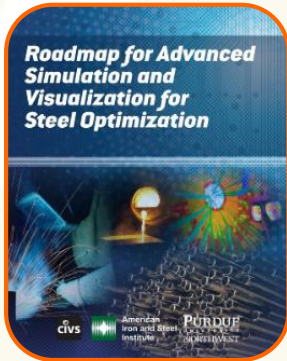


CIVS Newsletter

October 2018

“Where Ideas Become Reality”

Issue 21



SMSVC Roadmap Stands Out from the Cloud

The collaborative efforts of more than 120 contributors, including the U.S. Dept. of Commerce’s National Institute of Standards and Technology, the American Iron and Steel Institute, the Association for Iron & Steel Technology (AIST), the Steel Manufacturing Simulation and Visualization Consortium (SMSVC), and CIVS, culminated in the August 22, 2018 official online release and publication of the AMTech Program–commissioned report: *Technology Roadmap for Advanced Simulation and Visualization for Steel Optimization*. [Read more ...](#)

Naval Cooperative Agreement Grant Seeds CIVS Research

In September of 2018, PNW researchers and the Center for Innovation through Visualization and Simulation (CIVS) were recognized as recipients of a Cooperative Agreement Grant awarded through the NSWC Crane federal laboratory in Crane, Indiana. Principal Investigators Chenn Zhou and Hansung Kim received the competitive award for their research proposal on 3D modeling and simulation for lifetime prediction of electronic components. This research has the potential to serve as the foundation for updating system models with real-time operational environments to both provide accurate component lifetime predictions and identify specific factors that can cause and/or accelerate materials degradation.



Dr. Alison Smith, a Chief Engineer of Materials Analysis within the Flight Systems Division at NSWC Crane, remarked, “Initiatives such as the Cooperative Agreement Program enable the NSWC Crane’s Chief Technology Office to serve as a synergy generator, allowing the federal laboratory to access and benefit from university science and technology expertise, while supporting pioneering research for the benefit of the public.” [Read more ...](#)

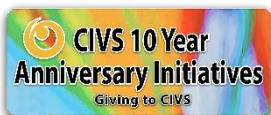
Die-Casting Program Selects CIVS for Smart Shop Floor Development

On the strength of its proven record for developing virtual models of industrial processes and environments, PNW’s CIVS was selected as a subcontractor for a new American Metalcasting Consortium program—the Innovative Casting Technologies (ICT) program, which was awarded through the Department of Defense’s Defense Logistics Agency (DLA) to address targeted DLA metal-casting research-and-development areas of interest. CIVS project roles and objectives center on developing a “smart” shop floor for die-casting, including creation of virtual die-casting machines and melting furnaces for process optimization. [Read more ...](#)



CENTER FOR INNOVATION THROUGH
VISUALIZATION & SIMULATION

PURDUE
UNIVERSITY
NORTHWEST



2200 169th Street
Hammond, IN 46323

219.989.2765
civs@pnw.edu
centers.pnw.edu/civs



Students Walk into Future at PNW, CIVS



More than 300 Hobart Middle School students visited PNW-Hammond on October 19, 2018, on a “Walk into My Future” event day, organized by the Office of Undergraduate Admissions. Among the tour features were PNW’s nursing simulation labs, science experiments, and broadcasting studio control rooms. CIVS visual technology demonstrations tied the sack lunches for “most memorable event.” [Read more ...](#)

Director, CIVS Alumnus Present at International Heat Transfer Conference



CIVS Director Dr. Chenn Zhou and PNW/CIVS alumnus Bangju Chen reunited recently in Beijing, China, for the 16th International Heat Transfer Conference, held August 10-15, 2018, at which Zhou was part of the international organizing committee, a pair of technical presentations related to steel casting/cooling were delivered, and select research accomplishments of the SMSVC and CIVS were shared with international audiences. [Read more ...](#)



Virtual Septic System Project Promotes Safeguards

On August 3, 2018, PNW professors Chandra Viswanathan Chandramouli and Chenn Zhou, CIVS members John Moreland and Komal Sharma, and Indiana Department of Natural Resources Grant Specialist Sarah Nimetz celebrated the closeout meeting and last-review-prior-to-final-report for the Virtual 3D Model of a Septic System project. The project makes practical information about septic system maintenance widely and easily available in a user-friendly format. [Read more ...](#)

Army Panel Explores Strategies in Virtual Training

Recognizing the need for repair and troubleshooting skills to keep pace with advances in technology, eight representatives of the U.S. Army visited CIVS on July 30, 2018, and took in presentations on state-of-the-art technician training and simulators developed through CIVS projects. Director Chenn Zhou and Kyle Toth led the group through flagship projects such as the AMTEC Virtual Training Simulator and the NSF/ATE-sponsored Wind Technician Safety and Troubleshooting Simulator. [Read more ...](#)



Spotlight on Faculty: Dr. Shuhui (Grace) Yang



Shuhui (Grace) Yang is an Associate Professor in the Department of Mathematics, Statistics, and Computer Science at Purdue University Northwest, which she joined in 2009. Along with co-PI Dr. Besma Smida, Dr. Yang was the first to have an **NSF Research Experiences for Undergraduates (REU) Site** funded at PNW. That program, “Sustainable Wireless Communication” (2015 – 2017), also featured CIVS as a partner and Dr. Chenn Zhou as a faculty mentor. Since Fall 2017, Dr. Yang has successfully developed and mentored a joint computer science and CIVS senior design project, “Indoor Navigation and Information with Augmented Reality,” which has been awarded an Indiana Space Grant (Fall 2017) and PNW

Undergraduate Research Grants in both Spring and Fall of 2018. Her research interests include visualization-assisted navigation, simulation for cloud computing, wireless networks and mobile computing, wireless security and privacy, and parallel and distributed systems.

AIST Technology Committees Roll Through Steel Industry Advancements



Around 70 attendees from the AIST’s Hot Sheet Rolling and Rolls Technology committees participated in a two-day meeting hosted by PNW-Hammond on September 25-26, 2018. Among the activities arranged by AIST lead organizer Charlie Bender were tours of ArcelorMittal’s Indiana Harbor Hot Strip Mill and CIVS facilities; discussions about safety, major projects, and mill upgrades; and roundtables on roll and mill design for advanced high-strength steel. [Read more ...](#)

Engineering Diversity Featured at 11th Annual High School Seminar



Mini-lectures and related hands-on activities in various engineering disciplines—electrical, mechanical, civil/structural, and metallurgical/materials science—were the order of the day as nearly 300 region high school students toured the PNW Hammond campus and CIVS facilities on Friday, October 5, 2018, for the 11th Annual AIST High School Engineering Seminar. [Read more ...](#)



UIC Professor’s Microfluidics Focus Generates Research Streams

PNW’s Engineering Distinguished Speaker Series returned for its second season and opened with a splash on Friday, September 7, 2018, as Dr. Jie Xu,



an assistant professor at the University of Illinois–Chicago, delivered a presentation on small-scale fluid and particle flow and control, “Microfluidic Manipulation Using Sound Waves: A Sound Idea?” [Read more ...](#)

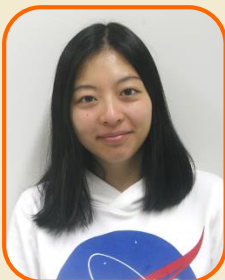
Engineering Distinguished Speaker Series

Continues ... with Alan W. “Bud” Wendorf, retired CEO of Sargent & Lundy, examining what engineering graduates and workplaces might expect of one another; presentation scheduled for Friday, Nov. 16, 3:00-4:00 pm, CIVS Theater.

PNW Alumna Provides Perspectives on Furnace Project Development



In her presentation “Walking Beam Reheat Furnaces Project at ArcelorMittal Burns Harbor,” delivered to a packed CIVS Theater on Friday, Sept. 14, 2018, PNW Outstanding Alumna and current ArcelorMittal Principal Engineer Kelly Dallas provided multiple perspectives on the evolution of ArcelorMittal’s installation plans for a pair of 500-ton-capacity walking beam furnaces at the company’s Burns Harbor facility. [Read more ...](#)



Student Success Story: Wenjie Liu

Even before her June 2017 graduation from Central South University (Changsha, China) with a B.S. degree in New Energy Engineering, CIVS research assistant Wenjie Liu was gaining international conference experience. Her presentation on reheat furnace design won 2nd place in an undergraduate oral competition at AISTech 2017 in May, and she later contributed to an article published in the Proceedings of the ASME 2017 International Mechanical Engineering Congress. As she seeks an M.S. in Mechanical Engineering at PNW, while continuing steel ladle research,

Wenjie is quick to thank her CIVS coworkers: “I received much assistance and learned a lot from Armin, Guangwu, Ty, and Haibo,” she said. “Research fosters both curiosity and excitement, and I appreciate the opportunities here.”

AK Steel Visit Adds to Project Creative Loop

On July 19-20, 2018, the CIVS team of Director Chenn Zhou, Tyamo Okosun, John Moreland, Matt Moore, and Bethany Worl visited AK Steel’s state-of-the-art Research and Innovation Center in Middletown, Ohio, on an exploratory tour hosted by Process Research Manager Bill King, and came away laden with positive impressions and ideas for potential collaborative research projects. [Read more ...](#)



ArcelorMittal Union/Management Safety Meeting Hosts CIVS Virtual Safety Presentations

The CIVS team of Kyle Toth, Youxin Luo, and John Moreland presented an overview of virtual safety training and demonstrated SMSVC safety simulators at an ArcelorMittal Union/Management Joint Safety Meeting, held at AM Burns Harbor on September 13, 2018. The presentations covered results to date of initial industry deployment and feedback on selected simulators (fall protection, lockout/tagout), video and virtual reality demonstrations (mobile equipment inspection), and views on future plans for other safety-related projects and steps. [Read more ...](#)



CIVS Director Chairs Committee Organizing International STEELSIM 2019 Conference



The 30+ members of the AIST’s Scientific Committee, with CIVS Director Chenn Zhou as Chair, are working to advance new developments in modeling and simulation of metallurgical processes, through organization of the 8th International Conference on Modeling and Simulation of Metallurgical Processes in Steelmaking (aka STEELSIM2019), to be held August 13-15, 2019 in Toronto, Ontario, Canada. Abstract submissions for papers are still being accepted—but only until **November 1, 2018**.

Final Program Papers to be Included in International Scientific Index

STEELSIM2019 sponsor AIST is pleased to announce that all papers chosen for the final program will be added to an international scientific index. The deadline for submission of 150-word abstracts is **November 1, 2018**. To access the **Call for Papers** announcement, click [here](#). For further information about STEELSIM2019, please visit: <https://www.aist.org/conference-expositions/steelsim>.



SMSVC NOTES

Fall 2018 Annual Meeting Scheduled for November 14-15, 2018

The AIST Young Engineers’ Night Dinner will be on **November 13**, at Avalon Manor in Merrillville, IN.

For more information, please contact us at civs@pnw.edu

SMSVC Accepting New Members

SMSVC is accepting new members. If interested in becoming a member, contact Felicia Armstrong at farmstr@pnw.edu.

For information on the Consortium, visit steelconsortium.org.

Facts and Impact (Since 2009)

- \$40+ million savings for companies
- \$17,500,000+ in external grants and contracts
- 110+ external organizations collaborated with CIVS
- 350+ projects
- 410+ national and local news
- 1,490+ students employed and mentored
- 10,000+ students used CIVS for virtual labs
- 110+ Purdue Northwest faculty and staff collaborators
- 129 student awards and grants (globally, since 2011)
- 32,000+ local and global visitors