



2006 Newsletter

Serving your testing needs since 1998

August 2006

Visit our booth

CNY MedTech Annual
September 12
Syracuse, NY

DRI—Annual Meeting
October 11—15
San Francisco, CA

MS&T (Materials Science and
Technology Conference)
October 16—19
Cincinnati, OH

Medical Design & Mfg
October 25—26
Minneapolis, MN

Aerospace Testing Expo
November 14—16
Long Beach, CA

Fabtech Internation & AWS
Welding Show
October 31—November 2
Atlanta, GA



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IMR Gives Back to the Profession

By Ron Parrington, President

IMR Test Labs (Ithaca, NY)



Since our beginnings, IMR has relied on materials science and engineering for its lifeblood. That's why we've supported organizations that work for the profession. We are a sustaining member of ASM International's Twin Tier Chapter and many of our employees are active individual members of this materials engineering and science professional society. We've enjoyed benefits including classes, access to technical information, and opportunities for personal growth. IMR markets itself by exhibiting at ASM's annual conference (MS&T) and advertising in the monthly ASM journal (Advanced Materials & Processes). To acknowledge our appreciation for the benefits materials science and engineering has given us, IMR and its employees actively volunteer their time for the profession. Here's just a partial list:

- ◆ Doug Puerta – Director of Metallurgical Engineering chaired the ASM International's Twin Tier Chapter this past year as it won the distinguished "Chapter of Excellence Award" for the fourth time in six years. Over 200 chapters of similar size compete for this annual award. Past chairmen of the Twin Tier Chapter include IMR's Bud Brinkerhoff, Steve Ruoff, George Wildridge, and myself.
- ◆ IMR subsidizes the monthly Twin Tier Chapter newsletter. Current and past editors include Doug, George, Steve, and myself. The support staff (Lisa Knapp, Jane Canfield, and others) fold, stamp and mail over 150 newsletters each month.
- ◆ To help plant the seeds for the next generation of professionals, IMR-Ithaca hosted the first annual ASM Materials CampSM on June 28th. Over one hundred 13 and 14 year old students from across New York State learned first hand about careers in engineering and science. The students enjoyed demonstrations of mechanical testing, nonmetallic materials testing and forensics, and scanning electron microscopy. On March 3rd a full bus load of local students from Dan Holden's Technology class at Southern Cayuga Central School toured IMR and interacted with its staff. They also experienced materials testing demonstrations and exhibits. *Continued on Page 2*

IMR Has International Flair

By Doug Puerta, Director of Metallurgical Engineering

IMR Test Labs (Ithaca, NY)

Our slogan, "Not just data. Knowledge" has taken on new meaning since our knowledge is being shared with others in the international scientific/testing community.

In mid-June, Doug Puerta, IMR-Ithaca's Director of Metallurgical Engineering, was invited to Copenhagen, Denmark by the Struers Corporation to serve on their Customer Advisory Council. Struers is a leading provider of equipment and consumables for materiallographic preparation of solid materials. Doug provided input to help develop new Struers products.



In July, Doug and John Sauer (Consulting Engineer and President of Sauer Engineering) spent over a week in Singapore teaching IMR's Aerospace Metallography and Coating Evaluation training class. This class was originally designed for Pratt & Whitney and taught at IMR-Ithaca. We presented this course in Singapore to employees of International Engine Component Overhaul PTE, Ltd. (IECO). IECO is a joint venture between Rolls Royce and Singapore Airlines. *Continued on Page 2*

IMR Gives Back

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- ◆ IMR also teaches ASM International courses for professionals. Ed Brothers has taught the course entitled “Scanning Electron Microscopy” at IMR-Ithaca. I've taught “Principles of Failure Analysis”, “Metallurgy for the Non-Metallurgist” and “Nonmetallic Materials” at IMR-Ithaca and across the country. Ed and I have also contributed materials now used by other instructors for these classes.
- ◆ For four years I've been privileged to serve as a volunteer mentor at the Eisenman ASM Materials CampSM at its headquarters in Materials Park, Ohio. Thirty high school juniors and seniors from throughout the nation are given an extraordinary week-long chance to learn about materials science and engineering.
- ◆ IMR is active on the international level as well. Doug Puerta chairs the Thermal Spray Society Committee on Metallographic Practices. Steve Ruoff is a member of the “Failure Analysis and Prevention” Editorial Review Board. George Wildridge served on the ASM Handbook Committee. I currently chair or have chaired the Failure Analysis Committee, Chapter Council and the Student Affairs Committee; and actively participate on many other committees.

We spend every day in our labs taking all kinds of measurements. But we've learned through volunteering that there is much that cannot be measured. We've received rewards that are tangible and intangible. IMR encourages you to take pride in your profession and actively sustain it. Give to your profession and it will give back to you. ■

IMR Has International Flair

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In total, 14 students attended the lectures and 7 students proceeded through the laboratory studies. After successful completion of written and laboratory exams, those 7 attending the full class will be recognized as Certified Metallographers.

While in Singapore, Doug and John managed to find some time to visit a few sights such as the Merlion on the southern coast of Singapore and Raffles Hotel, home of the Singapore Sling!

Plans are now being finalized to present this class in Tokyo for up to 10 Pratt & Whitney suppliers. ■

Audit Time for All IMR Labs...

By Deena Crossmore, VP-Corporate Quality
IMR Test Labs (Ithaca, NY)

This year all three IMR facilities had A2LA audits and the audits were conducted to the new revision of ISO 17025 (2005). In February, IMR-Ithaca and IMR-KY had their A2LA audits, which occur every 2 years. Both of these audits went smoothly, with few findings. In July, IMR-Charleston had their A2LA audit and they are currently waiting for their updated certificates. Looking forward—IMR-NY is scheduled for week-long Nadcap (aerospace) audit in November. To get current copies of our A2LA and Nadcap certificates, please go to the IMR website www.imrtest.com or contact Deena Crossmore, VP-Corporate Quality—deena@imrtest.com or 607.533.7000. ■



IMR to Assist in the Material Characterization of the H.L. Hunley

IMR—Charleston has been asked by The Friends of the Hunley, Inc to perform metallurgical testing on a small component of the historic confederate submarine. The Hunley was lost at sea in February of 1864 after successfully sinking the USS Housatonic, off the Charleston harbor. The Hunley and its crew never returned to port, their fate locked in the sediment off Charleston for 135 years.

The goal of this project is to provide data that will help the conservators with their daunting task of preservation and restoration of the sub to its original condition. In addition to generating baseline data on the materials used in the construction of the submarine, IMR will perform specialized testing to evaluate treatment options to be considered in the restoration efforts.



Photo provided by Friends of the Hunley, copyright 2001

How Do You Want Your News Delivered

Some people are very comfortable getting all their information on their computers.

Others enjoy having a newsletter printed on real paper that they can easily carry around or keep in a file drawer.

Could you do is a favor? Tell us how you would prefer to receive next year's news letter; by email or US Mail? You may also tell us if you would prefer not to receive it at all. Technical Sales Representative, Mike Parkhurst will tally your responses. Send him a FAX at (607)533-9210, a phone call at (888)464-8422, an email to mparkhurst@imrtest.com or just walk in and tell him. IMR wants to know the best way to serve you. ■

New Equipment

TA Instruments Q500 Thermogravimetric Analyzer (TGA) and Q400 Thermomechanical Analyzer (TMA)—Ithaca, NY

IMR's new Q500 high-resolution TGA offers an expansion of our thermogravimetric services. In addition to handling the usual tasks of polymer filler content and degradation studies, our new instrument now allows for improved differentiation of overlapping event signals and is equipped with a 16 position automatic sampler (providing shorter turn-around times for our customers). The dual-range balance can accommodate samples up to 1 gram and 500 micro-liters.

The Q400 TMA measures dimensional changes in a sample with respect to temperature. Typical applications include measuring glass transitions on highly filled aerospace composites, softening point, melting point, and coefficient of thermal expansion on a variety of materials. Measurements are typically performed on solid pieces, but testing on thin films is also common. This instrument can provide measurements from -150 °C to 1000 °C and has 15nm sensitivity.



Struers Abrapol-10 and Abraplan-10 Polishers—Ithaca, NY

These dramatically increase the efficiency of preparing sample mounts for optical and SEM examination. As part of this upgrade, a new dosing unit for dispensing lubricants and diamond abrasives has been added.

Struers Exotom-150 Chop Saw—Ithaca, NY

If Norm Abrams worked in the New Yankee Test Lab he would definitely want this saw. Currently on order and arriving from Denmark, this saw is the largest chop saw that Struers makes. It features a 17 inch blade and several programmable cutting modes. Once a sample is locked in, the saw automatically adjusts blade position and controls blade contact time to optimize cooling.



Mechanical Convection Oven—Ithaca, NY

Meets ASTM specs for environmental testing of plastics and rubbers. The temperature uniformity specification is ± 0.5 °C at 100° C.



CEM MARS (Microwave Assisted Reaction System) Digestion Unit—Ithaca, NY

You should never put metal object in your home microwave, but our new MARS unit is built to take it. Think of it as a pressure cooker to speed the breakdown of metallic and nonmetallic samples for analysis.

Spectro MAXx OES (Optical Emission Spectrometer)—Charleston, SC

This unit is capable of determining the elemental concentrations in virtually all iron based, nickel based, and aluminum based alloys. In addition, our unit is set up to measure nitrogen in steels and to analyze wire products directly. These features will enable us to better serve our current customers by offering rapid chemical analysis and hopefully attract new ones.



Hardinge Cobra 42 Lathe—Charleston, SC

We are now able to produce our own tensile specimens in standard sizes ranging from 0.250 – 0.505. This will greatly enhance our throughput times on tensile testing. If your needs require different sizes, please contact Gregg Anderson to discuss specific dimensions—gregg.anderson@imrcharleston.com or 843.745.1608.



They Don't Make 'em Like They Used To...



...That's why IMR got a new (old) tensile testing machine. This monster from the 1960's can perform tension and compression tests from 150 lbs. up to 160,000 lbs. of force. The jaws can clasp a test bar up to 4 feet long and 3 inches in diameter. It weighs a ton (literally) with most of its weight in the solid cast steel base. The glory of older machines like this is their quality, rigidity, and ability to easily hold settings. And, they just look so cool. Jim Andrews, Manager—Mechanical/Machine Shop said, "Our previous pull testing limit was about 54,000 lbs. so we've increased our capacity by nearly 300%." This tester was in very good condition when we found it and it's been calibrated to meet modern A2LA and ASTM E4 standards of accuracy. You don't have to squint at an electronic display for readings. The indicator dial is 23" diameter! ■



New Employees

Brenda Arcangeli

Chemical Technician—Ithaca, NY

Brenda started at IMR as the primary receptionist in our very busy front office. She recently transitioned from being “the voice of IMR” to taking a position in Chemistry. Brenda’s favorite pastime is riding her horses.



Steve Bryan

Machinist / Metallurgical Technician—Louisville, KY

Steve is a Certified Journeyman Tool & Die Maker with over 15 years experience working in the metal stamping industry. At IMR he performs all types of mechanical testing and sample preparation, but he has specialized in tensile testing and specially designed product testing. When he is not at work Steve enjoys playing guitar and home improvement.



John Corbett

Machinist / Metallurgical Technician—Louisville, KY

John is a Certified Journeyman Mold Maker with 16 years experience in the injection molding industry. He has quickly become a proficient metallographer in addition to his mechanical testing and sample preparation duties. John enjoys photography and spending time with his wife and children.



Stephanie Dalo

Metallurgical Technician—Ithaca, NY

Stephanie received degrees in General Liberal Arts from Monroe Community College and Mechanical Technology from RIT (Rochester Institute of Technology). Before joining IMR, she worked as a Product Engineering Co-op with Borg Warner Morse Tech. Stephanie’s hobbies include snowboarding, riding motorcycles, hiking, and traveling.



Andrew Ensign

Chemical Technician—Ithaca, NY

Andrew graduated Magna Cum Laude from Roberts Wesleyan College with a BS in Chemistry. He’s very newly married. In fact, at the time of this writing, he’s on his honeymoon.



Sherry Foster

Receptionist—Ithaca, NY

Sherry has a business degree from TC3 and used to work as an insurance agent. She has a NYS & ATF explosive license and during certain times of the year, she’s quite busy orchestrating fireworks shows. Sherry and her husband own and operate an automotive body repair shop and raise Scottish Highland beef cattle.



Valerie Goettel

Nonmetallics Technician—Ithaca, NY

Valerie holds a BS in Geology from Fredonia. Before coming to IMR, she worked as a Geotechnical Laboratory Supervisor. In addition to being a fine laboratory technician, Valerie is an avid gardener.



Jason Jones

Machinist / Metallurgical Technician—Louisville, KY

Jason studied Machine and Tool Technology at Jefferson Technical College. He has held manufacturing jobs, as well as briefly working for this lab several years ago. Jason enjoys spending time with his wife and they are eagerly anticipating the arrival of their first child. His other interests include attending University of Louisville football and basketball games and playing paintball with friends.



Tim Mueller

Metallurgist—Ithaca, NY

Tim holds a BSME from Worcester Polytechnic Institute and comes to IMR with 12 years of industry and R&D experience. In his spare time, Tim collects and tinkers with all brands of two stroke motorcycles.



Otto Roser

Product/ESS Test Specialist—Ithaca, NY

Otto has an AAS degree in Electrical Technology. His previous work experience includes McIntosh Labs and New York State Electric and Gas, in addition to owning his own small business. Otto manages to enjoy all of New York’s seasons. He’s been a PSIA certified ski instructor for 20 years and has logged over 12,000 sailing miles. He recently cruised from Cayuga Lake to Nantucket!



Jamie Smith

Metallurgical Technician—Charleston, SC

Jamie Smith comes to us from US Engine Valve with eleven years experience in metallographic preparation and testing. Although he attended Clemson University and spent many years in the upstate, he still cheers for his native Georgia Tech Yellow Jackets. Jamie enjoys spending time with his family as well as fishing.



Andrew Waldron

Lead Chemist—Ithaca, NY

Andrew holds a B.S. in Biology from the University of Rochester. He worked at IMR as a Chemical Technician before moving to Boca Raton, FL where he worked as a Lead Analyst, and later Second Shift Supervisor for US Biosystems. He moved back North and worked for Environmental Laboratory Services in Syracuse as an Inorganics Department Manager before completing his circle and coming back to IMR as one of our two Lead Chemists. In his spare time, Andrew enjoys hiking and bowling.



Jamie Wech

Chemical Technician—Ithaca, NY

Jamie attained a B.S. in Chemistry from Oswego State. He enjoys water sports, cars, and wrestling (the real kind).



Troy Yeager

Building Maintenance Technician—Ithaca, NY

Troy is a welcome addition to the team at IMR. Before he started here, he held a similar position at Cornell University for many years. Troy’s favorite pastimes are spending time with his wife and two daughters and golf.



IMR Test Labs—Charleston Update

By Melissa Gainey

Lab Manager, IMR Test Labs-Charleston (Charleston, SC)

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IMR Test Labs—Charleston continues to increase its customer base as a result of manufacturing expansions in the southeast. Look for our booth at the **Technology that Protects and Connects Us – Aerospace, Defense and Automotive, October 10th – 12th, 2006 in Huntsville Alabama.**

We recently passed two onsite audits. One conducted by Jared, LLC, a leading manufacturer for Defense, Commercial, and Industrial Engineering applications located in Brunswick Georgia and the other conducted by Still-Walter Tools & Manufacturing, a manufacturing job shop serving the Nuclear, Medical, Automotive, and Aerospace industries. The audits related to specific requirements necessary for processing work from their manufacturing facilities. We're happy to submit to customer audits in order to provide our customers with the assurance that we are committed to the highest quality standards.

Some interesting samples that we analyzed this year include: an artificial knee, roller dispensers, and cast iron ice cream cone molds. ■

And Now ... Our Annual Science Trivia Contest!

(Cymbal crash; off stage announcer) What do nearly all the elements discovered since 1800 have in common?

Hmmm. They're all taxed? They've all dated Tom Cruise?
They're all found in hot dogs?

If you are among the first 10 respondents with the correct answer you will win a luxurious IMR Golf Shirt! We'll mail your prize directly to you. Go to <http://www.imrtest.com/quiz.html>. Good luck!

IMR Metallurgical Services—Louisville Update

By Brett Miller, PE

Lab Manager, IMR Metallurgical Services (Louisville, KY)

502.810.9007 bmiller@imrlouisville.com



IMR Metallurgical Services is experiencing unprecedented growth, spearheaded by enhanced marketing efforts in Kentucky and throughout the region. We've added formability determination and impact testing to our repertoire of mechanical tests, and we've seen substantial growth in the product testing arena. Litigation-related work has been unusually high recently, and failure analysis / manufacturing support is busier than ever. Automotive company support has also increased dramatically with additional increases anticipated from new facilities currently being built. Continued expansion in capabilities and personnel are planned in order to meet our goal to be the premiere lab in our region.

We've completed a wide variety of interesting projects in the last year, including analysis of a tread from a World War II German tank and truck radiators from current overseas military action. We've investigated a 60-year old gas line, a 100-year old water line, and steel from a distillery that was so old no one knew when it had been installed. We've analyzed a casket handle that failed during service and a log ride drive chain that failed in a famous amusement park, in addition to shotgun pellets, debris from jet engines, and unknown materials found in pizza. We're always on the lookout for new challenges and opportunities. ■

Oh the Things We Do....

- ◆ Ships' life raft
- ◆ Crayons (various colors)
- ◆ Strength of wood glue
- ◆ Magnetic head for credit card reader
- ◆ Clamps for high voltage towers
- ◆ NASCAR suspension parts
- ◆ Hotel wall covering scrubability
- ◆ Deep fat turkey fryer
- ◆ Children's cartoon jewelry
- ◆ Crowbars
- ◆ Spark plugs
- ◆ Lobster claw crackers
- ◆ Computerized railroad brakes
- ◆ Cigarette lighter striking wheel
- ◆ Pool Chlorinator
- ◆ Cast metal mail box
- ◆ Motorcycle engine reed valve
- ◆ Computers (for corrosion)
- ◆ Materials for aircraft passenger compartments
- ◆ Varnish insulation for magnet wire
- ◆ Seismic expansion joint sealer
- ◆ Hip flask
- ◆ Sensor inside power station turbine
- ◆ High visibility helmet stickers
- ◆ Metal foil for lightning protectors
- ◆ Back vertebra stabilizers
- ◆ Water heater anodes
- ◆ Teflon coated guitar strings
- ◆ Inks for skin sensitivity
- ◆ "Nanotube Clay"
- ◆ Auto sound system speakers
- ◆ Pull test on parachute cord
- ◆ Citrus degreaser
- ◆ Hydrogen fuel cell components
- ◆ Interstate road sign bolts
- ◆ Cracked shot gun barrel
- ◆ Dental mirror handles



A Celebration Worth Waiting For!

We're sorry to say we will not have an IMR Open House this Fall. But we're very pleased to announce that next year we celebrate our 10th Anniversary! We'll be pulling out all the stops to mark this special occasion and we're already making spectacular plans for all 3 locations; IMR-Ithaca, IMR-Charleston, and IMR-Louisville. If you will be anywhere on this planet in Fall '07 you'll want to migrate toward the nearest IMR lab. We'll be giving you more information as the date approaches.

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Not just data. Knowledge.



"Commercially pure titanium (CPT) etched using a dilute hydrofluoric acid solution and viewed under polarized light. CPT is commonly used for medical implants due to its light weight, high strength, biocompatibility, and corrosion resistance."

Sample prepared by Ron Hughey

A Boy and His Dog

It's Stan DeForest, Manager-Nonmetallics, and his trusty test dog "Buster". An IMR client wanted evidence to confirm that his dog beds were more durable and resistant to puppy chewing than his competitors'. To provide laboratory grade chewing, IMR staff created "Buster", featuring a real dog's skull from a supplier of teaching aids to veterinary schools. Buster can be programmed to deliver thousands of identical chews on fabric swatches by means of computer controlled pneumatically driven jaws. The client was thrilled with the results. ■



Stocks, Viagra, and Other Time Wasters

We're currently upgrading our email system. Part of that process involves changing our spam filtering software to help us reduce time wasted digging through unwanted email. As we introduce this newer, more aggressive software, we're hoping it will help us focus our time and energy on genuine requests. But, technical jargon and specification limits can confuse even the most robust systems. As we fine tune the software, we sincerely hope to avoid deleting any legitimate email. But, if you try to email us and don't receive a prompt response, please let us know by phone or fax so we can take care of the problem. ■

Visit our website www.imrtest.com