



William P. Breedlove, the 2010–2011 AIST president, addressed a crowd of 1,200 at the AISTech 2011 President's Award Breakfast. In the background are photos from the various events at AISTech. View the full AISTech 2011 photo gallery at AISTech.org.

Conference & Exposition Review

AISTech
2011

— The Iron & Steel Technology Conference and Exposition, held 2–5 May at the Indiana Convention Center in Indianapolis, Ind., was a record-setting event. The conference hosted more technical paper presentations than any prior year, while the sold-out exhibition spanned more than 182,400 square feet and featured more than 400 exhibitors. Total attendance reached 5,529, representing more than 40 countries. The event was one of the largest gatherings of industry

personnel in the world this year, providing both essential networking opportunities and valuable education in the latest iron- and steel-related technologies.

Highlights of the event included the annual AIST Foundation Golf Classic, the Howe Memorial Lecture, the President's Award Breakfast and the Town Hall Forum. There were multiple student-focused activities, and the Exhibit Hall featured chances to win a trip to the Indianapolis 500, a Blu-ray Disc™ player, a Nintendo® Wii™ and many other prizes. Also this year, the Town Hall Forum Webcast was offered live on the Internet for those who could not attend in person, and the first-ever AISTech app for smartphones carried the full technical program as well as the list of exhibiting companies.

Golf Classic

Starting off the week was the annual AIST Foundation Golf Classic, held on Sunday, 1 May, at Pebble Brook Golf Club in Noblesville, Ind. The 36-hole course hosted 190 golfers and eight corporate sponsors, raising approximately \$60,000 for AIST Foundation programs. The AIST Foundation would like to thank all the golfers who participated, even in the rain; the sponsoring companies; and the Golf Committee chair, **Thomas J. Russo**, president of Trusscon Inc. See page 51 of this issue of *Iron & Steel Technology* for a list of the event's winners and sponsors, and for information on participating in and sponsoring the 2012 AIST Foundation Golf Classic in Atlanta, Ga.

Howe Memorial Lecture

The 2011 Howe Memorial lecturer was **David K. Matlock**, Armco Foundation Fogarty Professor in the Department of Metallurgical and Materials Engineering at the Colorado School of Mines, Golden, Colo. Dr. Matlock's lecture was entitled, "Dual-Phase Steels: A Look Back With an Eye to Advanced High-Strength Sheet Steel Innovations." The lecture explained how lessons learned from the development of dual-phases steels can help predict the growth of advanced high-strength sheet steels. Dr. Matlock discussed the variables that affect steel properties, and how flexible processing lines could help control these variables to make stronger and more ductile steels — exactly what is needed for applications like lightweight yet crashworthy automobiles.

International Alliance Lecture

The 335 people who attended the Howe Memorial Lecture stayed in their seats to hear **Peter F. Marcus** present the International Alliance Lecture, which was entitled "Chaos Therapy." Dr. Marcus, managing partner of World Steel Dynamics, a leading steel information service based in Englewood Cliffs, N.J., spoke about the interconnectedness of the global economy, particularly how steel

scrap prices affect spot iron ore prices. He presented 12 points in a look ahead to the year 2025, predicting, among other things, that there will be a rising demand for slab, marginal facilities will be abandoned, and the premium on knowledge will continue to rise. "The information revolution is in its adolescence," he stated.

Technical Sessions

More papers were presented at AISTech 2011 than at any previous AISTech event — a record-setting 434 papers within 85 technical sessions. AIST's 29 Technology Committees worked diligently throughout the previous year, volunteering their time to put together the four-day program that also included two sold-out plant tours — one of Nucor Steel-Indiana and another of Steel Dynamics Inc.'s Engineering Bar Products Division.

The Exposition

The Exhibit Hall opened at 9:30 a.m. on Monday, 2 May. Among the 413 exhibiting companies was nestled the AIST Service Center, where attendees could review AIST publications, enter raffle drawings and speak to AIST staff about membership. The Exposition provided many opportunities for networking and new business.

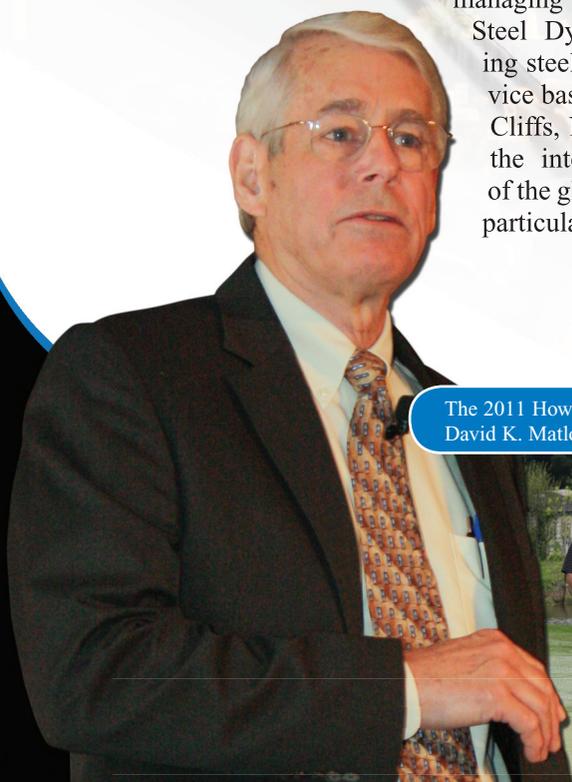
The show floor included the sixth annual AIST Foundation "Dollars for Scholars" event, a Raceway simulator (in homage to the approaching Indy 500) and five great drawing prizes, raising more than US\$7,000 for Foundation programs. The grand prize, for the individual who had the fastest score on the race car simulator, included a pair of tickets to the Indianapolis 500, hotel accommodations and dinner for two. (See page 52 for more information about the Dollars for Scholars program and winners at AISTech 2011.)

A full-size, genuine IndyCar was also on display during the Exposition, and attendees were able to get their photo taken in the car by donating to the AIST Foundation.

Mi-Jack Inc., who sponsored the display, gave



The 2011 Howe Memorial Lecture was given by David K. Matlock of the Colorado School of Mines.



away a ticket package to the Indy 500. **Ronald A. Balyint** of The Timken Co. was the prize winner.

President's Award Breakfast

Sponsored by



Each year at AISTech, the AIST president hosts a breakfast at which numerous association awards are presented, followed by a keynote presentation by a notable industry figure. AIST executive director Ron Ashburn began the 2011 breakfast program on Tuesday, 3 May, by introducing the AIST president, **William P. Breedlove**, to a crowd of 1,050 professionals.

Breedlove spoke about AIST's latest efforts to build membership through global outreach, including international seminars and membership alternatives for those in non-high-income countries, as well as development of Member Chapters in Italy, India, Brazil and elsewhere. Breedlove also noted other achievements of the association over the past year: the addition of the Pipe & Tube Technology Committee, the development of the AIST Process Benchmark for steel producer metrics, and the securing of the maximum matching contribution, \$500,000, for programs led by the AIST Foundation.

Thomas J. Russo, AIST Foundation president, then discussed the Foundation's many offerings, including university grants, student scholarships and internships, the University-Industry Relations Roundtable and the Material Advantage program. The Don B. Daily Memorial Fund, the latest effort of the AIST Foundation in conjunction with the Steel Manufacturers Association, has already raised more than \$200,000 through matching funds — far beyond the initial goal of \$120,000. The fund challenges North American university teams (students and professors) to submit proposals for grant funding in the theme area of safety and health awareness within the steel manufacturing industry.

Russo also announced that the AIST Foundation raised more than \$1,000,000 during the 2010–2011 academic year. With the added incentive of a \$500,000 match from

the Association for Iron & Steel Technology board of directors, the Foundation trustees were able to secure industry pledges exceeding \$560,000 during its annual fund campaign.

One of the first major awards given each year at the President's Award Breakfast is the Steelmaker of the Year Award, and the 2011 recipient was **Paolo Rocca**, chairman and chief executive office of Techint Group. Rocca accepted the award while thanking the nearly 50,000 people employed worldwide by Techint and its related companies Tenaris, Ternium and Tenova “for their commitment to safety, quality and industrial excellence.” Mr. Rocca asserted his confidence in the future of the industry when he said, “Steel is not material from the past. It is a key component of economic development in the future. It is a product that is continuously evolving...adapting to the needs of society.”

The keynote speaker was **Frederick “Fritz” Henderson**, chairman and CEO, SunCoke Energy Inc., and former president and CEO of General Motors. His speech, entitled, “Observations Regarding Opportunities for Growth in the Steel Industry,” stressed that the steel industry is a growth industry. “There's a tremendous opportunity to grow in this business,” he remarked, with “a significant engine of growth in emerging markets.” Asia, particularly China, has been a major driver of current steel production, and by 2015, Henderson said, India will be the second largest steel producing country. In 1999, only one company from China was in the list of the top 10 steel producers. By 2009, six companies from the developing world were in the top 10. Henderson encouraged each person in the audience to find his/her role in the shift to emerging markets.

Mr. Henderson was presented with the William T. Hogan Lecture Award in honor of his keynote address. His entire address appears on page 45 of this issue of *Iron & Steel Technology*. For the full list of the 2011 award winners, see pages 53–66 of this issue.



Left to right: William P. Breedlove, 2010–2011 AIST president; Frederick “Fritz” Henderson, chairman and CEO of SunCoke Energy Inc.; Paolo Rocca, chairman and CEO of Techint Group; and Thomas A. Danjczek, president of the Steel Manufacturers Association.



Peter F. Marcus presented the International Alliance Lecture.



Town Hall Forum

Five key industry leaders participated in the 2011 Town Hall Forum, which took place Wednesday, 4 May in the Indiana Convention Center's Sagamore Ballroom. Approximately 1,300 people attended the forum, which covered global issues and concerns — everything from safety to construction and energy, to developing markets and even what the U.S. government could be doing better.

The Town Hall was moderated by **Jon Delano**, money and politics editor for KDKA-TV (CBS), Pittsburgh. The panelists were: **George F. Babcoke**, senior vice president — European and global operations services, United States Steel Corporation; **Keith E. Busse**, chairman and CEO, Steel Dynamics Inc.; **James R. Darsey**, executive vice president — bar products, Nucor Corp.; **Theodore F. Lyon**, managing director, Hatch Associates Inc.; and **Louis L. Schorsch**, president/CEO — Flat Carbon Americas, and executive vice president, ArcelorMittal. The session chair was **George J. Koenig**, president, Berry Metal Co.

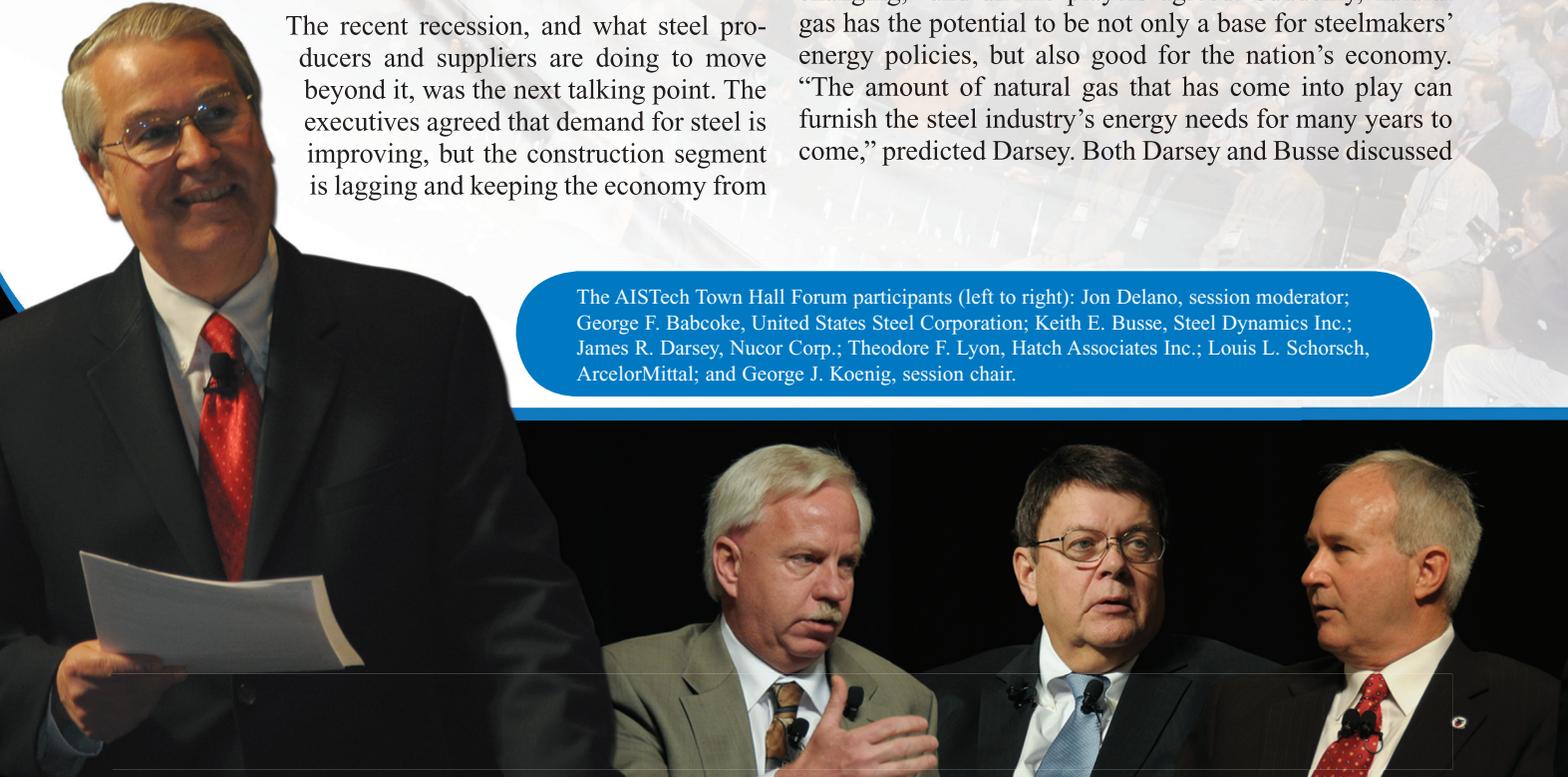
Delano opened the discussion on the topic of safety. He questioned Lou Schorsch about ArcelorMittal's safety program, called "Journey to Zero," asking, "Is zero a feasible goal?" Schorsch answered that zero fatalities is indeed feasible at a plant level. "Individuals and departments can achieve it," he said. Ted Lyon, speaking from the supplier's point of view, agreed, "The goal for lost-time injuries *has* to be zero." George Babcoke added, "This is the one topic on which the whole industry, globally, can agree that the passion of its leaders and employees can make improvements that can result in making a difference in someone's life." Babcoke explained how U. S. Steel, at its European venture in Slovakia, which had a 90% reduction in accidents over the last decade, partnered with the local union leaders to send employees home each night the same way they came to work — safe and sound.

The recent recession, and what steel producers and suppliers are doing to move beyond it, was the next talking point. The executives agreed that demand for steel is improving, but the construction segment is lagging and keeping the economy from

moving ahead in 2011. "Until the construction segment kicks in, a sustained trajectory that is clearly positive is going to be difficult to predict," said Babcoke. Jim Darsey of Nucor put it into a historical perspective by saying, "For steel consumption to grow, historically the GDP has to be 3% or greater. At 1.8%, steel consumption in the United States is not growing." If construction were to pick up, the United States could return to capacity utilization rates of 90% or better, according to Keith Busse of Steel Dynamics. "This country used to consume 135 million tons of steel annually," he stated. "There is no reason why the U.S. shouldn't put in place the capacity to serve the future needs of the country."

But to move beyond the recession, companies are taking action: by integrating vertically and exploring all forms of energy development. "It's all about raw materials and energy," said Lyon. Much of the value of steel is in the raw materials — iron ore, coal, coke, etc. This is why U. S. Steel utilizes its Keetac facility in Minnesota. "It's better if you own it," admitted Babcoke. Schorsch added regarding ArcelorMittal's strategy, "One leg of our investment program is to grow in raw materials. Otherwise you can only do so much hedging." Steel Dynamics is also involved in mining and producing iron for their own internal needs. "If you're going to be a healthy steel producer today," commented Busse, "it is imperative to be invested in the commodity arena, to backward vertically integrate." Nucor, similarly, is working to become self-sufficient in scrap and raw materials. The steelmaker is investing in a new 2.5-million-ton DRI plant in St. James Parish, La., adding to its 2-million-ton DRI plant in Trinidad. Darsey stated, "It's our goal to have 6 to 7 million tons of viable scrap substitute capacity."

In terms of energy development, George Babcoke said the recent rise of shale drilling in the United States is "game-changing," and all the players agreed. Suddenly, natural gas has the potential to be not only a base for steelmakers' energy policies, but also good for the nation's economy. "The amount of natural gas that has come into play can furnish the steel industry's energy needs for many years to come," predicted Darsey. Both Darsey and Busse discussed



The AISTech Town Hall Forum participants (left to right): Jon Delano, session moderator; George F. Babcoke, United States Steel Corporation; Keith E. Busse, Steel Dynamics Inc.; James R. Darsey, Nucor Corp.; Theodore F. Lyon, Hatch Associates Inc.; Louis L. Schorsch, ArcelorMittal; and George J. Koenig, session chair.

the need to explore all forms of energy — natural gas, oil, coal, even nuclear energy.

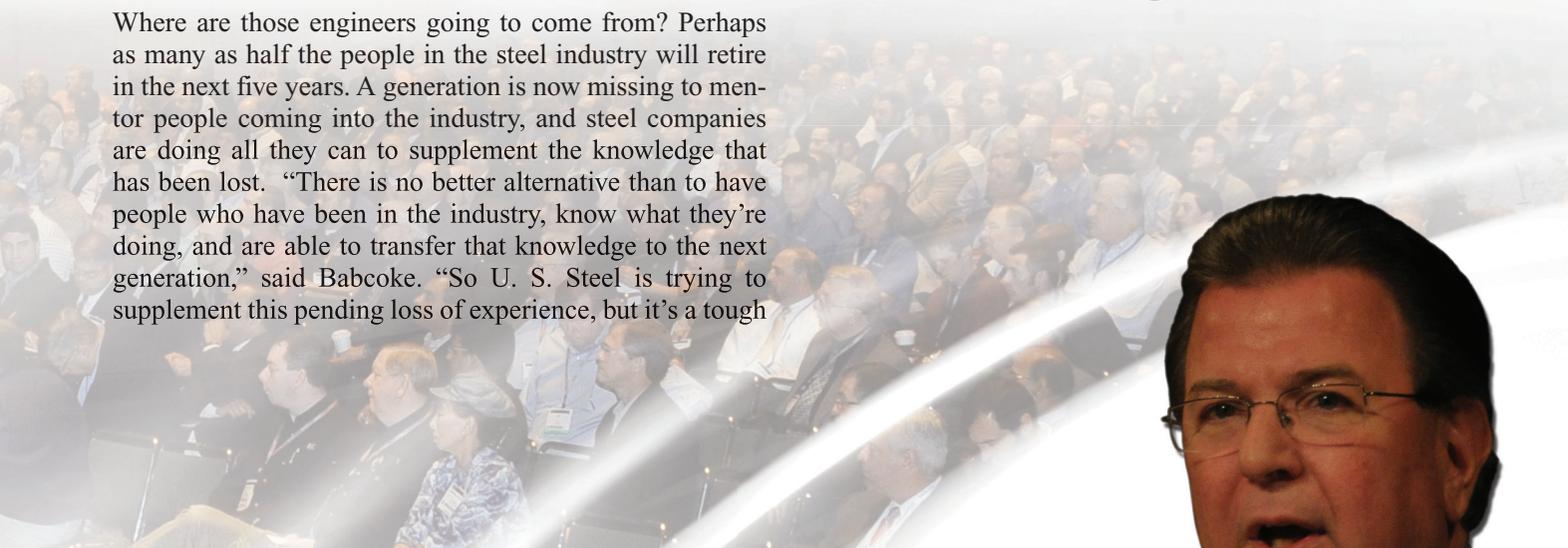
With the global economy expanding and developing countries growing in steel production as they are, Delano questioned how the U.S. can stay competitive. “I think we have a very productive industry,” replied Schorsch, and “there is no doubt whatsoever that we can have — we already have — a very competitive industry. The key to surviving in the U.S. economy is to keep productivity going up.” Then Babcoke added, “This country needs a good base of manufacturing. Manufacturing jobs in the United States will lead us to a sustainable economy.” Darsey agreed, “It is absolutely key and critical that we have a strong manufacturing base to survive and keep the steel industry and America as we know it.” “You cannot be a great nation and have a vibrant economy unless you make something,” said Busse.

The discussion heated up a bit when the panelists were given the opportunity to play “benevolent dictator” and explain what they think the government should be doing to fix the U.S. economy. Gaining energy independence, developing a strong manufacturing base and addressing the massive trade deficit were just three of the suggestions. Darsey was adamant: “We have to have free and fair trade.” Ted Lyon was clear in what he would do if he led the country: “The government needs to get back to defense and infrastructure provisions and provide enough regulation to ensure the integrity and ethics in our institutions, and that’s it.” Babcoke added that the United States needs a solid energy policy, along with “fewer attorneys and more engineers.”

Where are those engineers going to come from? Perhaps as many as half the people in the steel industry will retire in the next five years. A generation is now missing to mentor people coming into the industry, and steel companies are doing all they can to supplement the knowledge that has been lost. “There is no better alternative than to have people who have been in the industry, know what they’re doing, and are able to transfer that knowledge to the next generation,” said Babcoke. “So U. S. Steel is trying to supplement this pending loss of experience, but it’s a tough

task.” ArcelorMittal actively recruits talent through a program called “Steelworker for Tomorrow,” where they work with community colleges and even high schools in the areas in which they operate. However, according to Busse, “we need to do a better job of marketing who we are as an industry. We have to convince young men and women it’s a great place to be. There is a viable future.” The Nucor Foundation has already invested more than \$50 million in scholarships and endowed chairs. “The steel industry is exciting, it’s dynamic,” bragged Darsey. “It’s not your father’s steel industry. There are tremendous opportunities. We need to encourage our young people to get involved and work on attracting them.”

A lunch in the Exhibit Hall followed for all attendees. The lunch was sponsored by Berry Metal Co., Woodings/Munroe, Herr-Voss Stamco and Danieli Corp. The Town Hall Forum was also available — free to AIST members — via live Webcast, sponsored by Vesuvius. The Webcast was available on-demand at AIST.org through 30 June 2011. Nonmembers were also able to purchase and view the Town Hall Forum Webcast, both live and on-demand.



Member Chapter Meetings at AISTech

During AISTech 2011 in Indianapolis, leaders from AIST's Brazil Member Chapter, India Member Chapter and the proposed Italy Member Chapter met to discuss advances within each chapter.

The AIST India Member Chapter meeting was held on 1 May 2011 at AISTech 2011. Strategy was discussed for the first AIST International Steel Academy. The proposed location for the event is in Kolkata, India. Although the dates have not yet been confirmed, the event planning is still under way. With the support of the steel producers of India, the Academy will provide attendees with a broader and deeper understanding of the ironmaking and steelmaking processes. More details about AIST's International Steel Academy will be announced on AIST.org once finalized.

At the Brazil Member Chapter meeting on 3 May 2011, discussions included a status update on the AIST/ABM Combi-Membership, which was established in September 2010. The partnership with the Associação Brasileira de Metalurgia, Materiais e Mineração (ABM) provides AIST members with the opportunity to obtain an ABM membership at a reduced rate and gain in-depth information about the Brazilian steel industry. Although the program was just recently introduced, there were 74 combi-members at the time of the meeting. As of 11 July 2011, the number of combi-members has increased to 89. In addition to the AIST/ABM Combi-Membership, an Oxygen Steelmaking Brazil Study Tour was discussed. The Study Tour will consist of four BOF facility tours, roundtable discussions with the Brazilian BOF operators, and an AIST Brazil Member Chapter event in Rio de Janeiro.

The steering committee of the proposed AIST Italy Member Chapter met on 4 May 2011 to determine the future path toward the formal establishment of the Italy Member Chapter. With the cooperation of the Italian Association of Metallurgy (AIM), AIST may be able to provide programs in the Italian steel market that will complement the benefits already provided by AIM, engage students to become involved in the steel industry and possibly arrange a collaborative event. The steering committee and AIST staff are dedicated to formalizing the Italy Member Chapter and will continue to move forward with their efforts.

Students at AISTech

Student attendance at AISTech increased by more than 25%, jumping from 76 students in 2010 to 97 in 2011. With support from five industry companies, the AIST Foundation put on a student-centered program including a plant tour, a recruiting reception, lunch with the Foundation Board of Trustees, presentation and poster contests, and social events. Engineering students from all related disciplines were encouraged to attend AISTech 2011, and were offered complimentary registration, travel grants and paid session monitor positions.

The corporate sponsors were ArcelorMittal, Nucor Corp., Steel Dynamics Inc., The Timken Co. and TMK-IPSCO.



Both undergraduate and graduate students from 24 universities, representing 11 different countries, registered for the conference. The university with the highest number of students in attendance, Purdue University Calumet, won AIST's annual Attendance Challenge, receiving US\$500 in prize money.

Student activities began with a plant tour on Sunday, 1 May, to Steel Dynamics Inc., Engineered Bar Products Division in Pittsboro, Ind. Following the plant tour, the students attended an orientation dinner, where they learned



Dale Heinz, senior division manager — primary operations for ArcelorMittal Burns Harbor, speaks with Andrew O'Loughlin, a student at the Missouri University of Science and Technology.



Kevin Bort (left) of New Millenium Building Systems congratulates Colleen Lyons on winning the Student Project Presentation Contest at AISTech 2011.

about AIST and the AIST Foundation from Bill Breedlove, 2010–2011 AIST president. Melissa Sestilli of Steel Dynamics then discussed what steel companies are looking for in candidates for employment. Those attending enjoyed dinner (with an ice cream bar!) and networking with the corporate sponsor representatives.

The AIST Student Project Presentation Contest was held on Monday, 2 May. During this contest, 13 students presented 10 projects before a panel of judges. The judges were **Kelly Dallas** of ArcelorMittal, **Fred Harnack** of U. S. Steel, and **Kevin Bort** from New Millennium Building Systems, who also acted as moderator.

Participants were judged on technical content, topic coverage and presentation skills. The winners of the Student Project Presentation Contest were:

- First Place (\$1,500) — **Colleen Lyons** from the University of Illinois at Urbana-Champaign for her presentation entitled, “Inclusion Characterization of Titanium Stabilized Ultralow-Carbon Steels — Impact of Oxygen Activity at Deoxidation.”
- Second Place (\$1,000) — **Patricia Tavares da Silva** and **Samuel Trindade Viana** from Universidade Federal de Ouro Preto for their presentation entitled, “Characterization of Mixtures of Sugarcane Bagasse and Charcoal for Injection Through Tuyeres of Blast Furnaces.”
- Third Place (\$500) — **Philip B. Mann** from Purdue University Calumet for his presentation entitled, “CFD Study of the Effects of Orifice Plate Reversal.”

The first annual Graduate Student Poster Contest was held on 2 May in the Indianapolis Convention Center. In all, 23 posters were entered in the contest. The winners of the Graduate Student Poster Contest were:

- First Place (\$1,500) — **Paul Wu**, University of Toronto, for his poster presentation entitled, “Refining of Liquid Stainless Steel with Low Carbon Dioxide Emission.”
- Second Place (\$1,000) — **Neerav Verma**, Carnegie Mellon University, for the poster presentation entitled, “Modification of Alumina and Spinel Inclusions by Calcium in Liquid Steel.”

- Third Place (\$500) — **Lance Hibbeler**, University of Illinois at Urbana-Champaign, for his poster presentation entitled, “Thermal Distortion of Funnel Molds.”

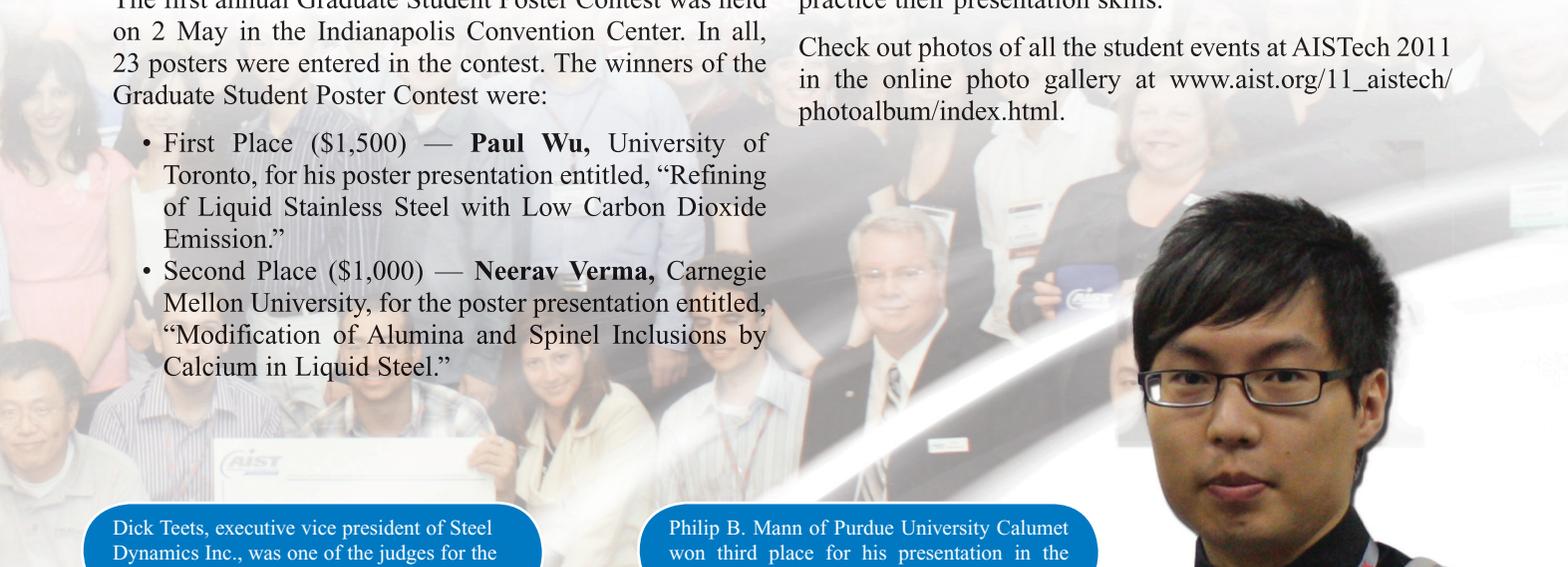
Following the contest, tickets were drawn for door prizes donated by Paul Wurth Inc., ITT Enidine, Midrex Technologies Inc., Schneider Electric, LAND, Vollmer America, Hydro, Magneco/Metrel, SMS and AIST. Special thanks to the contest moderator, Kevin Bort from New Millennium Building Systems, along with all contest judges and companies who donated the door prizes!

Also on Monday, the students were invited to lunch with the AIST Foundation Trustees. This was a great opportunity for both students and the Trustees to network. The students had the chance to talk with executives from various companies about the steel industry, and the Trustees had the chance to ask the students questions and encourage them to consider careers in the industry.

On Monday evening, many students attended the student social, which took place at RAM Restaurant and Brewery. The students mingled with corporate sponsor representatives in a more relaxed setting, enjoying a barbeque buffet and touring the microbrewery at RAM.

Financial assistance was available through the AIST Foundation and Material Advantage program to students attending AISTech 2011. Travel grants, contest prizes and session monitor positions are offered each year to help defray travel expenses. Students who attend AISTech not only learn about the newest technologies, but they also meet and network with steel industry professionals, and practice their presentation skills.

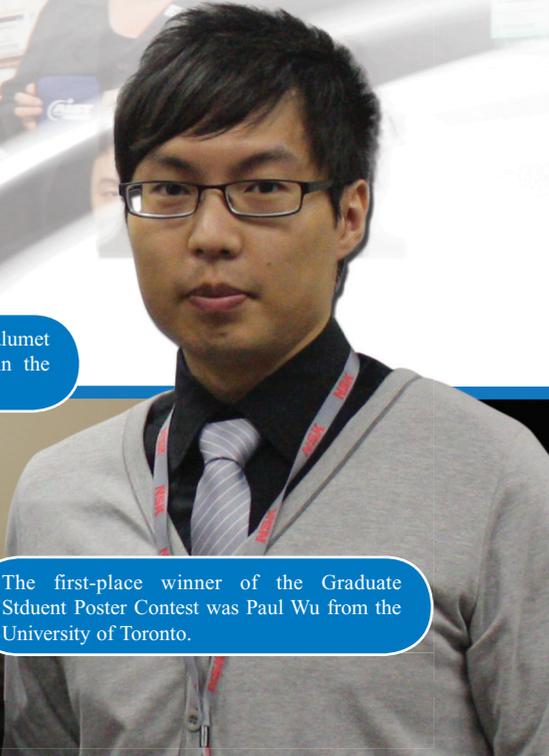
Check out photos of all the student events at AISTech 2011 in the online photo gallery at www.aist.org/11_aistech/photoalbum/index.html.



Dick Teets, executive vice president of Steel Dynamics Inc., was one of the judges for the first annual Graduate Student Poster Contest.



Philip B. Mann of Purdue University Calumet won third place for his presentation in the Student Project Presentation Contest.



The first-place winner of the Graduate Student Poster Contest was Paul Wu from the University of Toronto.

Acknowledgments

A special thank-you is extended by the AIST executive committee and the board of directors to the following individuals who helped make the event a success: AISTech 2011 Conference Planning Committee chair, **Toni Brayton** of United States Steel Corporation; Exhibitor Committee chair, **Theresa Gillooly** of Vesuvius PW; Town Hall Forum session chair, **George Koenig** of Berry Metal Co.; AIST Foundation president, **Randy Skagen** of Nucor Steel Tuscaloosa Inc.; Golf Committee chair, **Tom Russo** of Trusscon Inc.; and the authors who wrote and/or presented papers during the conference. Thanks are also extended to all the exhibiting and sponsoring companies.

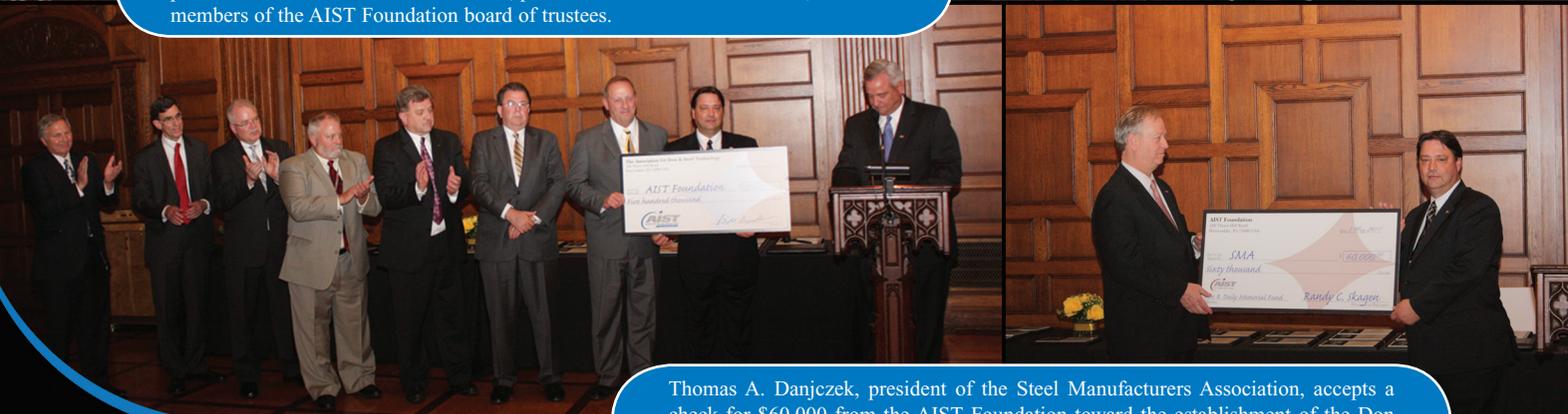
AISTech 2012: Atlanta, Georgia, USA

Mark your calendar now to attend AISTech 2012! Steel's premier event of the year will take place 7–10 May 2012 at the Georgia World Congress Center in Atlanta, Ga., USA. Submit an abstract for a technical presentation by emailing abstracts@aist.org or visit AISTech.org. Also, join more than 200 companies that have already reserved their exhibit space. Contact William Albaugh, +1.724.814.3010 or balbaugh@aist.org; Geraldine Kane, +1.724.814.3022 or gkane@aist.org; or Beth Kirschner, +1.724.814.3030 or bkirschner@aist.org. See you there! ♦

Members of the 2010 and 2011 AIST executive committee and board of directors gathered at AISTech 2011. Front row, left to right: Ronald E. Ashburn, Kent D. Peaslee, R. Joseph Stratman, William P. Breedlove, Theodore F. Lyon and Glenn A. Pushis. Back row, left to right: James A. Dunn, J. Matt Baur, Gary M. Urso, Peter Harschnitz, Darrell E. Sturgill, Larry A. Dalke, James O. Finley, Matthew J. Merwin, Robert Buchanan, Chad M. McClimans, Christopher J. Carr and Ricardo Anawate.



During AISTech 2011, the AIST Foundation celebrated the receipt of \$500,000 in matching funds from AIST. William P. Breedlove, AIST president (at the podium), presented the check to Thomas J. Russo, president of the AIST Foundation, and other members of the AIST Foundation board of trustees.



Thomas A. Danjczek, president of the Steel Manufacturers Association, accepts a check for \$60,000 from the AIST Foundation toward the establishment of the Don B. Daily Memorial Fund. The fund has raised more than \$200,000 through matching contributions and continues to accept donations.