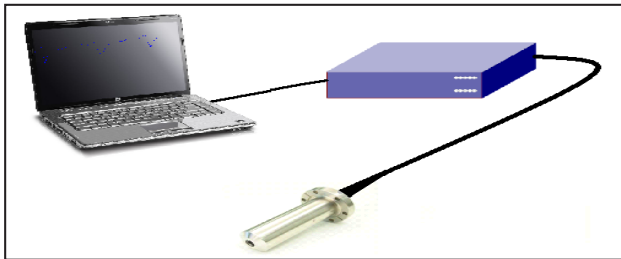


*"... $\mu$ CMA..." continued on next page"*

**Features:**

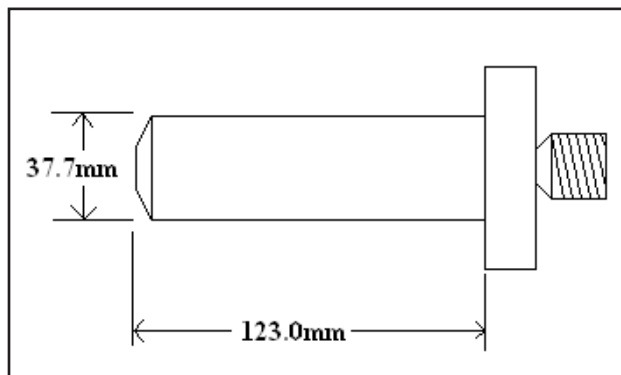
- Compact size
- 3 kV Coaxial LaB<sub>6</sub> Electron gun
- USB interface
- Windows acquisition and data message software
- ASCII commands that let you write your own application
- Optional Z-axis linear translator

The ASCII-based software and USB control work with any PC or laptop to provide you with a powerful and easy to use way to acquire the surface analysis information that you need.



**Preliminary Specifications**

Description	Specification
Mounting	70 mm (2.75") CF
Flange to end of optics	123 mm standard, longer with optional Z translator
Diameter	37.7 mm
End of optics to sample	3 mm
Electron gun	Coaxial
Filament	LaB <sub>6</sub>
Electron Multiplier	Channeltron
Detection	Extended range analog



**Analyzer Dimensions**

## **AES Theory**

Auger Electron Spectroscopy (AES) is an analytical technique that uses a primary electron beam to probe the surface of a solid sample. Secondary electrons are emitted as a result of the Auger effect; the kinetic energy of these electrons is element-specific. Quantitative analysis is accomplished by differentiating the peak energy from the background energy. AES is a surface sensitive technique due to the short mean free path of the electrons, which is just a few nanometers. All light elements except H and He are detected.

The cylindrical mirror analyzer is a variation of the parallel-plate analyzer design. It is currently the most popular type for AES due to the design's high sensitivity and throughput.

### **Additional Resources on AES theory:**

- [Auger Electron Spectroscopy Wikipedia](#)
- [Eagle Analytical Labs AES Theory](#)
- [Michigan State University AES](#)
- [Washington State University AES](#)
- [Johns Hopkins University Principles of AES](#)

## **AES Applications**

The μCMA is an imaging (non-scanning) cylindrical mirror analyzer that was designed for the 80% of AES applications that do not require scanning capability. Some of these applications include:

- Quantization of light element surface films and metal component thermal oxides
- Determination of thin film composition
- Characterization of sputtered layers
- Measurement of passive oxide thicknesses in semiconductors and metals
- Depth profiling to determine quantitative composition of surface and bulk evaporated or deposited layers
- Analysis of the contamination on integrated circuit surfaces

## **Relevant Industries that use AES**

Aerospace	Biomedical	Coatings
Data Storage	Defense	Health care
Plasma displays	Electronics	Energy
Manufacturing	Metals	Mining
Semiconductors	Solar PV films	Telecommunications
Vacuum Deposition		

For more information, please [send us an email](#) or call us at 541-330-0723 x 304.

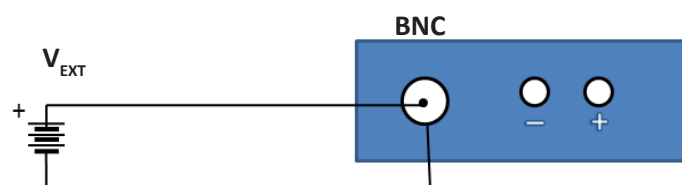
## 9103 USB Picoammeter — External Bias Option

For vacuum applications, the +/- 90 VDC bias option effectively increases the accuracy of electron and ion current measurements by reducing the number of secondary electrons that are generated by the primary electron or ion beam.

But what if you would like to monitor low DC current versus a variable bias voltage?

For these applications, the external bias option works well. Using your own floating programmable power supply, you can control the bias voltage, then record and graph the corresponding DC current. The 9103 can be floated up to 550 V from ground, which is adequate for many applications including characterizing diodes, semi-conductors, and liquids, and for doing resistivity testing.

The graphic below, left, shows the use of a low noise floating external voltage supply as the bias. The external bias input is on the back side of the 9103 as shown in the picture below, right.

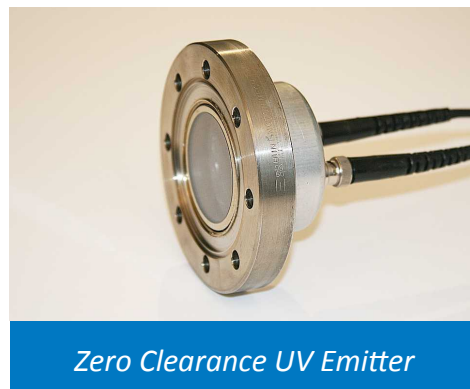


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## Under Development — Zero Clearance Water Vapor Desorption UV Emitter

Our [UVB-100 water desorption system](#) requires a UVC emitter (a mercury vapor quartz tube) to be inserted into the vacuum chamber. For some users, the idea of putting a glass tube that contains mercury into a vacuum chamber is not palatable because no matter how small the chance of breakage is, any breakage at all could introduce a small amount of mercury into the vacuum chamber. In other cases, the standard emitter simply will not fit into the chamber. In response to these concerns, we are developing a zero clearance UV emitter window that enhances water vapor desorption in vacuum systems without needing to insert an emitter into the chamber. Flange sizes will range from 2.75" (DN40) to 12" (DN250) in both CF and KF face types. For larger viewports that produce higher power, a cooling fan will keep the emitter in the proper temperature zone.

The zero clearance UV emitter ("ZCUVE") makes it easier to add water vapor desorption capability to reaction chambers, load locks, and deposition chambers. In addition, for deposition systems, only a simple window shutter will be needed to prevent the UVC window emitter from being coated, rather than the retractable bellows and gate valve that are needed for the standard emitter.



*Zero Clearance UV Emitter*

For more information on how our zero clearance UV water vapor desorption emitter might work for your application, please contact us at 541-330-0723 x 304 or [via email](#).

## New Product — C75-010 Filament

As many of you know, we have been rebuilding the PHI C75-010 filament for 20 years. Now, in addition to the rebuild service (which requires that you send your filament in for rebuild or exchange), we are also able to provide brand new C75-010 filaments. These new C75-010 filaments do not require that you send your old filament back to RBD for exchange.

So, now you have a choice: Send your old filament in for a rebuild or buy a new filament. Whichever option you choose, our C75-010 filaments are guaranteed to meet or exceed original performance specifications.

The C75-010 filament is used in these PHI optics units:

- 10-155 Cylindrical Mirror Analyzer
- 15-255G Cylindrical Mirror Analyzer
- 15-110 Cylindrical Mirror Analyzer
- 25-260/270 Cylindrical Mirror Analyzer
- 04-015 Electron gun
- 06-110 Electron gun
- 10-110 electron gun



The price for the rebuilt/exchanged C75-010 (RBD's part number C75010RF) is \$185.00. The price for a new C75-010 (RBD's part number C75010RE) is \$455.00.

For more information about our C75-010 filaments, please [email us](#) or call us at 541-330-0723 x 310.

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## ALS Fundraising Walk

ALS (Amyotrophic Lateral Sclerosis), more commonly known as [Lou Gehrig's disease](#) is a progressive neurodegenerative disease that kills thousands every year, and there is no cure.

I recently lost my father to ALS and so I know firsthand how devastating this disease is to the victims and their families. RBD Instruments is doing what we can to help fight this disease by forming a company team for the annual Walk for ALS here in Bend, Oregon. Our team is named "More for Les" (in honor of my father, Les).

We have set a goal of raising \$10,000.00 to fight ALS and would like to ask you to help us reach this goal. You can help in two ways:

1. By contributing any amount you're comfortable donating to the ALS society at [this link, in our team's name](#).
2. By joining our team either as a walker on our team here in Bend or "virtually" (in spirit if not in person) [at this link](#). Once you join the team, others can donate in your name by going to this same page, then clicking on the Donate Now link to the right of your name.

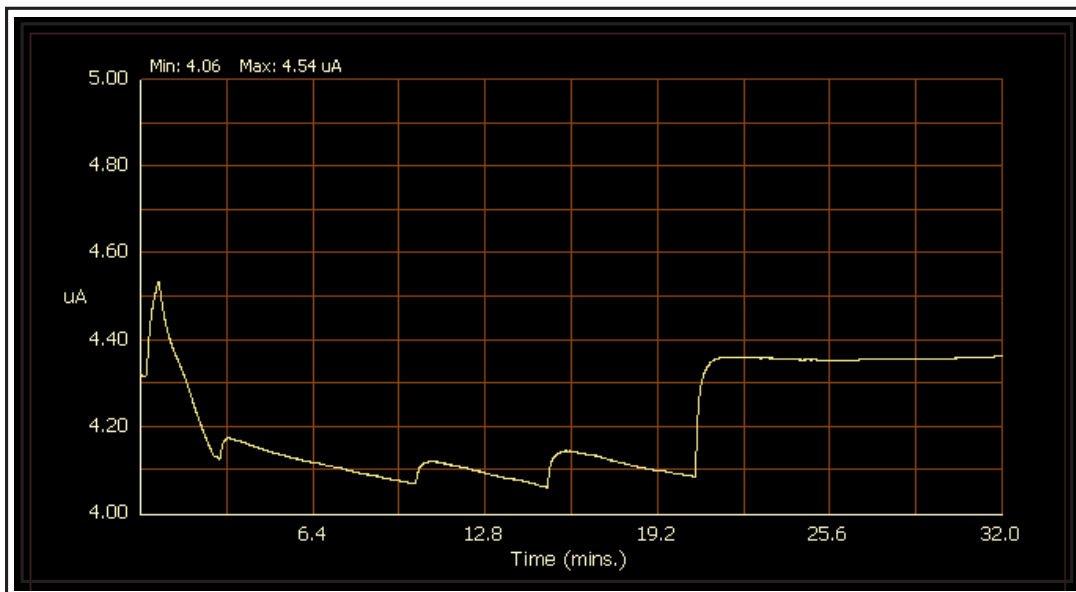
Thank you sincerely for your help and support,

Rena Bennett-Dellwo and the members of our team, "More for Les."



# 9103 Application Note: Monitoring Ion Current Stability

Using the data logging function in the Actuel program can provide a graphical representation of ion current stability. The graph below shows the ion current versus time from a 04-303 ion source as the leak valve is opened and then adjusted a few times until the current stabilizes.



In this example, it took about 20 minutes for the ion current to stabilize as the heat from the ionizer assembly warmed up the valve. Using a thermo valve controller provides faster stabilization of the gas flow and, as result, faster ion current stabilization.

Monitoring ion current stability improves the accuracy and repeatability of depth profile acquisitions for AES, XPS, and SIMS. For more information about Actuel, [email us](#) or call 541-330-0723 x 310.

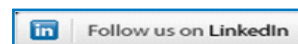
For more information on our Actuel software, check out this [video tutorial](#).

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## Follow RBD Instruments on LinkedIn

Now you can keep up to date with RBD products, services, and people by following us on LinkedIn.

Just scroll down to the bottom of any page on our website at [www.rbdinstruments.com](http://www.rbdinstruments.com) and click on the button.



Not a member of LinkedIn? It is easy to [join](#). In addition to staying in touch with colleagues and expanding your opportunities for employment or career advancement, there are many useful groups related to surface analysis and materials science that provide a forum for exchanging ideas and information. It is also fun for reconnecting with people that you have lost touch with.

Also, look at the [RBD Instruments product page](#) on LinkedIn for special deals on selected products.

# Sputter Rate Comparisons

The Journal of Vacuum Science and Technology (JVST-A) article titled "Comparison of the sputter rates of oxide films relative to the sputter rate of SiO<sub>2</sub>" provides sputter rate comparisons for oxides such as: Ta<sub>2</sub>O<sub>5</sub>, Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, CeO<sub>2</sub>, Cr<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>, HfO<sub>2</sub>, In-Sn oxide, TiO<sub>2</sub> (anatase, rutile, and amorphous), and ZnO. (Click here to purchase the article: [Comparison of the sputter rates of oxide films relative to the sputter rate of SiO<sub>2</sub>](#).)

Authors: D. R. Baer, M. H. Engelhard, A. S. Lea, P. Nachimuthu, T. C. Droubay, J. Kim, B. Lee, C. Mathews, R. L. Opila, L. V. Saraf, W. F. Stickle, R. M. Wallace, and B. S. Wright

J. Vac. Sci. Technol. A **28**, 1060 (2010) doi:10.1116/1.3456123 (13 pages)

## Abstract:

There is a growing interest in knowing the sputter rates for a wide variety of oxides because of their increasing technological importance in many different applications. To support the needs of users of the Environmental Molecular Sciences Laboratory, a national scientific user facility, as well as our research programs, the authors made a series of measurements of the sputter rates from oxide films that have been grown by oxygen plasma-assisted molecular beam epitaxy, pulsed laser deposition, atomic layer deposition, electrochemical oxidation, or sputter deposition. The sputter rates for these oxide films were determined in comparison with those from thermally grown SiO<sub>2</sub>, a common reference material for sputter rate determination. The film thicknesses and densities for most of these oxide films were measured using x-ray reflectivity. These oxide films were mounted in an x-ray photoelectron or Auger electron spectrometer for sputter rate measurements using argon ion sputtering. Although the primary objective of this work was to determine relative sputter rates at a fixed angle, the measurements also examined (i) the angle dependence of the relative sputter rates, (ii) the energy dependence of the relative sputter rates, and (iii) the extent of ion beam induced reduction for some oxides. Oxide films examined include SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, CeO<sub>2</sub>, Cr<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>, HfO<sub>2</sub>, In-Sn oxide, Ta<sub>2</sub>O<sub>5</sub>, TiO<sub>2</sub> (anatase, rutile, and amorphous), and ZnO. The authors found that the sputter rates for the oxides can vary up to a factor of 2 (usually lower) from that observed for SiO<sub>2</sub>. The ratios of sputter rates relative to those of SiO<sub>2</sub> appear to be relatively independent of ion beam energy in the range of 1–4 kV and for incident angles <50°. As expected, the extent of ion beam induced reduction of the oxides varies with the sputter angle.

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## 2011 AVS Symposia and Other Exhibitions

RBD instruments has attended or will be attending and exhibiting at four AVS symposia in 2011:

- February 22<sup>nd</sup> — NCCA VS 32<sup>nd</sup> Annual Vacuum Equipment Exhibition (We're sorry if you weren't able to stop by. If you're in the area, come see us there in 2012.)
- March 7<sup>th</sup> - 8<sup>th</sup> — FLAVS at the University of Central Florida in Orlando (We're sorry if you weren't able to stop by here, either.)
- September 15<sup>th</sup> - 16<sup>th</sup> — Pacific Northwest Chapter Symposium and Vendor Exhibit
- October 30<sup>th</sup> through November 4<sup>th</sup> — AVS 58<sup>th</sup> International Symposium and Exhibition, Nashville, Tennessee



Please visit [our website for more information about AVS](#). We hope to see you at one of these exhibitions!



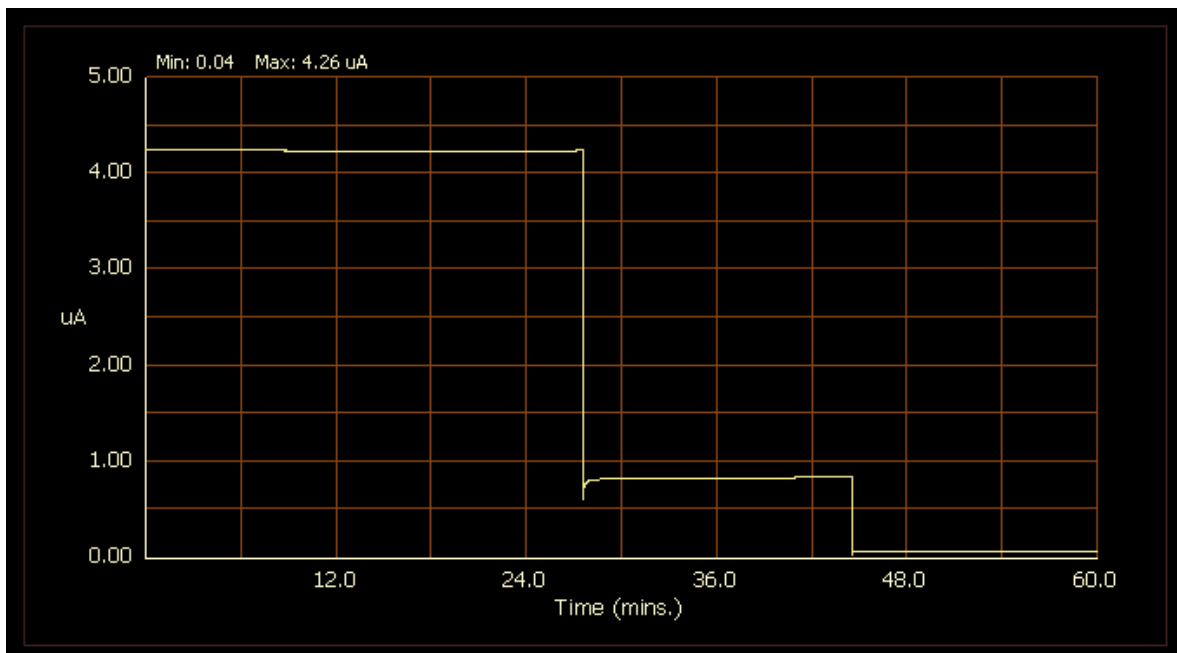
# 9103 Application Note: 11-065 Emission Switch

The emission scale switch on the 11-065 ion gun control is used to set the scale of the emission to three levels: 100% (X1), 10% (X.1), and 1% (X.01). The effect of changing the emission scale is to reduce the emission current, which in turn reduces the ionization (pressure reading) and ion (target) current proportionally.

Initially, the emission needs to be set to 25 mA in the X1 scale and the leak valve adjusted to achieve 15 to 25 mPa of pressure.



The graph below shows the target current versus time and the effect of changing the emission current to the X.1 and X.01 scales.



*“...Emission Switch...” continued on next page*

When setting the emission scale switch, the emission reading will not appear to change, but the actual emission current will be reduced by a factor of 10 (X.1 scale ) or 100 (X.01 scale). So, for example, if the emission is set to 25 and the Emission Scale switch is changed to X.1, the meter still indicates 25 mA but the actual emission is  $25 \text{ mA} \times .1 = 2.5 \text{ mA}$ . The pressure display will be reduced by a factor of 10 as well since the quantity of ions being generated is reduced proportionally to the emission current. Ideally, the target current will also be reduced to 10% of the X1 value when the emission scale switch is changed to X.1. In the graph on the previous page we see that the target current drops from about  $4.25 \mu\text{A}$  to  $.8 \mu\text{A}$  as the emission drops from 25 mA to 2.5 mA. As expected, the target current drops another factor of 10 to 70 nA as the emission scale switch is set to the X.01 position.

The emission scale switch is an easy way to reduce the ion target current by a factor of 10 or 100 in order to achieve lower sputter rates.

The picture to the left, below, shows that the pressure drops to about 2 mPa as the emission scale is changed to X.1. The picture to the right, below, shows the pressure dropping to .2 mPa as the emission scale switch is changed to the X.01 position. Thermo valve controllers cannot be used on older 11-065s in the X.1 or X.01 emission scale positions because they depend on the pressure reading for feedback. Newer 11-065s have a circuit that compensates for the pressure output.



## Newsletter Naming Contest

As many of you may know, RBD has been publishing *The Service Detail* newsletter since 1992, when our company's name was still RBD Enterprises. In 2008, we changed our company's name to RBD Instruments to help reflect our company's transition from being predominately a service-oriented company into a company that also provides scientific instrumentation for the materials science industry.

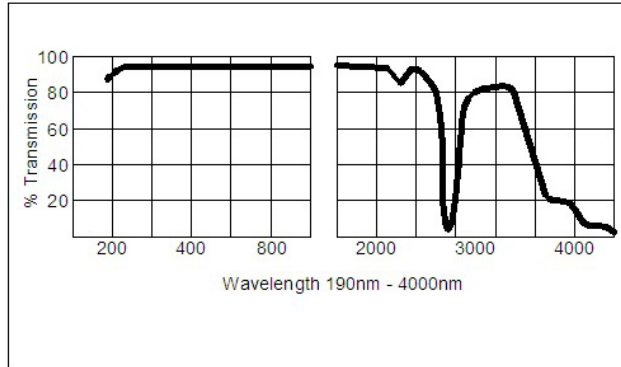
We did not, however, rename our newsletter to reflect this change. We're now ready to make this change and we'd like some help with creating a new name for *The Service Detail*.

Please send your ideas for a new name for our newsletter to [editor@rbdinstruments.com](mailto:editor@rbdinstruments.com). To show our thanks to the winner of this contest (to be selected by a review panel), we will be awarding one of our [9103 Picoammeters](#). The winner of this contest will be announced in our next newsletter and via email.

# Fused Silica Vacuum Viewports Now in Stock

TSL provides fast delivery of viewports with custom anti-reflective coatings. And now, RBD Instruments, Inc., is stocking common non-reflective viewports for immediate delivery at great prices.

As of now, we have the following sizes in stock: 1.33" CF; 2.75" CF with 32 mm window; 2.75" CF with 38 mm window; and 4.5" CF. All viewports in our stock contain the 304L stainless steel flanges.



## Fused Silica Viewport Specifications

Seal Type	Braze
Temperature	Max 200°C (KF versions 150°C)
Leak Rate	$<1 \times 10^{-10}$ atm-cc/sec (He)
Pressure Range	$<1 \times 10^{-11}$ Torr
Surface Quality	20/10 scratch/dig
Flatness	$<8 \lambda$

Torr Scientific fused silica viewports are offered in CF, ISO, and KF flange styles. The clean, UHV CF versions are offered using 304L or 316LN stainless steel flanges. Non-magnetic viewports are offered as standard using a tantalum weld ring instead of the regular kovar weld ring. Flanges in 316L stainless steel are used for the high vacuum KF and ISO viewports. The rugged construction of the fused silica viewports allows repeated bakeout with ultra high vacuum (UHV) performance, while the window offers broadband optical transmission through deep UV, visible to near infra-red.

As is discussed in the "New Spectrophotometer" article of [TSL's March newsletter](#), various anti-reflective coatings to match customer reflectance requirements are processed at TSL. These non-standard viewports can be manufactured on request, including re-entrant style microscope/camera viewports.

Please [email us](#) or call 541-330-0723 x 310 for a quote.

# Repair and Rebuild Services for PHI's and Other Manufacturers' Optics

RBD Instruments provides repair services not just for electronic controls such as ion and electron gun controls, but also for many optics units as well. Common optics repairs include ion sources (such as the PHI 04-191 5 kV ion source shown in the pictures below), as well as analyzers, X-ray sources, neutralizers, specimen stages, and electron sources from PHI and other manufacturers in our industry.



Most optics such as analyzers can be maintained by the user in the field because they primarily need to have only consumable items such as electron multipliers and filaments replaced periodically. However, ion sources and X-ray sources will occasionally need a complete teardown, cleaning, and reassembly due to internal deposition or breakdown. Because most users do not have the facilities or expertise to perform these services on site, RBD provides reasonably-priced rebuilding services with fast turn-around times to minimize your system's down time. We also have loaner units available.

In the last few years some of the older VG and other manufacturers' optics units are no longer being supported, even though only a normal rebuild is required. If you learn that you can't have these units repaired by their manufacturer, we invite you to contact our factory repair department to discuss your optics rebuild needs. Since most optics are very similar, we have been able to rebuild VG and other manufacturers' optics units at very competitive prices. So, you may not have to scrap that older VG ion source or X-ray source just yet! For more information, please contact us at 541-330-0723 x 310 or [by email](#).

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## RBD Instruments Expands Operations

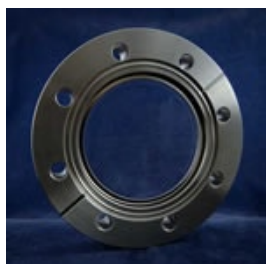
We have recently increased our production capacity through the addition of several thousand square feet of office and assembly floor space. Having this new space will help make it easier for us to continue to develop and produce innovative new products for surface and materials science. If you are ever in our Central Oregon neighborhood, please stop by for a tour!



[See a video of the start of our expansion!](#)

# Custom Coatings on Vacuum Viewports – QUICKLY!

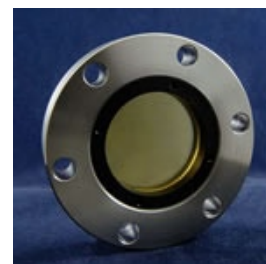
There are many companies that provide vacuum viewports, and many companies that provide anti-reflective, multi-layer broadband and 'V' coatings, but very few companies that provide both services in-house. As an all-in-one-stop shop, TSL can meet your custom coated vacuum viewport requirement more quickly than the competition and at great prices, too! So, when you need a custom coated viewport for your application and you need it now, think of TSL.



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For more information and a quotation in the U.S. and Canada please contact us by phone at 541-330-0723 x 310 or [by email](#).

## New Product – 3 kV Sputter Ion Source

RBD is now providing a 3 kV ion source sputter package that comprises an electron discharge source, power supply, and cable. Designed to operate as low as 100 eV, the 3 kV ion source provides a large 10 mm spot size and is compatible with all inert gasses and does not require differential pumping.

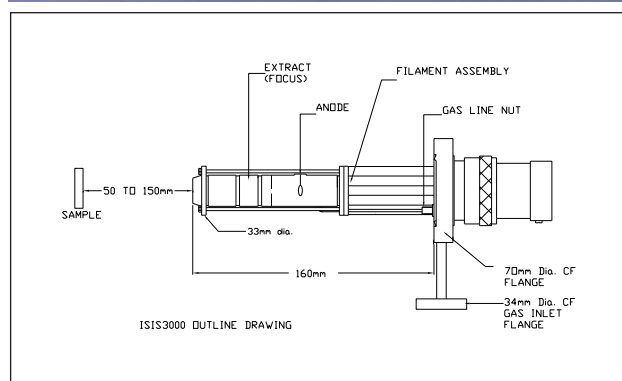
### Benefits:

- High beam currents at low beam energy
- Broad 10 mm spot with no raster required
- Long working distance; avoids conflict with other instrumentation
- Dual filaments
- UHV compatible

### Specifications:

- 2.75" mounting flange
- Flange to target distance of up to 12"
- Operating Pressure – typically  $5 \times 10^{-6}$  Torr
- Beam current –  $1 \mu\text{A}$  @ 100 eV to  $18 \mu\text{A}$  @ 1 kV to 3 kV
- Beam voltage – variable 0 to 3 kV
- Filaments – dual Tungsten/Thoria
- Gas Inlet Flange - 34 mm OD CF (separate leak valve required)

[Click here for more information](#). For a quotation, please contact us at 541-330-0723 x 304 or [send us an email](#).



# Tech Tip: Adjusting the Scale Factor in AugerScan

In the AES and XPS Hardware Properties dialog boxes of our AugerScan software there is an adjustment called the Scale Factor. The Scale Factor represents the bits/eV that drive the DACs, which in turn control the analyzer energy. Changing the Scale Factor works like a gain adjustment over the energy scale; it has more effect on the high kinetic energy end of the spectra than on the low end. By changing the Scale Factor you can calibrate your analyzer's energy scale without needing to adjust any potentiometers on the analyzer control.

The formula to calculate the correct scale factor is:

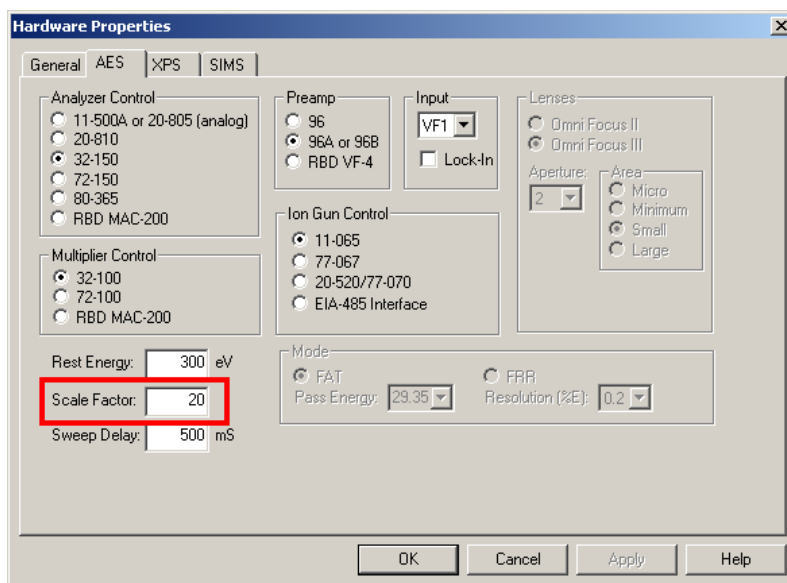
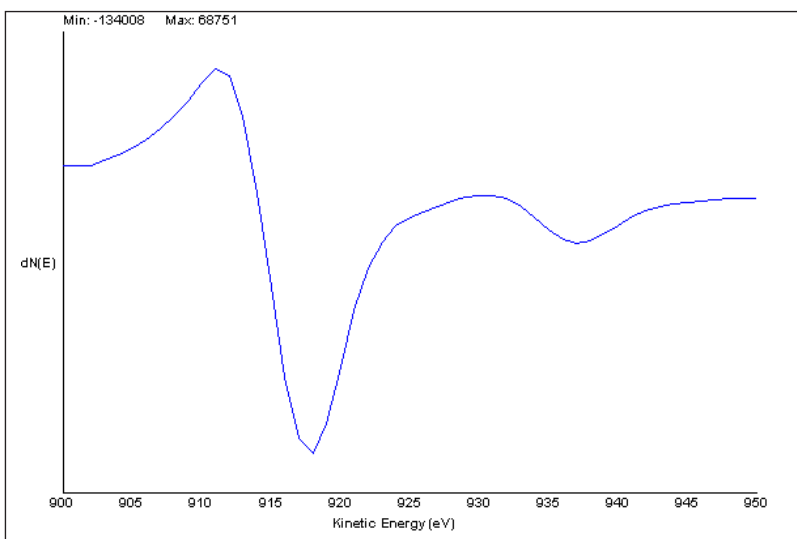
$$\langle \text{Actual Peak Energy/Desired Peak Energy} \rangle \times \langle \text{Present Scale Factor} \rangle = \langle \text{Correct Scale Factor} \rangle$$

*Example:*

In the graph to the right, the high end AES copper peak is located at 918 eV and the correct energy for this particular analyzer is 920. (Note that depending on your particular analyzer, the correct energy for the differentiated copper peak will be 917 to 920 eV.)

The actual energy (918) divided by the desired energy (920) gives us a ratio of 0.9978. When we multiply that ratio times the present scale factor of 20, we get the value for the correct scale factor of 19.9565. When we change the scale factor (as shown in the Hardware Properties dialog box below, right) to this new value, the high energy copper peak will be in the correct location. Note that you will need to adjust the 2 kV or 3 kV beam voltage supply so that the elastic peak comes in at 2 kV or 3 kV anytime that you adjust the AES scale factor.

This formula works for the Cu to Au span (energy linearity) adjustment on XPS analyzers as well. Just use the span between the 932.67 Cu peak and the 84 Au peak to get the ratio. The resolution of the scale factor is 4 decimal places.



For more information on the AES or XPS calibration procedure for your specific system, please call us at 541-330-0723 x 311 or [email us](#).

# Surface Science Mailing List

For many years, the Surface Science Western (SSW) mailing list has been available for users in surface science. The purpose of this list is a general discussion of all aspects of surface science, including (but not necessarily limited to) techniques, instrumentation, analytical procedures, data interpretation, and possible applications. Also, conference and workshop listings and job postings are welcome. It is intended for anyone interested in the field.

Vendors as well as users of their instrumentation subscribe to this list. Vendors are asked not to send out unsolicited advertising messages, but to only respond to related inquiries. Users are asked to respect vendors' interests and to use good judgment when relaying experiences with regards to support and instrument performance. Messages should be sent in hopes of gaining assistance or advice, rather than damaging a vendor's reputation or furthering commercial interests.

SSW does not take any responsibility for the content of messages being distributed. Users are warned they may be individually liable for anything they communicate using the SSW mailing list, including but not limited to defamatory, discriminatory, false, or unauthorized information.

To subscribe to this list, send the following message to 'majordomo@surf.ssw.uwo.ca':

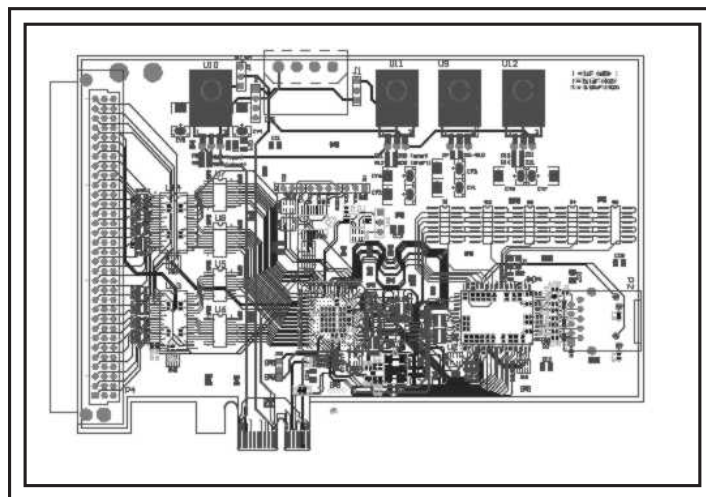
**subscribe ss < Your e-mail address >**

Use this email address to send a message to this list: 'ss@surf.ssw.uwo.ca'.

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## RBD 147 PCIe Interface Card

For the last few years the PCI slots in new PCs have been slowly going away and being replaced by the PCIe (express) format. In the not too distance future, we anticipate that you will not be able to get a new PC with a PCI slot at all. When this happens, the RBD PCIe board will allow you to keep using your 147 interface unit and AugerScan/AugerMap software to control your PHI system on not only the newest PC technology, but also the newest Windows platform (currently 7).



For more information on the RBD PCIe card, or any of our PC upgrade products for older PHI Systems, please contact us at 541-330-0723 x 310 or [via email](#).

# Software Corner Spring 2011

## ***9103 Picoammeter – What’s Coming Next in Actuel***

While there is no official release date for the next version of Actuel (RBD’s control and data logging/graphing software for the 9103 Picoammeter), here are some of the features that you will likely be seeing in future updates:

- Real-time and zero-reference time stamps for data. This feature will provide a data column for sample data time, using either a real-time (ISO 8601) standard value or a zero-based relative value based on the sampling rate.
- Export to CSV (Comma Separated Value) files. This feature will provide easy export to spreadsheets as well as the ability to permanently store logged data without using a third-party application.
- Option to record or average every ‘n’ data points. For long acquisitions, this feature will provide smaller data sets (and less cluttered graphs).
- Improved interface (with hot-keys and range buttons)
- Analog peak meter

## ***AugerScan and AugerMap – New Features You May have Missed***

It’s been a while since the last “official” releases of AugerScan and AugerMap, but “beta” versions of the latest versions are currently available free of charge.

### **New AugerScan Features (since Version 3.22)**

- PHI 77-067 and 20-520/77-070 ion gun control interfaces now allow raster ratios up to 10
- Support for remote control of PHI 50-096 X-ray source control
- Selection from multiple element tables for each technique
- Can shift survey data (with limits) for standalone surveys as well as multiplex and depth profile regions
- Up to 12 different colors can now be selected for depth profile peak lines
- Depth profile labels are staggered and color-matched for better display
- Option to load previous multiplex and depth profile settings automatically for new acquisitions
- Offset adjustment available for your Auger analyzer (in addition to scale factor setting for gain)
- Lens information now exported with gun properties (enables CasaXPS to determine transmission function)
- Windows 7 compatibility

### **New AugerMap Features (since Version 2.2):**

- Can select any specific input (VF1, VF2, VF3, PC1, PC2, etc.) for each input type (VF, Pulse Count)
- Option to prompt for “Save” after acquisition is complete
- Prompt to “Save/Discard all” when closing AugerMap
- Option not to display lines/points/areas on images
- Point/Area font and line color options
- Windows 7 compatibility