

A professional portrait of Chenn Zhou, a woman with dark hair, wearing glasses, a red blazer, and a pearl necklace. She is smiling slightly. The background is a plain, light-colored wall.

**Interview With  
Distinguished  
Member and  
Fellow**

***Chenn  
Zhou***



*Chenn Zhou (right) was presented with the AIST Distinguished Member and Fellow Award by 2021-2022 AIST president Steven Henderson (left) at AISTech 2022 in Pittsburgh, Pa., USA.*

*Chenn Q. Zhou is the NIPSCO Distinguished Professor of Engineering Simulation; Director, Center for Innovation Through Visualization and Simulation and Steel Manufacturing and Visualization Consortium, Purdue University Northwest. She was named an AIST Distinguished Member and Fellow this year in recognition of her extraordinary passion and commitment for the Association's mission of service to the steel industry. A prolific researcher, author and educator of computer-aided modeling, simulation and visualization technologies, Dr. Zhou has given her energy and expertise to program AIST symposia to facilitate the early adoption of digitalization technologies to promote industry leadership in smart manufacturing applications. Through her service as an AIST Foundation Trustee and beyond, she continues to inspire the next generation to find evolutionary solutions to the industry's most formidable technical challenges.*

### ***How did you get started in the industry?***

I was introduced to the steel industry by Dr. Pinakin Chaubal at ArcelorMittal in 1998 and to the use of computational fluid dynamics (CFD) modeling for predicting hot metal flow, heat transfer and erosion in the hearth of a blast furnace. We started with a senior design project, which evolved into a US\$1.29 million project awarded by the Indiana 21st Century Research & Technology Fund. I still remember the excitement during my first field trip with my students to the Indiana Harbor No. 7 blast furnace, which was arranged by Wendell

Carter who is now the executive vice president, operations west, at Cleveland-Cliffs.

The CFD model developed for the hearth established a foundation for further development of CFD models for a whole blast furnace including fuel injections and combustion, as well as reactions and gas utilization in the shaft, which were funded by the Advanced Manufacturing Office (AMO), Department of Energy (DOE). We also developed virtual blast furnaces (VBF) by integrating the CFD models with advanced visualization technologies for troubleshooting, optimization, design, and training. Through the



**Field work at Cleveland-Cliffs Indiana Harbor No. 7 Blast Furnace in 2022.**

close collaboration with the industry, the research areas were expanded to include the computer simulation, visualization, virtual reality (VR), augmented reality (AR), machine learning for various the iron- and steelmaking processes such as electric arc furnace, reheating furnace, ladle, casting, safety, etc. Eventually, our research group evolved into the Center for Innovation Through Visualization and Simulation (CIVS) in 2009 and an industry-led Steel Manufacturing Simulation and Visualization Consortium (SMSVC) in 2016. The SMSVC currently has 15 member companies including ArcelorMittal, Cleveland-Cliffs, Charter Steel, Enbridge, EVRAZ North America, Gerdau, Linde, NiSource, NLMK USA, Nucor, SSAB, Steel Dynamics Inc., Stelco, Tata Steel and United States Steel Corporation.

***Who has been most influential in your life or career? How did this person influence you?***

My grandfather Mr. Zhifu Zhou, who worked as an accountant in a steel plant. He and my high school teacher Mr. Quande Xu strongly supported me to pursue my studies and career in engineering.

***How did you get involved with AIST?***

In 2004, I presented two papers on the CFD modeling of a blast furnace hearth at AISTech and was very impressed by AIST. Since then, I have attended AISTech every year and participated in groups such as the Ironmaking, Energy & Utilities and Digitalization Applications Technology Committees; scholarship committee;



**Presentation in the PNW CIVS Immersive Theatre during the first SMSVC meeting in 2016.**

Midwest Member Chapter executive committee; and the University-Industry Relations Roundtable. I have also served on the AIST Foundation Board of Trustees.

Through committees, boards and friends, I have been involved in helping organizing AISTech technical sessions, training courses, and the 8th International Conference on Modeling and Simulation of Metallurgical Processes in Steelmaking (STEELSIM 2019). I have also given invited talks in AIST symposia.



*Project discussion with industry collaborators and students in 2009.*

### ***How has AIST membership benefited you in your career?***

I have greatly benefited from AIST membership in my career, professional development and personal growth. It has provided wonderful opportunities to my students and me for learning, networking, engagement, field trips to the plants and research projects.

Furthermore, the AIST Digital Library and conference proceedings have greatly helped my students and colleagues to conduct research projects at CIVS and the SMSVC at Purdue University Northwest (PNW). The AIST Steel Wheel, for which CIVS was part of the development team, has provided a very effective way for my students to learn the iron- and steelmaking process. I deeply value AIST and its consistent drive to cultivate workforce development and advance the steel industry.

### ***What would you tell someone who might be considering a career in the steel industry?***

The steel industry plays a vital role in national security and the economy, supplying one of the most critical materials for manufacturing, infrastructure and defense. In my experience in working with the steel industry for more than

20 years, I have found that steel people are very nice, innovative and creative. The Steelworkers constantly strive for improvements through the state-of-the-art technologies. Now especially is the most exciting time for making steel greener and smarter through decarbonization and digitalization. Working in the steel industry, people can make direct impacts on the world and society. There are also so many opportunities for professional development and training through AIST.

### ***What does winning the AIST Distinguished Member and Fellow Award mean to you?***

I feel deeply honored and humbled. This is a recognition of the quality of our work and impacts made by my team and collaborators. I want to thank the people who nominated and endorsed me for this great honor. My thanks also go to the AIST board, AIST staff, our SMSVC member companies, all of my collaborators and sponsors, my university Purdue Northwest, my colleagues and students, and my CIVS team. This is also a great inspiration for us to continuously use advanced technologies to make the steel industry more competitive and more sustainable.

