

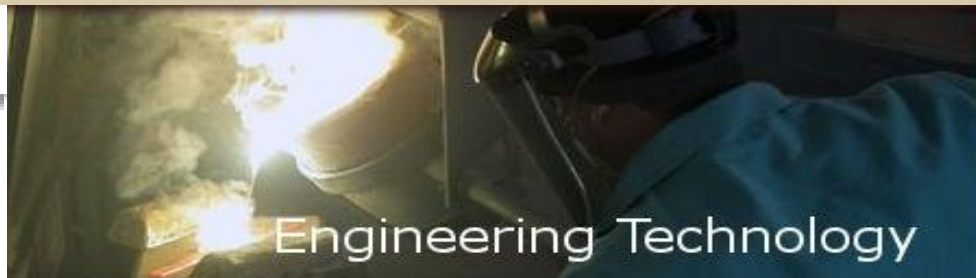
# Update on Steel Related Programs and Increasing Student Participation

**Laura Bartlett**

*Kent D. Peaslee Junior Faculty Awardee*

**University Industry Relations Roundtable  
AISTech May 4<sup>th</sup> 2015**

TEXAS  STATE  
UNIVERSITY<sup>®</sup>



Engineering Technology

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# The Kent D. Peaslee Junior Faculty Award

- ❖ Special thanks to the AIST Foundation for selecting me
- ❖ Very honored to receive this award named after my mentor and friend
- ❖ I miss him very much!
- ❖ I hope carry on Dr. Peaslee's good work



# Outline

- ❖ Steel related curriculum additions
- ❖ Steel Mill Tours
- ❖ Local Outreach Programs
- ❖ Our First Annual Texas State Steel Industry Day Celebration!
- ❖ Undergraduate and Graduate Steel Research Projects at Texas State
- ❖ Growing Our Steel Industry Internship Program
- ❖ Future Events

# Metalcasting at Texas State

- ❖ **The Foundry and Heat Treatment Lab**
- ❖ 5000+ square foot facility
- ❖ Two induction furnaces
- ❖ Thermal analysis
- ❖ Green sand, no-bake sand, lost foam, investment shell
- ❖ Programmable furnaces for heat treating in air or with protective atmosphere
- ❖ Cut off saws, band saws, grinding, and shot blasting equipment
- ❖ 300 lb ferrous induction furnace to be installed this summer! **\$6,400 +50% in-kind donation from Emsco**



**First heat of steel ever cast at  
TATE Texas State**



# Other New and Planned Equipment Purchases

- ❖ KDP Junior Faculty Award funds leveraged with department funds and funds from industry to increase steel related curriculum and research
- ❖ Sentry Model AI electrically heated salt pot furnace (250 - 900°C) – **\$23,000**
- ❖ **Sentrotech Box Furnace - \$15,000** (\$5,000 AIST Funds)
- ❖ **IRM Horizontal 2-High Hot and Cold Rolling Mill - \$81,250**  
Actively pursuing funding



# Steel Related Curriculum additions

- ❖ **TECH 4330 – Foundry and Heat Treatment**
- ❖ **Senior level course**
  1. Steelmaking methods
  2. Induction melting and casting of low alloy steel
  3. Microstructures of steel – Jominy End Quench Test (\$3,000 fabrication cost)
  4. Heat treatment and mechanical properties of plain carbon and alloy steel



# Steel Related Curriculum additions

- ❖ **TECH 1393 – Manufacturing Processes II**
- ❖ **New in Spring 2014! - Freshman/Sophomore level course**
- ❖ Basically an introductory metals casting and processing course
- ❖ Advantages: Get students interested in steel early and introduce internship opportunities!
- ❖ Steel related subjects covered:
  1. Nomenclature and classification of steels
  2. Ingot casting vs continuous casting of steel
  3. Defect analysis in continuous cast steel billets and slabs
  4. Temperature and processing effects on the notch toughness of SAE 1018

# TECH 1393 Lab Activity: Tour of CMC

- ❖ Best way to teach continuous casting:  
*Move the classroom to the mill!*
- ❖ 14 students attended a tour of CMC Seguin
- ❖ Students toured the EAF, LMF, Caster, Hot mill, and quality departments
- ❖ expose students to technical careers in the steel industry



**CMC**

**Commercial Metals**



# TECH 1393 Lab Activity: Tour of CMC



- ❖ Holding a tour of a steel mill as part of a regularly scheduled laboratory activity helped to reinforce principles learned in lectures
- ❖ Difficult to do in our labs at Texas State!

# TECH 1393 Lab Activity: Tour of CMC



- ❖ After the tour, students attended a question and answer session followed by a lecture on technical careers in the steel industry
- ❖ Thanks to CMC for providing lunch for our students!

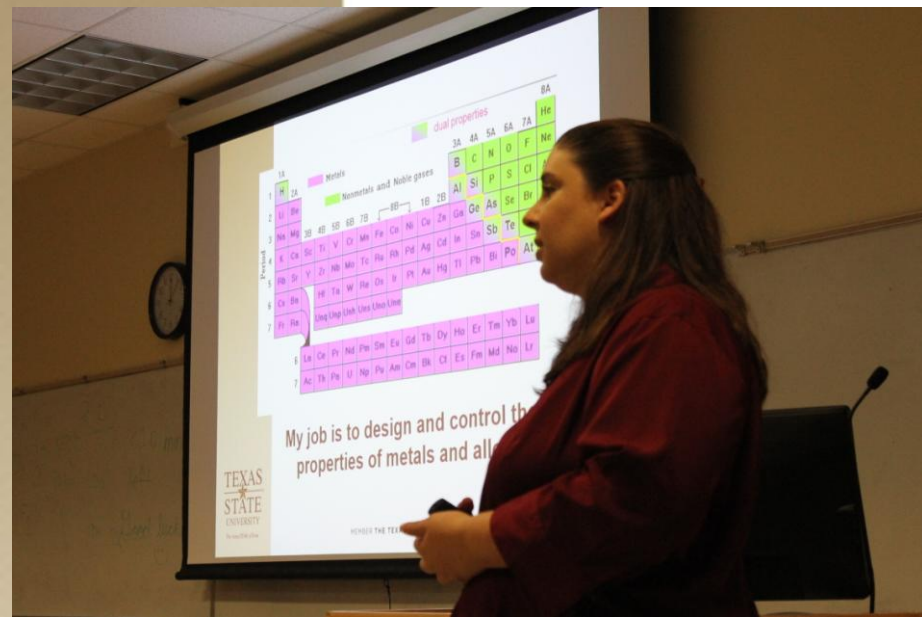


# Guest Lectures



- ❖ Two lunchtime lectures:
  1. Environmentally friendly steel production
  2. Transforming process data into powerful information
- ❖ Both guest lectures very well attended (40+ students)

# Community Outreach: Mountain Valley Middle School Tour



- ❖ Students, parents, and faculty members introduced to the importance of metallurgy and materials science
- ❖ 60 students, 7 parents, and 10 faculty members attended



# Community Outreach: Mountain Valley Middle School Tour



- ❖ Lost foam casting of aluminum in the Texas State Foundry
- ❖ Supervised by AFS and MA students

# Community Outreach: Mountain Valley Middle School Tour



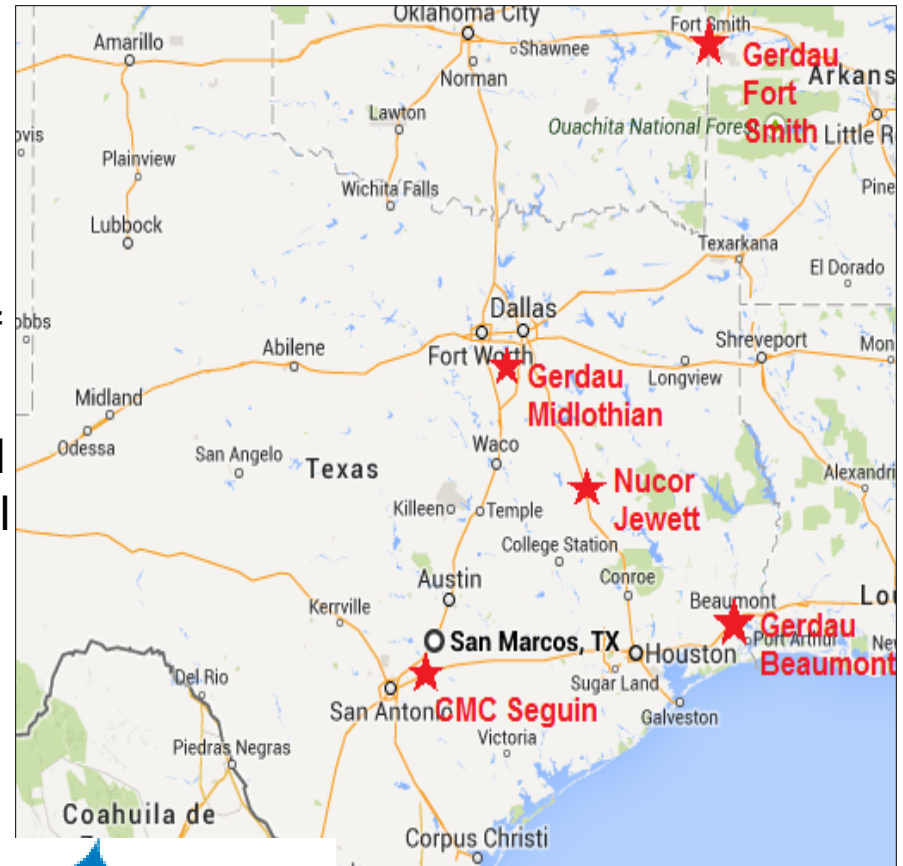
- ❖ Students participated in steel-related mechanical testing demonstrations

# First Annual Texas State Steel Industry Day

- ❖ critical challenge facing the steel industry - how to remain competitive with other emerging high strength materials
- ❖ Texas State with it's student body of 37,000 represents an untapped pool of young talent for steelmakers
- ❖ First annual steel industry day featured three steel companies, AIST, and Steel Manufacturer's Association



SITY SYSTEM™





# TEXAS STATE STEEL INDUSTRY DAY CELEBRATION!



- Learn about how steel is made and enjoy free BBQ!
- \$600,000 in Scholarships, Internships, and Career Opportunities!
- Network with Industry Representatives!
- Win Free Gifts!

**April 2nd 2015  
outside LBJ**

Free Snacks: 10:00 - 2:00 pm  
BBQ Lunch: 11:30 - 1:00 pm

**6pm RFM 3241- Info Session,  
Pizza dinner, and drawing for prizes**



Sponsored by AIIST, Engineering Technology, and Career Services

**TEXAS  
STATE  
UNIVERSITY**

*The rising STAR of Texas*

- ❖ Steel industry day celebration actually a two day event
- ❖ Designed for maximum exposure

MEMBER THE TEXAS STATE UNIVERSITY SYSTEM™



# Scholarship Opportunities in the Steel Industry!

**Speaker: Ms. Lori Wharrey**  
**Association for Iron and Steel Technology**

## **WHEN:**

***Wednesday, April 1, 2015***

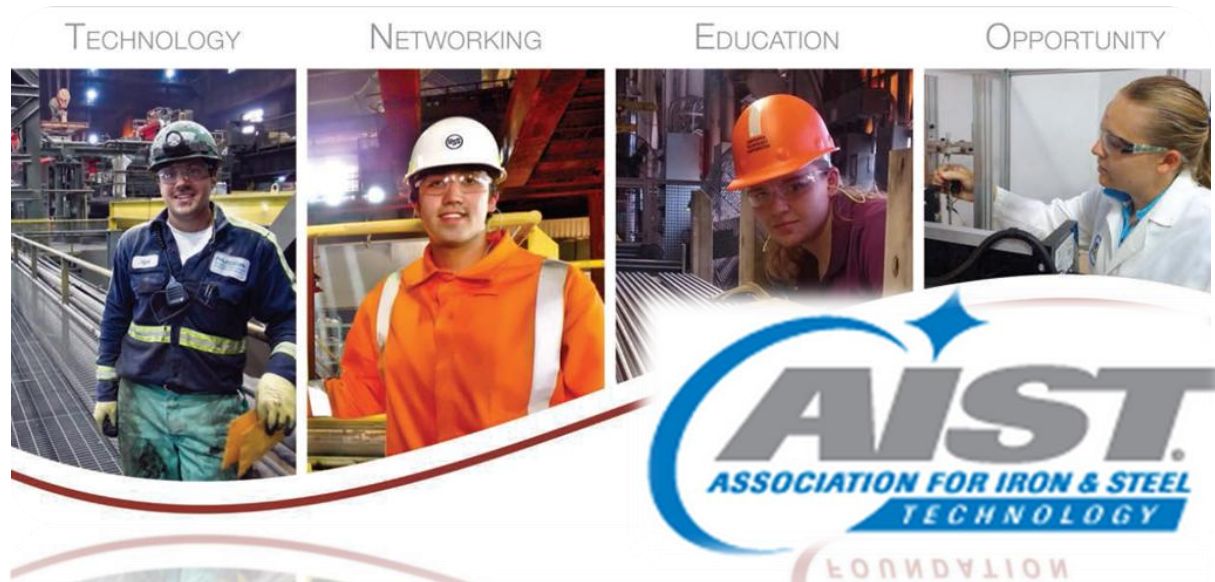
***11:45 – 1:15 p.m.***

**WHERE: RFM 4231**

- Did you know that steel is the most recycled material on Earth?
- Today's steel is engineered down to the atom for high performance applications!
- AIST donates more than \$600,000/year in scholarships to all kinds of majors
- Come find out about high paying and challenging technical careers!

## **Door Prizes!**

**Free Pizza and Drinks!**



# Material Advantage and Scholarship Opportunities



- ❖ Lecture was well attended
- ❖ More than 40 students attended – standing room only!



# Steel Day Student-Industry Welcome Dinner



- ❖ Held at Saltgrass Steakhouse
- ❖ Attended by industry representatives, students, faculty members, and career services

# Steel Day Student-Industry Welcome Dinner



- ❖ Presentation by Career services on Jobs4Cats
- ❖ Presentation by Undergraduate Research Assistant Sabra Serino on Technical Careers in the Steel Industry



# Early Morning Set-up for the Main Event!



# Texas State Steel Industry Day



- ❖ Event lasted from 10am until 2pm on April 2<sup>nd</sup>
- ❖ BBQ lunch catered by Fushack's BBQ!



# Texas State Steel Industry Day



- ❖ Over 1,000 students passed by the LBJ student center
- ❖ Over 300 of them stopped to talk to industry representatives



# Texas State Steel Industry Day



- ❖ Students registered to win prizes at the evening session
- ❖ Learned about scholarships and career opportunities

# Texas State Steel Industry Day



- ❖ Industry representatives were very happy with the positive response of our students



# The Evening Session



- ❖ Presentations by Lori Wharrey and Sam Matson on today's steel industry and high tech careers in the steel industry
- ❖ Attended by 30+ students



# Winners of the prize drawings!



# Texas State University partnership with CMC Seguin

- ❖ Significant progress has already been made toward forging a collaborative relationship between Texas State and CMC
- ❖ Training sessions to understand day-to-day operations
- ❖ CMC has provided guest lecturers for the Engineering Technology and Materials Science Departments, speaking on career opportunities and the technological aspects of steelmaking
- ❖ Representation on our Engineering Technology Industrial Advisory Board
- ❖ In-kind donations of equipment and ferroalloys (\$5,000)
- ❖ Cash donation of \$5,000 to support steel related programs at Texas State



# Texas State University partnership with CMC Seguin

- ❖ An internship program has been established between CMC Seguin and Texas State
- ❖ Two students (one male and one female) from the Engineering and Engineering Technology departments have completed paid internships in the Meltshop at CMC
- ❖ Two more students will complete internships this summer
- ❖ Two recent graduates from Engineering Technology have taken full time employment at CMC
- ❖ The amount of internship assistance provided by CMC totaled more than \$15,000
- ❖ The total amount of financial support by CMC to Texas State programs and students totals more than \$25,000
- ❖ I would like to personally thank CMC  
For their outstanding support of our  
programs





# Steel Casting and Research Programs at Texas State



- ❖ Undergraduate and graduate research assistants working on steel related projects:
- ❖ Sabra Serino, Cassie Elliot, Eunice Solis, Madeline Jennings, David Coleman, Colin Payne and Michael Grams
- ❖ Congratulations to Sabra Serino and Enice Solis for accepting internships at CMC and Nucor!

# Student participation at AISTech 2015



- ❖ This year we have two students here at AISTech
- ❖ One of our students, Ms. Sabra Serino, participated in the Student Presentation Contest
- ❖ Presenting work from a summer internship at CMC

# Student participation with MA and AIST

- ❖ Texas State now has 19 new Material Advantage students!
- ❖ MA and AFS students helped to organize steel day and other outreach events
- ❖ Two of those students applied for an AIST scholarship this spring
  1. That's 200% more than last year!
  2. Still need to increase the number of scholarship applicants



# Future Plans

- ❖ Second Steel Industry Day will be held in October 2015
- ❖ Establish an internship program with Nucor and Gerdau
  1. One Texas State student will intern this summer at Nucor Jewett in the hot mill – direct result of participation in Steel Industry Day
  2. Internships and full time opportunities at Gerdau
- ❖ Summer steel camps and workshops for high school students and faculty members
- ❖ Organize a Fall bus tour of Gerdau, Nucor, and CMC
  1. Two or three day event
  2. Maximum exposure to the steel industry
  3. Nucor has generously offered to help with expenses
  4. CMC has also offered to help