



A Materials Technology Institute Publication

# COMMUNICATIONS

*"Maximizing resources through a global network of materials specialists"* | **SPRING 2010**

Casting defect. Leaks around gasket.

outer diameter  
of flange = 5"

## Castings Prediction Project Complete

MTI teams with University of Iowa to develop dataset of thermophysical properties of alloys.

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## Calendar:

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Denver, Colorado  
AsiaTAC  
September 2010  
Shanghai, China  
AmeriTAC 103  
October 25-28, 2010  
Baltimore, Maryland

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Jiuli Industry Park in China

# Zhejiang Jiuli High-Tech Metals Co., Ltd. Joins MTI



Li Zhengzhou  
(Denny Lee),  
Deputy General  
Manager of  
Zhejiang Jiuli  
High-Tech  
Metals Co., Ltd.

**Z**hejiang Jiuli High-Tech Metals Co., Ltd. is the newest member of MTI and the first headquartered in China. How has membership benefited the company so far? "It's fantastic to communicate with those knowledgeable and professional people who know so much about materials and technologies," says Denny Lee, Deputy General Manager of Jiuli Hi-Tech Metals. "We can learn a lot from them about materials science, and then apply this knowledge to our own research and development."

Lee attended last year's AsiaTAC in Shanghai and the AmeriTAC 101 meeting in St. Pete Beach, Florida in February. He is enthusiastic about the quality of the contacts he made at both TACs. "The most exciting part for me was to discuss stainless steel developments with experts from different companies," he says. "I

especially liked the communication with end users, fabricators, and manufacturers."

Located near Shanghai, Jiuli was established in 1987 to supply pipe and tube for industries such as oil and gas, chemical processing, and power generation. The Jiuli product line features stainless steels, duplex and super-duplex stainless steels, nickel alloys, and titanium tube and pipe. "Our world-class facilities include a hot-extrusion, 25-inch continuous welding line that enables us to achieve excellent results with these high performance alloys," he reports. Since December of 2009, Jiuli has been a member of the Shenzhen Stock Exchange, a move that Lee says will promote growth and create more value for the company.

However, the company still needs information about new materials development, better inspection methods, and improved manufacturing processes. "We hope to take an active part in discussions related to these issues," says Lee, "and then transfer the new ideas into practice." He also wants to participate in research projects and studies, as these will help both Jiuli and the entire industry to grow. Specifically, he would like to help the Chinese stainless steel industry and plans to introduce





Welded pipe



Hot Extrusion Press

other Chinese manufacturers to the benefits of membership in MTI.

Lee thinks that one of the most important of these benefits would be to take an active role in the technical forums at MTI meetings. At these forums, members contribute advice from their experience to resolve pressing technical problems that are submitted online. He likes the platform it provides for discussing real world solutions because all

members can learn from it. Jiuli has been around for more than 20 years and has experienced many of the issues discussed at the forums, especially those related to high-performance alloys. He hopes that by drawing on this experience, Jiuli will help other MTI members.

Lee appreciates that the contributions of other MTI members will also help Jiuli in several ways. One major example is the many wide-ranging MTI-

funded research projects that provide useful insights for improved manufacturing, such as how to optimize material use. MTI case histories are another important resource for practical suggestions. "We are committed to providing state-of-the-art products, and the best way to do that is to exchange information with other steelmakers, especially global experts," Lee concludes. "That's the main reason we joined MTI." ■

## Associate Director & MTI Pioneer Hodge Retires



It's hard to imagine an MTI world without Galen Hodge. To be sure, he was doing anything but coasting the past 33 years. The string of committees that Hodge has served on and projects that he's participated in is far too long to roll out here. Executive Director Jim Macki

says that his longtime colleague is as close to irreplaceable as you can get.

"Galen, because of his management experience, has been very helpful in some serious situations that we've gotten into," says Macki. "I've come to lean on him and his advice. He's been responsible for a lot of the decisions and policies that have kept us healthy." Now that indispensable resource has left for greener pastures and warmer weather.

For quite awhile, there have been rumors that Hodge was planning to retire. He made it official at the February Meeting in St. Pete Beach, Florida. His colleagues rewarded him with gifts, including a flashy yellow BBQ apron, which he displayed along with a big smile for the AmeriTAC crowd.

"I will miss everything about the organization," says Hodge, who joined MTI while he was with Cabot in 1977. "Definitely I will miss the interaction with so many excellent folks. I have seen the nature of the organization change as the people involved in MTI have changed. The organization should change to embrace the changes in the nature of the CPI business and will need to do so to continue to be of value to the industry."

Hodge was the perfect match for MTI long before the organization ever existed. He holds numerous degrees, including a BS in Metallurgical Engineering from University of Kansas (1960), an MS in Materials Engineering from University of Kansas (1962), and PhD in Materials Engineering from Rensselaer Polytechnic

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# TAC 101 Highlights



AmeriTAC 101 participants addressed 41 forum questions.



MTI Associate Director Heather Stine (left) and BOD Member Kelly Wyrough (right) enjoy a reception at the Winter Meeting in St. Pete Beach, Florida.

There were plenty of hot topics to discuss at the 101st AmeriTAC Meeting, even if one of them wasn't the unusually cool St. Pete Beach, Florida weather. Thirty-three member companies, 67 individuals, one potential member (Edlon), and four guests stayed warm inside the TradeWinds Sandpiper Hotel, participating in a variety of meetings and taking in presentations.

"Monday night we had the MTI mixer, which turned into the brainstorming session for Metals PDC, and it was well attended," reports AmeriTAC Vice Chair Robert Sinko of Eastman Chemical. "Basically, we weren't going to invent new metals, but there were opportunities to expand knowledge on current metals."

Tuesday morning kicked off with a Breakfast of Champions followed by five PDC meetings: Integrity & Condition Assessment; New Materials – Polymers; New Materials – Metals; New Materials – Ceramics; and Knowledge Management.

Eighteen project teams convened

at the meeting, which yielded a new Chemical Resistant Masonry Manual Project Team. The AmeriTAC and Board of Directors also approved two new projects:

- Accelerated Testing of FRP
- Demolition of Obsolete Equipment

At the evening reception, MTI members took the opportunity to say goodbye to longtime member and friend to many, Galen Hodge. Hodge, who recently retired as an Associate Director, has been active in MTI since 1977. (see full story on page 3 - look for a guy in a BBQ apron with the big grin).

On Wednesday, Wolfgang Bretz of Wicked Westfalenstahl provided a presentation on "Tubing Clad Stainless Steels and High-Ni-Alloys for Welded Tube Application." Bretz discussed the technology for cladding stainless steels and nickel-based alloys to different core metals for the manufacturing of welded tubes.

Malcolm Blair of SFSA wrapped

up a project with a presentation on *Casting Quality Prediction – Project Final Report and Training Session on Niyama Software*. "It was well received, with lots of questions on how to invoke the Niyama simulation software when MTI people wanted it used for their company's casting projects," according to Sinko. (See story on page 7)

By the end of the day, AmeriTAC representatives had also addressed 41 forum questions in all – cause enough for Sinko and others to celebrate another successful meeting with friends and colleagues. That night, "we cheered Bob Gill (Ellett Industries, Vancouver, Canada) and the Canadian hockey team in their win over the Russians in the search for Olympic gold," he says, demonstrating that mti-global is more than an Internet url. Speaking of which, further details about the new projects, teams and other happenings at the meeting are available in TAC 101 *News and Executive Summary of the 101st TAC Meeting* at [www.mti-global.org](http://www.mti-global.org). ■



# 2010 EuroTAC Meeting Hosted at Karl-Winnacker-Institut

*EuroTAC 2010 participants discuss metal dusting session.*

**F**abricators like MTI member DMC are able to bond metals, providing combined benefits that the individual materials applied alone can't match. The same principle was in process at MTI's 2010 EuroTAC Meeting, but involved bright minds rather than nickel alloys or titanium. In this case, EuroTAC organizers Mike Turner (AkzoNobel), Maria José Landeria Ostergaard (Haldor Topsoe AS), Dr. Dietlinde Jakobi (Schmidt & Clemens), and Bernhard Rijpkema (AkzoNobel) arranged to join MTI member forces with DECHEMA for the March 29-30 meeting in Frankfurt, Germany. MTI Associate Directors Emory Ford and Tony Scribner as well as Natalie Gelder (BASF) and Andrew Kelleher (Bayer) also contributed to making the hybrid meeting a success.

Ostergaard reports that 37 participants, including seven students from DECHEMA's Karl-Winnacker-Institut (KWI) and a potential new member Johnson Matthey Catalysts, attended EuroTAC 2010. "The meeting was a win-win meeting both for DECHEMA and MTI," she says.

Dr. Michael Schütze, Institute Director of Materials at KWI, agrees. "My feeling is that the meeting was very fruitful for all who participated," he reports.

"For KWI, the meeting was an extremely good opportunity for showing its competences in materials research for chemical process industries to the industrial colleagues, not only in Germany where we are well known, but also in Europe and some non-European countries." KWI (a division of DECHEMA where active research is performed) provided a lab tour to introduce specific research

projects, which were discussed in more detail in subsequent scientific presentations.

"For the young scientists, the meeting also gave them a deeper insight into the materials issues of CPI by the presentations of the industrial colleagues, which they found very enlightening and helpful for performing their own research work," explains Schütze. "The industrial talks in particular provided a very good impression of the current topics in CPI's materials R&D."

He adds that the meeting has already resulted in MTI participants connecting with KWI participants, resulting in proposals for further discussion and collaboration. "We therefore have the impression that this has been a very good meeting with benefits for both the MTI members and KWI," he says. "We enjoyed very much having the MTI group with us, and it would be a really great pleasure for us to continue this very nice collaboration with MTI."

According to Ostergaard, the organizing committee focused on improving EuroTAC by implementing a strategy that includes increasing the visibility of MTI in Europe. She points out that was the primary reason for holding the meeting at DECHEMA. It seems to be a step in the right direction. "The idea was very successful, and we received two proposals for sites for EuroTAC 2011," reports Ostergaard.

Another committee goal was to deliver more value to participants. To that end, the meeting covered a variety of current issues, including the following topics:

- NDT of reformer tubes and life time predictions

- Quality control of coatings, including glass enamel coatings and glass-lined equipment
- Corrosion control prediction using artificial neural networks

In addition, the EuroTAC meeting included training sessions on the ASSET software program and MTI web page data retrieval, including the Google and Granta search facilities, as well as a presentation on mitigation of biomass corrosion by thermal spray coatings.

"As something new, we provided a template the first day of the meeting, where participants could include suggestions for presentations and training sessions for EuroTAC 2011," reports Ostergaard. "We received approximately 10 responses, which we will use as basis for next year's program. We also received a proposal from TWI to give a presentation about cold plasma spray coating."

In an effort to align EuroTAC with AmeriTAC, representatives held their first business meeting on procedures for project identification and development, the MTI culture, and rules for voting. The latter was immediately put into use as the group voted to approve a second European project: Surface Modification for Poisoning of Metal Dusting (Microstructure Analysis was the first). But they weren't finished there, as EuroTAC participants elected a self-governing TAC, naming Turner EuroTAC Chair and Ostergaard Vice Chair. Based on the progress that was made in 2010, MTI's European members appear to have put their future in very capable hands. ■





# MTI People



Chairman Dale Heffner (right) congratulates Bill Fort (left) on his retirement.



Bill Watkins was recently named Associate Director.

## Fort Elected Fellow

MTI has named longtime member Bill Fort, recently retired from Shell Global Solutions, its newest Fellow. Fort, who joined MTI in 1993, was elected to the Board of Directors in 1996 and served as Chairman from 1999-2001. Always active in a variety of MTI activities, Fort recently chaired a committee working to better understand the conditions leading to hydriding of titanium under conditions of interest to member companies.

Gary Whittaker of Eastman Chemical says that nominating Fort was a no brainer for him. "I nominated Bill because I felt he met all the criteria that have been established for the Fellow award," explains Whittaker. "He has a long history of active participation and contribution to MTI, including a long stint on the BOD. He could always be counted on to actively contribute to the forum with both questions and answers, and that contribution will be missed. I thought making him a Fellow would give him access to the forum, which he will hopefully take advantage of to continue sharing his many years of experience. He was an active project champion over many

years as well."

Fort, who was touring a museum when we caught up with him, is already enjoying retirement, but adds that he plans to stay involved in MTI activities too. "I'm ecstatic about being able to continue to participate in MTI as an individual," says Fort. "I hope I can continue to contribute in some useful way. I was already missing access to the web site and to some of the member reps. I didn't have time to copy their phone numbers before I left," he laughs.

The humble Fort confesses that he was also very surprised to be elected for the Fellow honor. "It's deeply gratifying to be recognized in such a way," he says. Fort is MTI's 11th Fellow. For a complete list, with biographies, visit [www.mti-global.org](http://www.mti-global.org).

## Watkins Named Associate Director

Bill Watkins hardly had time to warm a seat in his new position on MTI's Board of Directors. A mere eight months and two meetings after assuming a role on the BOD, Watkins left that post to become MTI's newest Associate Director on May 1.

The materials engineer and

metallurgist had retired from Air Products on April 30, after 31 years of service.

"This is a great opportunity to continue working in some capacity in the field in which I've been working for over 40 years," says Watkins. "I've been told you need to retire to something rather than from something. This opportunity certainly fits the bill, no pun intended."

As an Associate Director, Watkins will help support MTI's growing regional and global activities, which span from North America to Europe and Asia. He will be responsible for organizing, leading, and facilitating teams of MTI member technical specialists and outside contractors to achieve project objectives. Watkins will report to MTI Executive Director Jim Macki.

"Bill is a great addition to the MTI technical staff, and we are very fortunate to be adding him," believes Macki. "In addition to his 30-plus years working on materials problems at Air Products, he has an additional ten years' experience in process metallurgy and metallurgical research."

Watkins, who holds a BS in Metallurgical Engineering from Drexel University and an MBA in

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# Casting Quality Prediction Project Update

Results of Phase II of the MTI Casting Quality Prediction project were summarized in an article titled "MTI Project Report" in the Summer 2008 issue of the MTI Communications newsletter. The goal of the project was to study the application of the Niyama Criterion to predict microporosity that could lead to leaks in castings.

The Niyama criterion is a common simulation output variable routinely used by foundries to detect solidification shrinkage in steel castings. It is a real quantity, with units based on the ratio of the local thermal gradient to the square root of the local cooling rate. A series of case studies showed that the cause of leakage in valves can be attributed to micro-shrinkage, a defect that is too small to be observed on a radiograph film. Following changes

by the foundries in the method of engineering the castings, it was observed that the Niyama values in the previously problematic areas were substantially higher. In simple terms, the Niyama value in these areas needed to be greater than that required to produce a casting with a Level 1 radiographic standard. The purpose of the Quality Casting Prediction project was to determine this value for high-nickel and other alloys used by MTI members.

Phase I of the project showed that the Niyama calculation was a reliable predictor of solidification shrinkage in castings and that commercially available casting simulation software produced consistent Niyama values when material property data and the Niyama calculation temperature were standardized.

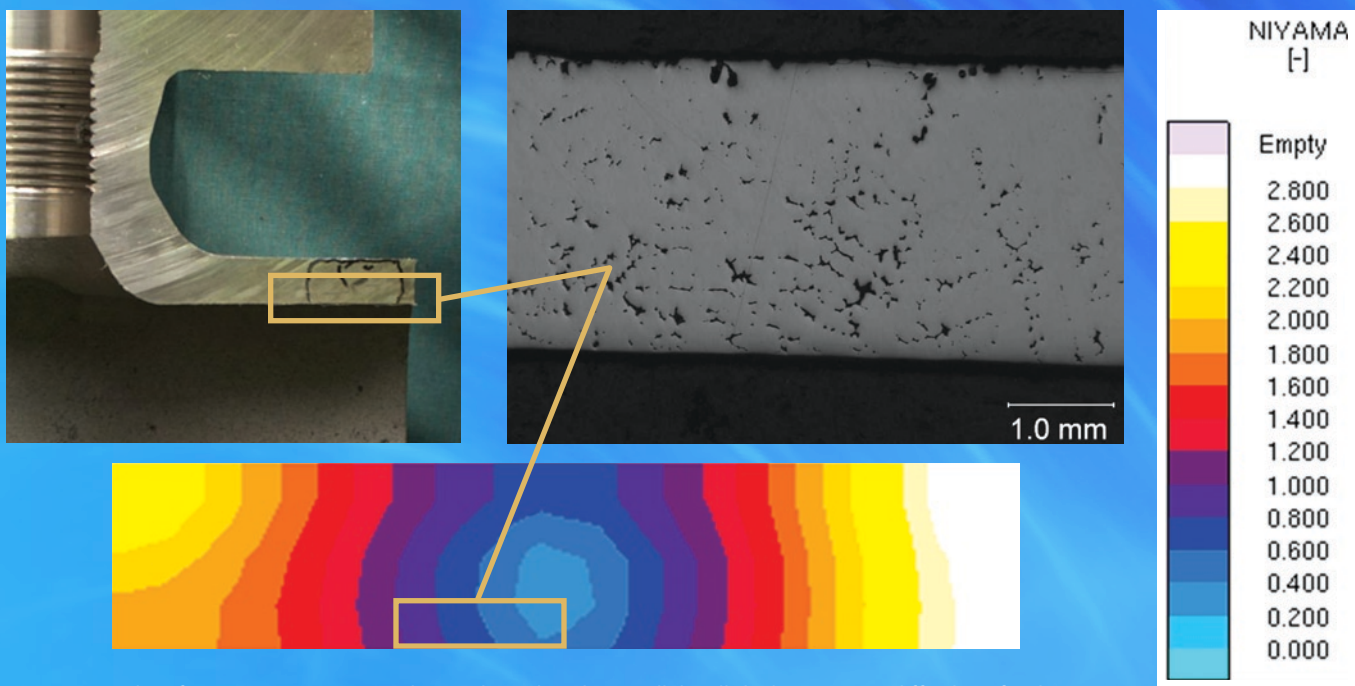
Phase II showed that the

Niyama value was an accurate predictor of the location of solidification shrinkage in nickel-base alloy castings.

"After phase II of the Casting Quality Prediction project was completed, we realized that we had to develop a dataset of thermophysical properties for the various nickel-base alloys that are the materials of choice for most MTI members," says Brian Fitzgerald of ExxonMobil. "Therefore, we worked with the University of Iowa and developed datasets for several duplex stainless steels and nickel-base alloys," adds Malcolm Blair of the Steel Founders Society of America. So far, datasets from 11 alloys have been researched and verified. All are available to members of both MTI and SFSA.

One of the important results of the project is that foundries can

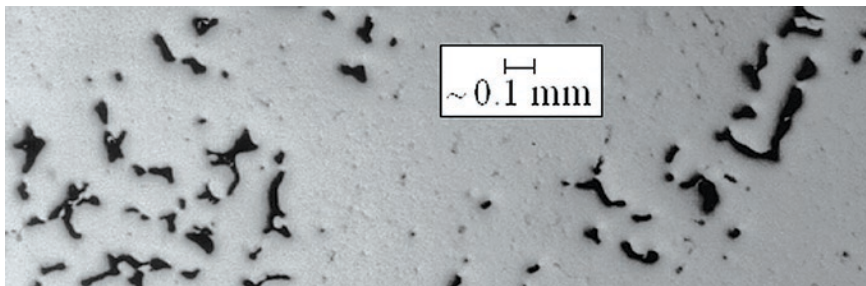
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Results of Niyama Criterion simulation show that the parallel wall thicknesses are difficult to feed.

## Casting Quality Update

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Leaking castings were sectioned, and photomicrographs were taken. Microporosity is evident in the leaking area.

easily make the fixes required to eliminate solidification shrinkage in critical areas of castings.

"Most foundries already use the software programs for which the datasets were designed," notes Fitzgerald. The bottom line is that the program will help end users improve reliability and foundries improve yield and reduce costs. Furthermore, the success of this project may lead to investigating ways to prevent other forms of casting defects.

"It is important to recognize that solidification simulation cannot overcome casting designs that prevent low levels of shrinkage

being present," Blair explains. In other words, this is at least a two-way street, where the casting designer and the foundry need to work together to ensure that the design is capable of producing a casting that is acceptable to the user. Realistically, it may not be possible to produce a casting that is completely shrinkage-free. "It may be best to identify critical areas of the casting that have been observed to be the most troublesome," he adds. Typically these will be thermal hot spots that appear during the solidification process.

"The only barrier that remains is

for companies to determine how to integrate the program into their specifications," says Fitzgerald.

As a first step, ExxonMobil has ordered a large, one-of-a-kind nickel-base alloy casting in which solidification shrinkage will be modeled by the program. This casting will be for information only, to establish specific protocols. After collecting data from the project, the company plans to integrate the program into its specifications. "This project should be complete by the end of the year," he reports.

To help foundries with such integration, the SFSA has developed a protocol to determine whether a foundry is capable of producing shrinkage-free castings. "We have given valve makers a method they can use to approve the solidification simulation capability of any foundry," says Blair. It is not necessary to be a large foundry to qualify. "We must, of course, expand the practice of the technology to all foundries," he asserts, "and their number is increasing." In fact, for a growing number, it has already become "part of the infrastructure." ■

## Problem Solved:

### MTI Forum Delivers Answers

It's a rare day when there isn't at least one notification of an MTI forum question coming across the email transom. Sometimes these calls for help and expert replies stream through in bunches. They are good indicators that the online forum (available 24/7 anywhere with an Internet connection) is very active and a key resource to many who work with materials for a living.

Robert Sinko, AmeriTAC Vice Chair, believes that some questions are answered online and never make it to the TAC floors (AsiaTAC and EuroTAC included). Even so, representatives at the February AmeriTAC Meeting

reviewed 41 technical queries uploaded to the agenda. Question #3, posed by Gene Liening from The Dow Chemical Company, is just one example of how the system works.

"Dow Chemical uses a blacklight test on new equipment intended for use in strong oxidizers," explains Liening. "This test assures absence of organic contamination that could be a safety issue. Our acceptance criteria for this test was unclear, weak, and frequently challenged."

Liening turned to his MTI network for help. "The Forum responses to our question on this topic helped us understand

the industry norms for this test," he reports. "As a result we strengthened our acceptance criteria, which has improved the safety of commissioning new equipment in strong oxidizer service. With the background on industry practice provided by the MTI Forum, pushback on our standard has been eliminated."

There are countless examples of engineers like Liening leveraging MTI members' expertise to solve real-life engineering challenges. Benefits range from cost savings to process improvement to safety assurance and more. We'll continue to share examples of the forum's effectiveness in coming issues. ■



## MTI Pioneer Hodge Retires

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*Hodge retiring to other pursuits.*

Institute in 1964. "I worked five years in the steel industry at Youngstown Sheet and Tube Co. in Youngstown, Ohio right after graduation," he recalls. "I was a Research Engineer working on corrosion of tin plate for the can industry, hydrogen sulfide cracking of oil country steels, and the weathering grades of low alloy steel."

After a one-year stint working on a variety of cracking problems with 304SS in nuclear grade BWR water at the General Electric Nuclear Research facilities in Pleasanton, California, Hodge joined Haynes in late 1969 as a Research Engineer. "My first project was to develop an understanding of the precipitation

of Hastelloy alloy C-276," says Hodge. "After a couple of years, I became a Group Leader in development of Corrosion and Wear alloys. During this time I developed Hastelloy alloys C-4 and B-2."

In 2001, numerous promotions later, he retired as Haynes' Vice President of Marketing and International Sales and became an Associate Director with MTI. In 2004, he was named a Fellow.

Hodge's MTI highlights include revising the organization's dues structure, member recruiting, and finally taking the concept global. "The last highlight for me was the development of the EuroTAC and AsiaTAC extensions of MTI," he says. "The extension of the organization into these parts of the world has increased the ability of our member companies to participate in the organization and thereby create value from their memberships."

Hodge singles out two projects that he participated in that come to mind as noteworthy achievements: Asset and Niyama Simulation. "The Asset Program provides the membership with a powerful tool to estimate high temperature corrosion of a number of alloys in a number of environments," he says. "I also believe that the Niyama simulation tool just developed will assist our membership in the improvement of reliability of castings (see article on page 7), and I was pleased to have

participated in these projects."

Now it's time for Hodge to pursue non-technical interests with his wife Hazel, including seeing parts of the world that they haven't experienced and traveling to U.S. National Parks as well as other desirable destinations. "We will probably be in Florida for part of the winter season, and when the MTI meetings are close by, you may just see me show up to check up on how things are going," he says.

When asked for any parting words of wisdom to pass along to the organization that he worked long and hard to help build, Hodge suggests: "Those carrying on the tradition need to be aware of changes in the industry and make sure that MTI is creating value for its members. By making sure that value is created, the organization should continue to prosper. Secondly, the organization needs to continue in the philosophy that it is a member-driven organization."

No one knows the value and loyalty that MTI creates any more than Galen Hodge. "I consider the opportunity to have been a member representative and then a staff member to have been one of the highlights of my career," he concludes. "I was blessed to have also been made a Fellow of MTI, and that honor will enable me to continue to participate remotely in the activities of MTI. I look forward to the great things yet to come from MTI." ■

## MTI People

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Administrative Management from Saint Joseph's University, built his expertise at Frankford Arsenal, Alan Wood Steel Company, and primarily at Air Products, where he started working in 1978.

Most recently, Watkins has managed the Materials Engineering Group and Laboratory in the company's

Global Technology Center. His primary functions at Air Products included failure analysis, materials selection, and corrosion testing. Watkins adds that MTI was a technical resource for him at work long before he became the company's TAC Representative in 2005.

Now he has the opportunity

to reverse roles and give back to others in industry seeking answers. "It's a great honor and a privilege to be selected for this position with such a prestigious organization," says Watkins. "I feel very fortunate that my association with MTI over the years has led to this opportunity." ■



# Colorado School of Mines Student Wins MTI Scholarship

Samantha Lawrence receives the MTI Scholarship Award from Ed Naylor (left) and Gene Liening (right) at the Corrosion 2010 Conference in San Antonio, Texas.



Samantha Lawrence has known that she wanted to study corrosion since grade school. "I am a bit of a daddy's girl and always helped with our building projects around the house," she remembers. So in 5th grade, the curious youngster decided to find out why nails turned orange in exposed stud walls. "In my research and experimentation, I learned about corrosion and pH, and I was hooked," recalls Lawrence. "I consider myself blessed for having found a particular career interest so early in life and for having so many people and opportunities to help turn it into my passion."

Now a college senior at Colorado School of Mines, the standout Metallurgical and Materials Engineering student will be able to continue pursuing her life-long interest with the help of MTI. BOD Members Ed Naylor and Gene Liening presented Lawrence with the 2010 MTI Bert Krisher Memorial Scholarship at NACE's Corrosion 2010 Conference in San Antonio, Texas. Naylor and Liening congratulated the aspiring entrepreneur and her parents

Terry and Dora Lawrence, who attended the March 17 ceremony held at the Henry B. Gonzalez Convention Center.

Samantha, whose alias is fittingly *corrosiongirl*, was thrilled to receive the MTI's \$10,000 award. "I knew the Bert Krisher Scholarship was important just based on the description and the sizeable amount of money, but it wasn't until I started receiving emails from people on the MTI scholarship board and then talking with everyone at NACE that I learned how much of an honor and prestige it is to receive this award," she says. "Everyone I have talked with from MTI has been so welcoming and willing to help me continue my endeavors in this broad field of corrosion. In a way, this award is very personal, because the members of MTI know how much weight it carries. I am so grateful to have received this award and to have met so many wonderful people during the process."

MTI's Selection Committee is equally pleased with its choice. "Based on expressed interest and achievements, Samantha Lawrence was clearly the most

qualified applicant for the 2010 MTI Bert Krisher Memorial Scholarship," reports Srin Kesavan, FMC Corporation's MTI Representative and leader of the committee that reviewed the candidates. "In addition to her academic and co-op experience, she has demonstrated leadership ability in founding a NACE student chapter at her university."

Based on those factors, Lawrence was a near unanimous No. 1 choice for this year's award, according to Kesavan. "We hope that this award will encourage Samantha to continue her education in this field and embark upon a career as a Materials Engineer serving the Chemical Process Industries," he says.

Lawrence has been fascinated with corrosion since she started studying the subject in fifth grade. "Corrosion affects everything," she explains. "It is so much more than rust. As we develop new alloys and push materials to perform in a broader range of environments, we need to understand the mechanisms that cause corrosion and then we can find ways to prevent it."

"Corrosion engineering is such





a multidimensional field, there is always something new to learn and discover," she says. "Also, while knowledge of the field is growing, I don't think many students have an appreciation of the importance of the field of corrosion engineering. For this reason, with the help of one of my advisors, the Rocky Mountain Section, and NACE International, I founded a NACE student section at School of Mines. I hope that more students will get involved and find the study of corrosion as captivating as I do."

The ambitious student is currently studying the hydrogen embrittlement of Zircaloy-4 for nuclear fuel cladding. "Like my science fair projects (in grade and high schools), I didn't know much about any of the projects I have worked on at Mines when I started research, but I have learned so much," she says. "I think I will be a more well-rounded metallurgist for having worked on such a variety of projects, and I have enjoyed each one."

A former NUCOR Steel Company summer intern,

Lawrence is particularly interested in metals. "As much as many industries are trying to find alternatives to expensive metals, there are some applications where only metals are viable," she explains. "The corrosion of metals is so varied that there is never any lack of new things to study."

Lawrence credits her parents for planting the seeds that have developed into her passion for metals and other materials. "They were the ones who helped me with my first science fair projects, encouraged me to set the bar and rise above it, and fueled my desire to learn about and understand corrosion," she remembers. "They truly were my first teachers and have done everything they can to ensure that I have received a complete education; even paying what scholarships didn't cover for me to attend the Colorado School of Mines. Having them attend the awards presentation in San Antonio and share in the honor I received as a scholarship recipient was the icing on the cake for me!"

As for her future, Lawrence

plans on pursuing a Ph.D in metallurgy and materials science, after which she would like to work in industry. "I'm not sure where, but something dealing with corrosion," she says. "Eventually, my ultimate goal is to own a corrosion prevention consulting firm. I had a mentor in 8th and 9th grade that owned a small company and did consulting work with the military. He told me I could get a degree in metallurgy and ever since that winter day in 8th grade, I've wanted to have a graduate degree in metallurgy and own my own company!"

For now, she will focus on school. "In December, I'll graduate from Colorado School of Mines after three and a half years as an undergraduate," Lawrence says. "I think the things I have done and continue to do outside of school have helped me become a well-rounded person." If her recent success record with scholarship applications is any measure, this *corrosiongirl* is destined for a bright future. ■

## MTI Events

### Cost Control Seminar at Stainless Steel World America 2010

"Cost pressures are forcing many companies to look hard at the economic viability of all projects," says former MTI chairman Gary Whittaker. As chair of the Cost Control Seminar during the Stainless Steel World America 2010 Conference in Houston this October, he hopes to encourage a dialogue around cost control. The day-long seminar, sponsored by MTI, will focus on best practices for global sourcing, project economics, and fabrication technologies.

"Fabrication of new equipment at the lowest possible cost while maintaining high quality is critical to helping members of MTI cope with today's economic and regulatory challenges," he stresses.



MTI is offering a Cost Control Seminar at this year's Stainless Steel World America Conference.

The challenge is to optimize every aspect of every project, including materials, design, and maintenance. As Senior Associate of the Eastman Chemical Company, Whittaker experiences this challenge every day. His job is to select the best alloy for a given application, while keeping a close watch on costs.

The MTI seminar will address such issues as design, engineering, conventional materials, and alternative materials. It will consist of three panel discussions/

workshops: Global Sourcing; Project Economics, Including the Impact of Approved Supplier Qualification; and Fabrication and Materials. Each session will begin with a presentation from an industry expert, followed by discussion among the panel members. Afterward, the discussion will be opened to everyone in the audience.

**Global Sourcing**, which Whittaker will chair, will focus on "best practices" related to

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Gary Whittaker (Eastman Chemical),  
Chairman Cost Control Seminar

the many issues involved with developing and qualifying sources in regions other than North America. Representatives of major global companies will discuss their experiences in developing effective strategies for sourcing from such areas as India and China, effective procedures for qualifying suppliers, and issues with specifications and standards. Presentations will include actual case studies of both successes and failures.

**Project Economics, Including the Impact of Approved Supplier Qualification**, is to be chaired by Cheryl Botti, Manager, Market & Product Development, ATI Allegheny Ludlum. This workshop will have two main themes: one is how to qualify a list of approved suppliers, from both the fabricator and the mill perspectives; the

other is how to manage project economics, especially when evaluating the many alternatives available today.

**Fabrication and Materials** will be chaired by David Barber, Materials Engineering Associate, The Dow Chemical Company. Novel fabrication methods, advanced modeling techniques, and new materials will be discussed. All of these could reduce costs significantly, but at the same time, they present new challenges, which this panel will identify and address.

"The Cost Control Seminar is a great buy because we combine our session with the SSW America 2010 conference," says Whittaker. "As an MTI member, you can attend the conference at a discount, or you can attend the MTI Cost Control Seminar alone for no charge."

The Stainless Steel World America 2010 Conference will be held October 5-7, 2010 at the Woodlands Marriott Hotel and Convention Center in Houston, Texas. The MTI-sponsored Cost Control Seminar will be presented on October 7. For complete details, visit the event web site at [www.stainless-steel-world.net/ssw2010](http://www.stainless-steel-world.net/ssw2010).

### **Mars Fontana Memorial Conference**

MTI is proud to help sponsor

the Mars Fontana Memorial Conference, scheduled for May 3-6, 2010 at The Ohio State University. The event is named in honor of corrosion pioneer and former OSU Professor who helped shape MTI in the organization's early years. In fact, Fontana was MTI's first Executive Director.

According to conference organizers, the meeting provides an interdisciplinary forum for the discussion of advances in the science and technology of corrosion. Topics include: corrosion and sustainability of complex systems, corrosion monitoring and prediction, atmospheric corrosion, comparison of accelerated testing to field results, passivity, long term stability, localized corrosion, application of laboratory results for lifetime prediction, and multi-scale modeling of corrosion.

Randy John (Shell), who coordinated MTI's participation in the conference's high temperature session, is pleased that it agreed to help sponsor the event. "I think MTI has done a super job in trying to promote this kind of technical cooperation between industries, academia, and government organizations," says John.

For more information about the Mars Fontana Memorial Conference, refer to the brochure posted in the Hot Topic and News Section at [www.mti-global.org](http://www.mti-global.org).

[www.mti-global.org](http://www.mti-global.org)

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