

FEATURING THE FS-522 WITH *FASTSpec*[™]
LAB INTERFACE, ASSOCIATED SENSORS
AND WINDOWS BASED SOFTWARE



E-Newsletter

Volume IV, Number 1

3,

April 2013

Upcoming exhibits at national and regional meetings:

200th 2YC3 Conference

April 5-6, 2013
New Orleans, LA
Delgado Community College

245th National Meeting in New Orleans, Expo is
April 7-9, 2013.
Booth 820.

GLRMACS 40: The 2013 Great Lakes Regional Meeting of the ACS, June 5-8, La Crosse, WI

Stop in and see our new software and new products in action.

Welcome new subscribers! We hope you will join the MicroLab users who have transformed their

Two Great Opportunities to See MicroLab in New Orleans!

Later this week at the 2YC3 Conference

and next week at the ACS Meeting, Booth 820, a stone's throw from the ACS booth toward the back of the Expo.

Official MicroLab Flash Drives to be given to the first 50 visitors to our ACS booth!

Get a nice thumb drive, with our logo, that has our latest catalog, product brochures, some fully editable lab handouts, interesting links, and other stuff loaded onto it. But that's not the only reason to visit us: See our new products in action...work with our updated software...tickle your imagination...experience the latest enhancements that make our products more attractive than ever!

- New Model 355 digital immersion heater and controller module
 - achieve +/-0.1 °C temperature control for temperatures above ambient
 - works with our Model 103 Thermistor or Model 109 Thermocouple
 - sample program available as an example of how to use our more advanced program

labs into true learning environments.

Quick Links...

[Past Newsletters](#)

[Website](#)

[Catalog](#)

[MicroLab Support](#)

[MicroLab Experiments](#)

Ideas?

Suggestions?

We want to hear from you!

If you have a question about the capabilities of the FS-522, please ask us. You may be surprised at its potential in your situation! Email us

[\(info@microlabinfo.com\)](mailto:info@microlabinfo.com)

or click the MicroLab Support in the Quick Links box (above) for other contact information.

If you have an interesting application of the MicroLab system in your lab, we would love to hear from you! Send us an email - just click on the link above.

If you want to contribute a featured lab application to the E-Newsletter, please contact the editor!

mjcollins@viterbo.edu

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What some of our colleagues using the FS522 say:

"MicroLab has made our labs much more economical.

Experiments use smaller samples and run more quickly, and students use their time more effectively."

**-Virginia Wairegi,
Rice University**

features for closed loop logical control.

Suppose you want to maintain 35.0 °C in a stirred bath:

- every (selectable time interval)
 - read sensors (any combination of our sensors)
 - if temp >35, turn the heater off
 - if temp < 35, turn the heater on
 - repeat until stop button is pushed
- New Model 272 Electroplating/Electrolysis unit
 - up to 5 volts applied potential
 - easy, one-click experiment built in to our latest software
 - real time graphs of current, voltage, coulombs, or moles of electrons vs. time
 - measure Avogadro's Number, equivalent mass, or atomic charge
 - or just demonstrate electrolysis or electroplating or other forced electrochemical process
 - New Model 292 Coulometric Titration Module
 - 16 bit precision
 - electrolyzing voltages up to 2.5V
 - user-selectable current ranges from fractions of a microamp up to 25 mA
 - isolated sensor inputs for end point detection
 - pH combination electrode sensor
 - redox combination electrode sensor
 - ion selective electrode sensor
 - amperometric detector
 - real time graphs of sensor response, current, voltage, coulombs, moles of electrons vs. time
 - easy export of all data to Excel for custom plots and data analysis
 - built in easy, one-click software or build your own coulometry program in the regular MicroLab software using our example program as a template
 - Upgraded hand-entered data capability.
 - Upgraded Spectrophotometry:
 - Visual as well as graphic display of absorption spectra.
 - Both line graph and bar graph display of absorbance data.
 - Transparent export of data to Excel.
 - Four x-axis variables:
 - Concentration - for Beer's Law.
 - Volume added - for spectrophotometric titrations.
 - Fraction number - for Chromatographic fraction analysis.
 - Time - For kinetics experiments.

"Y'all are doing wonderful work...MicroLab is a quantum leap in teaching the fundamentals of chemistry."
Sam Stevenson
 Marion Military Institute

"It used to be that students would spend a three-hour lab gathering data. Now, students can focus on what the data means; this enables them to decide quickly whether or not they need to do the experiment over. The discovery process - how the numbers relate to a concept - takes place in the lab, not when the students are writing their lab reports."
Dr. Carolyn Mottley
 Luther College

"I have been using the MicroLab FS-522 in our general and physical chemistry laboratories. I am impressed with the versatility and the low cost of this interface, it opens new possibilities for experiments."
Dr. David Saiki
 California State University Bakersfield

"MicroLab's software is an enormous aid for non-major students to visualize data collection in real time, and leads them to clearly understand the concept of the lab."
Dr. Angie Sower
 Montana State University

"I'm continually amazed at the research quality data we get from MicroLab. We can do things in teaching and in under-graduate

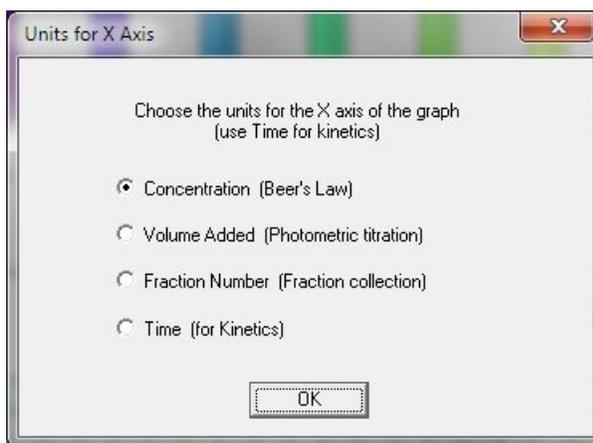


Fig. 1 The dialog box when opening the FastSpec software showing the choices for the x-axis.

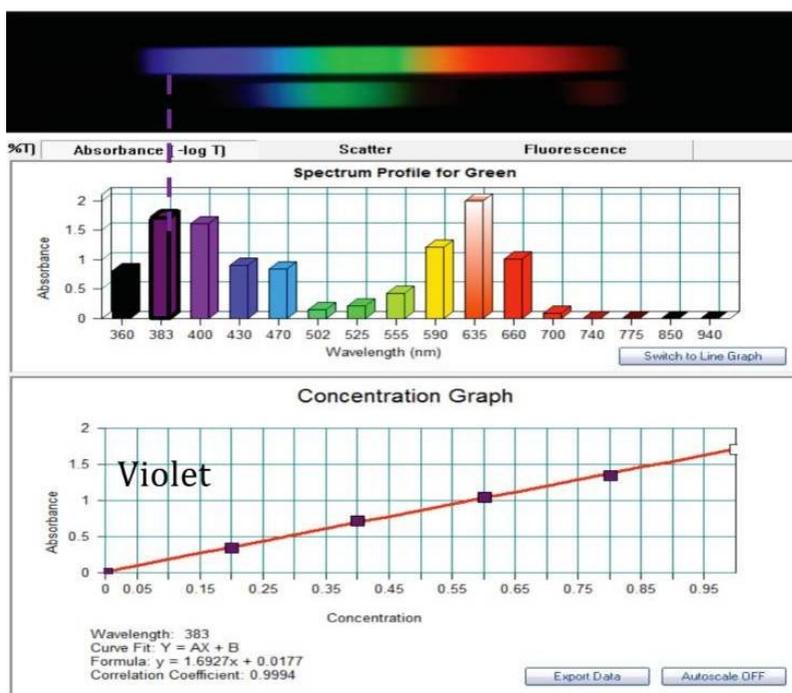


Fig. 2 Screen shot of concentration (Beer's Law) experiment using green food dye. The window shows the wavelength, equation type for the fitted curve, the actual equation for the fitted curve, and the correlation coefficient. The user can select any wavelength and the fit line is updated. Notice above the spectrum profile are two visual spectra. The top spectrum is a photograph that shows a continuous white light "blank" background. The bottom spectrum is computed from the actual measured absorbance profile. In this case it shows how the green dye solution selected absorbs in the violet and red, transmitting green. The new line graph spectrum display capability is not shown.

- New Electrochemistry Half-Cell data display:
 - Graphic display of direction of electron motion.
 - Graphic display and identification of oxidation and

research at a small institution that we never dreamed possible."
 Dr. Tom Kuntzleman,
 Spring Arbor University
 "You have an exceptional product. Money is very tight, and I wouldn't be spending this much of it if I didn't think that the MicroLab units were the best such devices on the market. I think that they will transform and reinvigorate the way we teach chemistry at Oglethorpe."
 Dr. Keith Aufderheide
 Oglethorpe University

"MicroLab has given us a great step forward in the Physical Chemistry lab."
 Dr. Clemens Heske
 The University of Nevada
 Las Vegas

"We used the built-in spectrophotometer to study the absorption/transmission properties of different food dyes. The students really took to the graphs produced for transmittance and absorbance ... they all said it made the ideas we were talking about really clear to see the two graphs."
 Dr. "Skip" Wiley
 Middlesex Community College

- reduction reactions.
- o Graphic display of digital voltage reading with virtual "light bulb" to indicate a completed circuit.

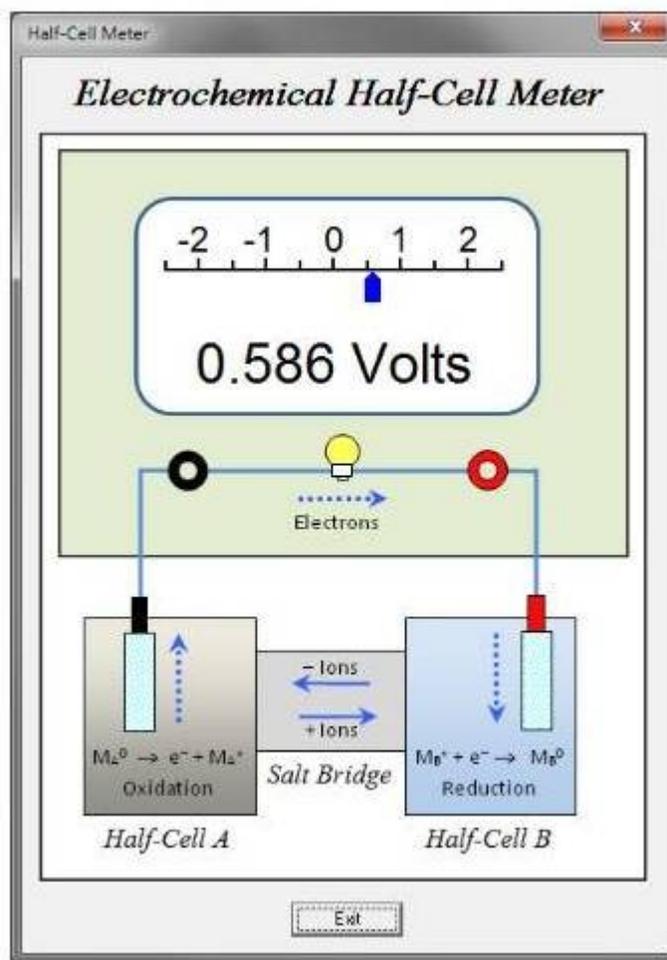


Fig. 3 This shows the screen display one sees when the Electrochemical Half Cell experiment is chosen from the MicroLab software. The banana jack voltage input on the FS-522 unit is used. When the leads are switched and the voltage changes sign, the arrows indicating the direction of electron flow and ion flow change direction, and the oxidation and reduction half cells change as well. The simulated light bulb goes from gray to yellow when voltage is produced.

We hope you will stop in to see us at 2YC3 or at booth 820 at the ACS meeting. Or call to set up a demonstration or workshop on your site. Booth 820 can be found easily - just a couple of aisles to the right of the ACS booth at the back of the Expo!

Meet the Editor: Michael Collins



Michael Collins is Emeritus Professor of Chemistry at Viterbo University in La Crosse, WI, USA. He taught undergraduate chemistry for 38 years at virtually every level - from introductory

chemistry for liberal arts, nursing, pre-med, biology and chemistry majors to advanced courses for senior chemistry and biochemistry majors. He was the 1988 CASE Wisconsin Professor of the Year and has won awards at Viterbo for his scholarship, teaching, and service. He has been active in his local American Chemical Society section, and chaired the planning committee for the Great Lakes Regional Meeting that was held in La Crosse.

His interest in computer data acquisition began in the early 1980s, and he became convinced of its ability to enhance the lab experiences of his students as well as to prepare them to function in a modern lab setting. He has developed experiments across Viterbo's curriculum that use MicroLab for guided inquiry experiments as well as for more routine data logging and analysis. He has also given presentations on the role of computers in the laboratory to facilitate learning chemistry and in the assessment of lab outcomes. He has been using MicroLab products since they first arrived on the scene, and he continues to develop ideas for new applications of MicroLab in undergraduate teaching and research.

Please contact us at MicroLab for more information and to learn how simple it is to put these experiments and others just as exciting into your lab classes with the MicroLab FS522 and accessories.

Thanks for reading! We invite your feedback, ideas, and suggestions. As college educators ourselves, we on your MicroLab team value your feedback.

Sincerely,

Your MicroLab team
info@microlabinfo.com

