



# CIVS Newsletter

January 2018

“Where Ideas Become Reality”

Issue 18

## Zhou Receives Prestigious Gerald I. Lamkin Fellow Award



CENTER FOR INNOVATION THROUGH  
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2200 169th Street  
Hammond, IN 46323

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



On October 26, 2017, CIVS Director and PNW Professor Chenn Zhou received the highest Fellow award bestowed by The Society of Innovators of Northwest Indiana: the Gerald I. Lamkin Fellow Award, given for outstanding achievement in innovation and service to community, region, and world.

John Davies, Managing Director of The Society, remarked on Dr. Zhou’s decades-long efforts on behalf of the steel industry and said, “This award is given not for a single innovation, but for the accretion of *power for good* over time.” [Read more ...](#)

## CIVS Hosts Annual SMSVC Meeting

Around 40 industry professionals attended the annual meeting of the Steel Manufacturing Simulation and Visualization Consortium at Purdue Northwest’s Hammond campus and CIVS on November 15-16, 2017, beginning with a tour of ArcelorMittal’s Burns Harbor facility. CIVS students and industry professionals presented updated results for seven technical projects, with accompanying question-and-answer sessions, and discussed future research directions.



Of the four semi-annual meetings held to date, the most recent meeting was considered the best, and the projects showed “continuous improvement.” Overall, the sponsors were very satisfied with the meeting, and Professor Zhou has now hit a “walk-off home run” to win the game. [Read more ...](#)

## Virtual Training Gains Ground at NSF Advanced Tech Education Conference



Senior Research Scientist John Moreland and Research Engineer Mike Hoerter staffed the CIVS booth at the 2017 NSF ATE Principal Investigators Conference, held October 23-25, 2017, in Washington, DC. They also explored other examples of advanced technological education on display. “Virtual reality training technology is starting to catch on among college educators,” Hoerter said, “but CIVS is still unique in that our development is in-house.” [Read more ...](#)

## “Innovative Work” Commended at AIST-IAS Crane Symposium

Dr. Chenn Zhou delivered two invited talks on CIVS research at the 2nd AIST-IAS Simposio de Grúas/Crane Symposium, held October 22-25, 2017, in Rosario, Argentina.

The presentations, “Life Prediction in Industrial Equipment” and “Safety Training 3D Interactive



Virtual Safety Training Simulator,” were well received, and Dr. Zhou was praised as “a very dynamic person who gets the information across in a very understandable way.”

[Read more ...](#)

## CIVS Joins the World of Forensic Science



CIVS has developed a first-of-its-kind virtual reality crime scene investigation training program, in collaboration with Charles Steele and others. The program integrates an immersive 3D environment, where users must properly locate, identify, and collect physical evidence, with a real-world forensics laboratory where the equivalent, actual material evidence will be tested with state-of-the-art techniques. Will the criminal “get away with it,” or will those “meddling kids” triumph? [Stay tuned.](#)

## CIVS Presents Research at International Mechanical Engineering Conference

CIVS graduate student Guangwu Tang and Director Dr. Chenn Zhou presented a total of three papers at the International Mechanical Engineering Congress & Exposition (IMECE), held Nov. 3-9, 2017, in Tampa, Florida. Two of the papers (“Modeling of Post-Combustion in an Electric Arc Furnace” and “Investigation of Hot Water Injection Effects on Reducing Frozen Blockage in a Water Intake Unit”) addressed “fire and ice” aspects in the Heat Transfer and Thermal Engineering track, while the third (“Numerical Optimization of a Gravity Dust-Catcher for Improving Operations Efficiency”) showcased CFD applications in the Fluids Engineering track. [Read more ...](#)

### Spotlight on Faculty: Dr. Bin Chen



Bin Chen is an Associate Professor of Electrical and Computer Engineering who has collaborated with CIVS on a predictive maintenance project for steel mill furnace fans. With the application of deep learning, Dr. Chen hopes to fully utilize collected sensor data and develop software that can accurately predict needed maintenance (for example, in fan bearing failure) and maintain efficient fan operation. Dr. Chen is also a widely recognized researcher in biological and medical image processing and analysis.

## **AIST Computer Applications Technology Committee Convenes at CIVS**

Members of the AIST’s Computer Applications Technology Committee took in steel-related research-and-development efforts at CIVS on October 26, 2017, and summed up the presentations as “great teaching tools to comprehend what’s going on—I feel like I just went through Blast Furnace 101,” said one committee member. [Read more ...](#)



## **CVIS Featured at Friday University**



CVIS Director Dr. Chenn Zhou and CIVS Senior Research Scientist John Moreland were among the featured speaker-instructors at PNW’s “Friday University” events on October 20, 2017, where they co-hosted a presentation and discussion, “The Future is Here: Science and Imagination at Purdue Northwest.” [Read more ...](#)

## **Students Visit CIVS at 10th AIST High School Engineering Seminar**

More than 260 high school students toured the interior of a working blast furnace on Friday, October 6, 2017, wearing only their street clothes—and the 3D glasses provided by CIVS. The tour was a virtual tour, part of the 10th Annual High School Engineering Seminar sponsored by the Midwest Chapter of the Association for Iron & Steel Technology (AIST). [Read more ...](#)



## **SMSVC Provides Bonus “Steel” Seminar**

AK Steel Principal Research Engineer Dr. Ron Radzilowski topped off the SMSVC annual meeting with his presentation, “Introduction to Steel for the Non-Metallurgist,” given at the CIVS Immersive Theater on November 16, 2017. While in timing and delivery it was a grand finale, Radzilowski’s presentation also substantiated steel’s “new beginnings” in terms of substance and scope. [Read more ...](#)

## **Student Success Story: Tyamo Okosun**



Tyamo Okosun, a doctoral student in Mechanical Engineering at Purdue University (BS from PNW), has worked as a CIVS research assistant since 2011. His projects have ranged from computational modeling of wind turbine action to optimization of blast furnace fuel injection to development of high-performance CFD software; he has contributed to more than a dozen published technical reports and papers; and he is the first author of the teams bestowed the AIST’s Josef S. Kapitan Best Paper Award for Ironmaking (2016 and 2017), as well as the Hunt-Kelly Outstanding Paper Award—First Place (2017). “I always wanted to work on aerodynamics and fluid mechanics,” Okosun said, “and CIVS offered an extraordinary range of opportunities, which has led to an equally extraordinary breadth of benefits, including experiences with industry and other innovators.”

## New Engineering Distinguished Speaker Series at CIVS

The PNW School of Engineering is pleased to announce the following distinguished speaker schedule. All sessions are free, open to the public, and scheduled to begin at 3:00 pm in the CIVS Theater (Powers 115). [Read more ...](#)

- Dr. Mohammad Shahidehpour, presenting “Smart Cities for Promoting Global Sustainability,” Friday, January 26, 2018.
- Dr. Christos Georgakis, presenting “The Surprisingly Complex Structural Cable—Aerodynamics, Icing, and Fatigue,” Friday, March 2, 2018.
- Dr. Wenliang Du, presenting “Android Security: Attacks, Defenses, and Education,” Friday, March 30, 2018.
- Dr. Pravin Varaiya, presenting “Towards Vision Zero: Intelligent Intersection Infrastructure to Enhance Safe Operations of (Self-Driving) Cars,” Friday, April 27, 2018.



### SMSVC NOTES

Thanks to John D’Alessio for the Stelco introduction at the annual meeting.



## CIVS-Mentored Students Garner 16 Grants



Nine teams of CIVS-mentored and affiliated students (25 students) were awarded Fall 2017 research grants as part of PNW’s Undergraduate Research Grant program. [Read more ...](#)

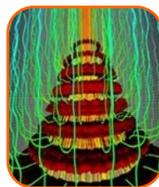
Additionally, seven different CIVS-mentored teams (16 students) recently received 2017-2018 Indiana Space Grants. [Read more ...](#)

### Semi-Annual Meeting Scheduled for April 11-12, 2018

For more information, please contact us at [civs@pnw.edu](mailto:civs@pnw.edu)

## Fuel Cells Show Capacity at Friday CIVS Seminar

Postdoctoral researcher Lihui Wang, from the University of South Carolina, shared insights into fuel cell and fuel cell membrane development in her “Investigation of Ion Exchange Membranes for Electrochemical Energy Conversion and Storage Systems,” delivered Nov. 3, 2017, at the CIVS Theater. [Read more ...](#)



### SMSVC Accepting New Members

SMSVC is accepting new members. If interested in becoming a member, please contact Ana Jovanovich at [ajovano@pnw.edu](mailto:ajovano@pnw.edu).

For information on the Consortium, visit [steelconsortium.org](http://steelconsortium.org).

## Facts and Impact (Since 2009)

- \$40+ million savings for companies
- \$16,340,800+ in external grants and contracts
- 110+ external organizations collaborated with CIVS
- 340+ projects
- 350+ national and local news
- 1,480+ students employed and mentored
- 9,650+ students used CIVS for virtual labs
- 110+ Purdue Northwest faculty and staff collaborators
- 122 student awards and grants (globally, since 2011)
- 29,300+ local and global visitors

### Office of Institutional Advancement – Giving to CIVS



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