



**EXCEEDING EXPECTATIONS.
INCREASING OPPORTUNITY.**

Conference and Exposition Review

AISTech 2012 — The Iron & Steel Technology Conference and Exposition was held 7–10 May at the Georgia World Congress Center in Atlanta, Ga. More than 5,200 attendees from 40 countries benefited from the networking and educational opportunities made available through what each year is the largest gathering of steel industry personnel in the world. The program included a world-class industry conference and exposition, highlighted by the annual AIST Foundation Golf Classic, the J. Keith Brimacombe Memorial Lecture, the President's Award Breakfast and the Town Hall Forum.



2011–2012 AIST president
R. Joseph Stratman

at-a-glance

AISTech[®]2012



Total Attendance



George Koenig (front) rolls in a birdie at the AIST Foundation Golf Classic.

GOLF CLASSIC

Leading in to AISTech, the annual AIST Foundation Golf Classic was held on Sunday, 6 May, at Stone Mountain Golf Club in Stone Mountain, Ga. The 36-hole course hosted 240 golfers, who along with nine corporate sponsors helped to raise approximately US\$60,000 for AIST Foundation programs. The AIST Foundation would like to thank all the golfers who participated; the sponsoring companies; and the Golf Committee chair, **Fred Harnack**, United States Steel Corporation. See page 94 of this issue of *Iron & Steel Technology* for a list of the event's winners and sponsors. Watch future issues and AISTech.org for information on participating in and sponsoring the 2013 AIST Foundation Golf Classic in Pittsburgh, Pa.



Dr. Alan W. Cramb delivered the J. Keith Brimacombe lecture via Skype — a first at AISTech.

TECHNOLOGY CONFERENCE

AIST's 29 Technology Committees created a technical program with 81 sessions for a total of 400 individual presentations, representing the world's foremost compilation of technological developments for the manufacturing of iron and steel.

The 2012 J. Keith Brimacombe Memorial lecturer was **Alan W. Cramb**, provost and senior vice president for academic affairs at The Illinois Institute of Technology, Chicago, Ill. Dr. Cramb's lecture was entitled, "Steel Research — Then, Now and Tomorrow." Approximately 350 people attended the lecture, which began by covering the history of steel research and ended with a discussion on the need for that research to include eco-processing, as well as the impact of materials and production on society. The full lecture appears on pages 74–83 of this issue of *Iron & Steel Technology*.



G.K. Basak delivered the International Alliance Lecture to a crowd of 230 attendees.

Directly following the Brimacombe Memorial Lecture, the International Alliance Lecture was presented by **G.K. Basak** before 230 attendees. His lecture was entitled, "The Steel Industry of India — Remarkable Growth and Transition." Mr. Basak is executive secretary of the Joint Plant Committee, Ministry of Steel, Govt. of India, which has emerged as an authentic information base in the country, the "destination of knowledge of iron and steel," and the facilitator of the Indian steel industry. The lecture can be found on pages 84–88 of this issue of *Iron & Steel Technology*.

The four-day technical program also included two sold-out plant tours — one of Gerdau Cartersville Mill and another of U. S. Steel – Fairfield Works. Although Fairfield Works was almost three hours away by bus, many people were eager to see the integrated facility which has an annual raw steelmaking capability of nearly 2.4 million tons.

AISTech2012

at-a-glance

40

Countries Represented



United States



Canada



China



Germany



Mexico



Italy



Brazil



Japan



United Kingdom



Austria



South Korea



India

EXPOSITION

The Exhibit Hall opened at 9:30 a.m. on Monday, 7 May, hosting 470 exhibiting companies and covering 189,000 ft² (17,560 m²) — making this the largest AISTech exposition ever! Exhibitors displayed the full gamut of products, from those offering consumables and services to major equipment builders.

Year after year, the AISTech exposition provides numerous opportunities for networking and new business. Paul Barlow, manager — sales and engineering connection technology for Voith, talked about the value of exhibiting at AISTech this year. “The steel industry cannot be promoted over a telephone conversation,” he said. “It’s a highly technical product with very diverse, robust applications. Selling face-to-face, showing the features and benefits of the product and the quality of engineering and application expertise, has to be done face-to-face.”

Featured within the Exhibit Hall was the AIST Service Center, where attendees could become AIST members, purchase additional publications and enter various raffle drawings. The show floor also contained two Internet cafés and several opportunities to win prizes, including a set of golf clubs and bag, a large-screen TV, cash inside a Money Machine, and an iPad.

The AIST Foundation “Dollars for Scholars” feature this year was a SuperShot basketball competition. More than US\$1,400 for Foundation programs was raised at this event on the exposition floor.

PRESIDENT’S AWARD BREAKFAST

The 2011–2012 AIST president, **R. Joseph Stratman** of Nucor Corp., hosted a breakfast on Tuesday, 8 May, at which numerous association awards were presented, followed by a keynote presentation. AIST executive director **Ron Ashburn** began the 2012 breakfast program by introducing Stratman to a sold-out crowd of 1,100. The breakfast was sponsored by Danieli, HP and Tenova.

Stratman spoke about Nucor’s initiative to encourage domestic manufacturing and fair trade. “America can still be a nation that innovates, makes and builds,” he said. Members of the steel industry can speed this initiative, said Stratman, by taking advantage of the opportunities in the steel industry and in AIST. AIST educates our ever-younger workforce through programs like the International Steel Academy. New programs like the AIST Process Benchmarker, the upcoming Digital Library, and planned additions to *The Making, Shaping and Treating of Steel*[®] series are all ways in which AIST is helping to advance the state of the steel industry as more and more people retire.



The largest AISTech exposition ever kicked off Monday, 7 May, with 5,228 attendees by week’s end.



AIST executive director Ron Ashburn at the 2012 President’s Award Breakfast, which was held on Tuesday, 8 May.



Joseph Alvarado delivered the AIST William T. Hogan, S.J. Lecture at the President’s Award Breakfast.





Charlene Bell (left) presents the John Bell Award for EAF Innovation, Improvement and Education to Charloom Goldenhuis.



José Henrique Junior Noldin (left), representing ABM, exchanged plaques with AIST president Joe Stratman.



Kent Peaslee, AIST 2012–2013 president, spoke at the President's Welcome Reception and Dinner.

Thomas J. Russo, AIST Foundation president, then discussed the Matching Funds Challenge II. The AIST Foundation had raised more than \$1,000,000 during the 2010–2011 academic year through a \$500,000 match from the AIST board of directors. The Foundation hopes to surpass that amount during this second campaign, in which AIST will once again match donations up to \$500,000.

The 2012 Steelmaker of the Year Award was presented to **Andre B. Gerdau Johannpeter**, chief executive officer of Gerdau. While accepting the award, Johannpeter said, "It's a great honor to be here receiving this award. When receiving an award, it's a good time to reflect. It's a sign you are moving in the right direction. I wouldn't be here today if it weren't for the Gerdau team of more than 45,000 all over the world." An interview with Mr. Johannpeter appears on pages 89–90 of this issue.

The keynote speaker was **Joseph Alvarado**, president and CEO of Commercial Metals Company. His speech, entitled, "The Light at the End of the Tunnel," is included on pages 51–56 of this issue of *Iron & Steel Technology*. Alvarado was presented with the William T. Hogan, S.J. Lecture Award in recognition of his keynote address.

For the full list of the 2012 Association-Level and Technology Division-Level Award winners, see pages 57–73 of this issue.

PRESIDENT'S WELCOME RECEPTION AND DINNER

On Tuesday evening, the AIST board of directors, AIST Foundation trustees and other invited guests gathered at the Georgia Aquarium for the President's Welcome Reception and Dinner. The event recognized all outgoing board members for their service to the association.

During the event, the success of the Combi-Membership established between AIST and the Brazilian Association of Metallurgy, Materials and Mining (ABM) was celebrated with the exchange of plaques of recognition between the two associations. **José Henrique Junior Noldin**, from Lhoist Group, represented ABM at the event and received a plaque from AIST president **Joe Stratman**. This partnership provides AIST members with the opportunity to obtain an ABM membership and gain in-depth information about the Brazilian steel industry.

The inaugural John Bell Award for EAF Innovation, Improvement and Education was awarded posthumously to **Jacobus Marthinus Andreas "Kobus" Geldenhuis**, of Nucor Crawfordsville. The award honors **John R. Bell**, executive vice president and manager of operations at Severstal Columbus LLC, who passed away in September 2011. Mr. Geldenhuis passed away in August 2011. Mr. Bell's wife, Charlene, presented the award to Mr. Geldenhuis' wife, Charloom.

AISTech2012

at-a-glance

(countries represented, cont'd.)



Russia



Taiwan



Thailand



Netherlands



Saudi Arabia



Bosnia & Herzegovina



Israel



Luxembourg



Malaysia



Nigeria



Romania



Singapore



South Africa



United Arab Emirates

The initiation of the AIST Foundation's Matching Funds Challenge II was again recognized when AIST president **Joe Stratman** presented a symbolic check worth \$500,000 to **Tom Russo**, AIST Foundation president. See page 34 for more information about the challenge.

Finally, **Kent D. Peaslee** was welcomed as the incoming AIST president for 2012–2013.

TOWN HALL FORUM

The 2012 Town Hall Forum took place Wednesday morning, 9 May in the Georgia World Congress Center's Thomas B. Murphy Ballroom. Approximately 850 people were in attendance as six key leaders discussed current issues, concerns and opportunities in the global steel industry. More than 120 people watched via live Webcast, which was sponsored by SMS group and NSK.

The Town Hall was moderated by **Jon Delano**, money and politics editor for KDKA-TV (CBS), Pittsburgh. The panelists were: **Christian Dohr**, president and chief executive officer, ThyssenKrupp USA; **André B. Gerdau Johannpeter**, chief executive officer, Gerdau; **Dieter Hoeppli**, managing director, Deutsche Bank Securities Inc., Natural Resources Group; **David A. Sumoski**, vice president and general manager, Nucor Corp.; **P.S. Venkataramanan**, chief executive officer — Long Carbon North America, ArcelorMittal; and **Michael S. Williams**, senior vice president — North America flat rolled operations, United States Steel Corporation. The session chair was **George J. Koenig**, president, Berry Metal Co.

Delano opened the discussion by pointing out that the energy market currently accounts for 7% of steel demand. The 21st century energy economy is providing growth opportunities for the steel industry in a variety of ways, which are leading to increased investment in the United States. Gas prices in the U.S. are \$2–3 per mmBtu, but over \$10 in other countries — and as much as \$17 in Japan. Because the price of input energy affects steel production, according to Hoeppli, steel companies are looking to shift to gas-based production. “We have Nucor building a big DRI facility in the South,” he said. “We have U. S. Steel talking about using more natural gas and maybe moving into DRI. This is a huge competitive advantage for the North American steel industry, and we are only in the early stages.”

The lowering costs of energy are driving investment decisions among steelmakers, especially in the U.S. For instance, Gerdau is investing a total of \$16.5 billion over the next five years, with a meaningful portion of that directed toward this growing market, including investments in both Brazil (plate mill) and the United States (multiple special bar quality (SBQ) expansions). Johannpeter said, “The price of gas will dictate what technology you'll use in



Christian Dohr is president and chief executive officer of ThyssenKrupp USA.



André B. Gerdau Johannpeter is chief executive officer of Gerdau.



Dieter Hoeppli is managing director of Deutsche Bank Securities Inc.



Brimacombe Memorial Lecture



International Alliance Lecture



President's Award Breakfast



Town Hall Forum

Individual Event Attendance



David A. Sumoski is vice president and general manager of Nucor Corp.



P.S. Venkataramanan is chief executive officer — Long Carbon North America of ArcelorMittal.



Michael S. Williams is senior vice president — North America flat rolled operations of United States Steel Corporation.

the future. If you can use more gas, you might change your technology route and migrate to different iron units. When gas was expensive, a lot of DRI production had to be shut down.”

United States Steel Corporation is working to develop the products and services that the oil and gas industry needs. The company recently completed a new oil country tubular goods (OCTG) heat-treating facility in Lorain, Ohio. Williams confirmed the effect of the new energy economy: “U. S. Steel consumes up to 120 million mmBtu each year. A \$1 change in the price of natural gas is significant, and has enhanced our ability to compete globally,” he said. U. S. Steel hopes to leverage its raw materials position with gas-based technologies such as direct reduced iron (DRI), and is actively pursuing such opportunities.

ArcelorMittal, likewise, is positioning itself for growth within the U.S. “This is an exciting time,” said Venkat. “For a change, we are looking at energy as an opportunity rather than a problem or an issue. The availability of gas in the United States is opening up new areas for us to grow in.” Venkat said that ArcelorMittal will be looking to run its DRI facilities at maximum capacity due to low-cost gas and will consider increasing its DRI charge into the company’s electric arc furnaces (EAFs). The company continues to invest in the development of steel products for line pipe and OCTG, as well as steel for the manufacture of wind turbines.

Dohr said the new ThyssenKrupp mill in Alabama can produce X-80 to X-100 grade sheet, which the company expects to be in higher demand from the energy market moving forward. Meanwhile, Nucor, according to Sumoski, is spending \$400–500 million this year to expand its reach into this key market through plate mill upgrades and multiple SBQ expansions.

Companies look at steel consumption growth trends, raw material availability and energy costs when making investment decisions. We have already seen this happen, as Nucor completely changed course midstream in Louisiana from building a blast furnace to produce pig iron to building a DRI plant because of the abundance of low-cost natural gas.

How does the abundant natural gas supply affect steel producers’ raw materials strategies? All the panelists agreed that they are working toward increased self-sufficiency in raw materials. U. S. Steel is evaluating an iron ore expansion project alongside investments to increase its coke and coke substitute capacity; ArcelorMittal is growing rapidly in the mining of both iron ore and coking coal; and Nucor is also looking to increase control of its raw material inputs by making acquisitions on the scrap side and building a 2.5 million tpy DRI facility. Gerdau is currently searching for a partner to monetize sizeable iron ore resources in Brazil.

AISTech 2012 at-a-glance

30 Author Countries

400 Technical Presentations

81 Technical Sessions

Authors by Region

- 205** Asia
- 382** Europe
- 63** South America
- 433** North America

What about automotive and construction? The automotive market has rebounded more quickly than expected, according to Hoeppli. In 2009, the auto industry had its worst year in 30 years, selling 10.7 million cars and trucks. That number grew to 12.7 million in 2011 and is forecast to reach more than 14 million in 2012. The automotive segment is particularly important to the steel industry. **Mr. William Clay Ford Jr.**, executive chairman of the Ford Motor Co., addressed the session via video on behalf of the industry's automakers. He asked the panelists, "How is your company positioning itself to be a strong partner to the auto industry?"

"Our objective is to assist the auto industry with our material, and make steel the material of choice," said Williams. "It is U. S. Steel's belief that ultrahigh-strength and advanced high-strength steels provide the best value proposal for the auto industry and the consumer."

"Steel is the innovation behind the automotive sector," added Dohr. Johannpeter said that while the rebound in North America is very apparent, the opportunities for the steel industry to partner with the automotive industry are global, "especially in developing countries like Brazil, India and China."

The panelists had different adjectives for the construction market. Nucor's Sumoski said the market is improving, but "improving from pathetic is still pathetic." The general consensus was that the construction market is getting better but that meaningful improvement would not happen in the near term.

Further topics explored during the Town Hall Forum included currency and trade in a global marketplace, collaboration between steel producers and their suppliers, the core value of safety, improving the image of the steel industry and tactics for recruiting the next generation. The Town Hall Forum will remain available on-demand — free to AIST members — on AIST.org through 2012.

A lunch for all attendees followed in the Exhibit Hall. The lunch was sponsored by Berry Metal Co., Bognar & Co. and Herr-Voss Stamco.

MEMBER CHAPTER MEETINGS AT AISTECH

During AISTech 2012, leaders from AIST's Brazil Member Chapter, India Member Chapter and the proposed Italy Member Chapter met to discuss advances within each chapter and future programming opportunities within each region.

Representatives from the AIST Brazil Member Chapter met with AIST staff members on Tuesday, 8 May to discuss the success of the AIST/ABM Partnership, including the Combi-Membership and future collaborative opportunities. Also discussed was the direction of the Member Chapter and the potential of a future AIST Specialty Conference in Brazil.



The Town Hall Forum was attended by 970 people on Wednesday, 9 May.



Representatives of the proposed AIST Italy Member Chapter met with AIST staff on Wednesday, 9 May.



AIST's Brazil Member Chapter met with AIST staff on Tuesday, 8 May.



Exhibiting Companies



AIST's India Member Chapter met with AIST staff on Sunday, 6 May.



Students attending AISTech 2012 toured Gerdau Cartersville.



A student orientation dinner was held on Sunday, 6 May.

On Sunday, 6 May, the India Member Chapter officers and representatives met with AIST staff members. The AIST India Member Chapter was formed in 2008 and has been led by **Mr. N.K. Guha**, who served as the chapter secretary until his recent retirement. Mr. Guha was commended for his service to the India Member Chapter, and **Mr. B.N. Mukhopadhyay** was appointed to the position of interim secretary. Also at the meeting, a review of AIST's 2011 International Steel Academy (ISA) was discussed, and plans to hold a 2013 ISA in India were presented, possibly near SAIL or JSPL.

AIST staff members met with representatives from the proposed AIST Italy Member Chapter on Wednesday, 9 May 2012. The discussion focused on establishing a program in Italy for fall 2012. The fall program will feature multiple panel discussions from industry experts. More details about the fall event will be announced as soon as they are finalized.

STUDENTS AT AISTECH

The AIST Foundation, with support from eight industry companies, held student-specific programs at AISTech 2012 in Atlanta, Ga., 6–10 May. The corporate sponsors were AK Steel, ArcelorMittal, Gerdau, Harrison Steel Castings Co., Nucor Corp., Steel Dynamics Inc., ThyssenKrupp and TMK IPSCO.

Engineering students from all related disciplines were encouraged to attend AISTech 2012 and were offered complimentary registration, travel grants and paid session monitor positions through the AIST Foundation and Material Advantage programs. A total of 104 students, both undergraduate and graduate, from 35 universities and representing nine different countries, registered for the conference. In addition, AIST held an Attendance Challenge among participating universities. The university with the highest number of students in attendance received US\$500. The winner of this year's challenge was Universidade Federal de Ouro Preto, with 18 students registered.

Student activities began with a plant tour on Sunday, 6 May, to the Gerdau steel mill in Cartersville, Ga. Following the tour, the students attended an orientation dinner at which they learned about AIST and the AIST Foundation from **Ron Ashburn**, AIST executive director; **Tom Russo**, president of the AIST Foundation; and **Stephanie Glashagel**, manager of talent acquisition at TMK IPSCO. 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, 7 May. During this contest, 10 students presented eight projects before a panel of judges. The judges were **Kelly Dallas** from ArcelorMittal, **Otavio Sanabio** from O&S Consultoria E Servicos Ltda., and **Kevin Bort** from New Millennium Building Systems, who also acted as moderator.

AISTech2012
9
 Student Countries

at-a-glance

- 27** First time in the United States
- 68** First time at AISTech
- 53** First steel conference



Participants were judged on technical content, topic coverage and presentation skills. The winners of the presentation contest were: **Scott Pisarik** from the Missouri University of Science & Technology (first place), **David Futch** from the University of Florida (second place) and **Mingqian Zhu** from the University of Toronto (third place).

The Graduate Student Poster Contest was held on 7 May in the Georgia World Congress Center. In all, there were 17 posters entered in the contest. AIST members **Ron O'Malley** from Nucor Steel-Decatur LLC, **James Finley** from ArcelorMittal, and **Edgar Gonzalez** from Quaker Chemical volunteered to judge the poster entries.

The Poster Contest winners were: **M.D. Taifur Rahman** from Purdue University-Calumet (first place), **Eric Marks** from Georgia Institute of Technology (second place) and **Shane C. Kennett** from the Colorado School of Mines (third place).

Following the contest, tickets were drawn for door prizes donated by ArcelorMittal, Herr-Voss Stamco, InfoSight Corp., Tenova Pomini, Siemens and SMS Siemag. AIST would like to express special thanks to the contest moderator, **Kevin Bort** of New Millennium Building Systems, along with all contest judges and companies that 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.

MATERIALS CAMP AT AISTECH

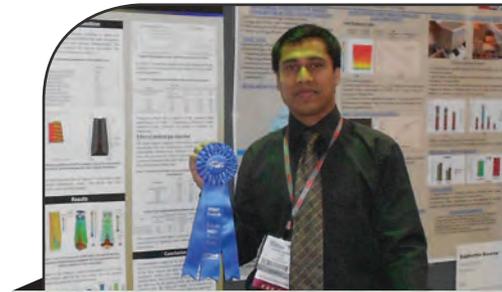
For the first time at AISTech, the AIST Foundation hosted the ASM Materials Education Foundation's "Materials Camp." The camps are held for high school and middle school students to introduce them to and excite them about science and engineering in a "hands-on" setting. On 8-9 May 2012, two separate camps were held, comprising 10 demonstrations:

- Nitinol — A Shape Memory Alloy
- Corrosion of Metals
- LaserFest
- Properties of Ceramics
- Annealing of Metals
- Microstructures of Metals
- What Makes a Metal Metallic?
- Building Blocks Rocks of Steel
- Electroless Copper Plating
- Recycling — What Is an MRF?

In all, 223 students from five area schools attended the camp over the two-day event. **Martha Muir**, a teacher from Mill Springs Academy, expressed her appreciation for the program. "My students and I totally enjoyed the Materials Camp. Riding back to school, the students were saying that the camp was their favorite activity all year — and this crowd had just come back from a weekend



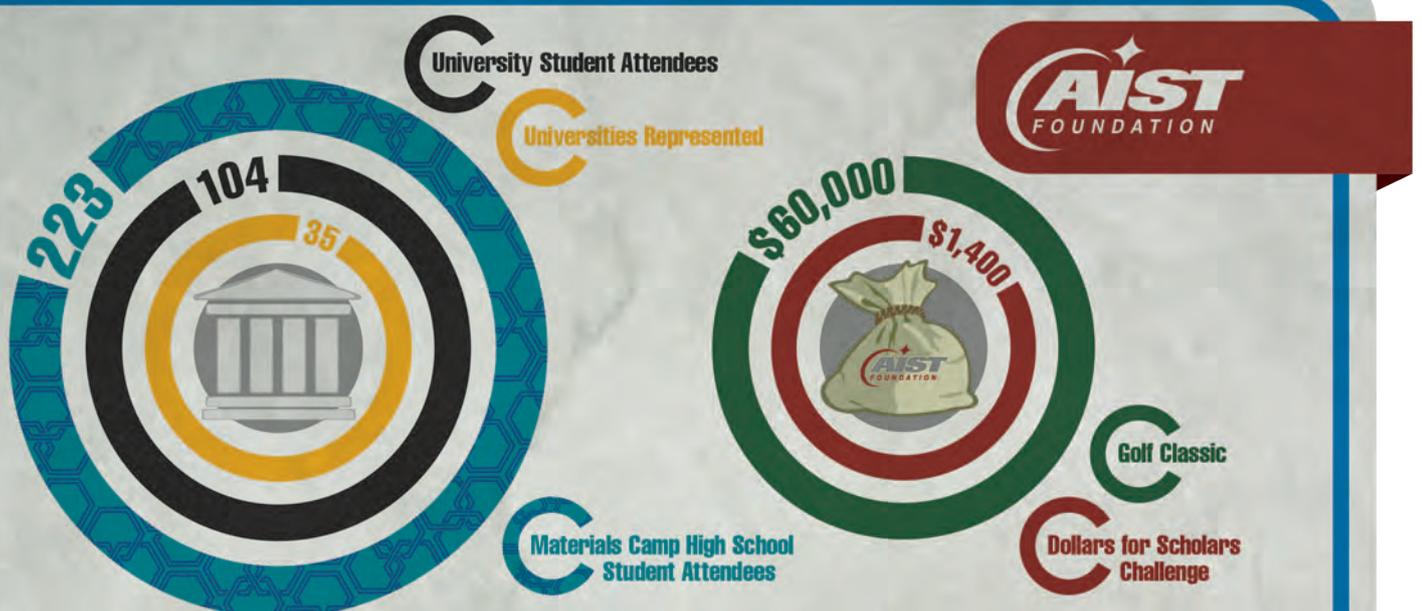
Student Project Presentation Contest first-place winner Scott Pisarik (left) with Kevin Bort (right).



The first-place winner of the Graduate Student Poster Contest was M.D. Taifur Rahman from Purdue University-Calumet.



A total of 223 students participated in the ASM Materials Education Foundation's "Materials Camp."





The AIST executive committee convened at AISTech 2012.



The AIST board of directors met during AISTech 2012.



The AIST Foundation board of trustees gathered at AISTech 2012.

white water rafting trip! I think programs like the Materials Camp will expose students to areas that might interest them and therefore lead them into the sciences.”

AIST thanks the following for their demonstrations and assistance in presenting the camp: Georgia Tech Material Advantage Chapter, ASM Atlanta Chapter, ASM Materials Foundation and the AIST Southeast Member Chapter. The camp was sponsored in part by Gerdau, MCC International and Nucor Corp. Check out photos of all the student events at AISTech 2012 in the online photo gallery on the “Student Programs” page on AIST.org.

ACKNOWLEDGMENTS

A special thank-you is extended by the AIST executive committee and the board of directors to the following individuals who helped make AISTech 2012 a success: AISTech 2012 Conference Planning Committee chair, **William Schlichting** 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, **Tom Russo** of Trusscon Inc.; Golf Committee chair, **Fred Harnack** of United States Steel Corporation; and the authors who wrote and/or presented papers during the conference. Thanks are extended to all the exhibiting and sponsoring companies, and also to **Michelle Applebaum** of Steel Market Intelligence for the original text regarding the Town Hall Forum.

AISTECH 2013: PITTSBURGH, Pa., USA

Mark your calendar now to attend AISTech 2013! Steel’s premier event of the year will take place 6–9 May 2013 at the David L. Lawrence Convention Center, Pittsburgh, Pa., USA.

Submit an abstract for a technical presentation by emailing abstracts@aist.org or visit AISTech.org. Also, join more than 270 companies that have already reserved their exhibit space — the highest level ever achieved of re-signs for AISTech exhibitors. Contact the AIST Sales Team or visit AISTech.org.

See you there! ♦

AISTech2013

Mark Your Calendar

6–9 May 2013

David L. Lawrence Convention Center
Pittsburgh, Pa., USA



2013 Pittsburgh, Pa.

2014 Indianapolis, Ind.

2015 Cleveland, Ohio