



# Progress & Perspectives

## WOMEN IN STEEL

### Elaine Chen

Head of Fines Recycling Plant, ArcelorMittal Texas HBI LLC

#### Where did your education and career start?

I received my bachelor's degree from Northeastern University in Shengyang, China, majoring in ferrous metallurgy. After graduation, I joined the Technology Center of Ansteel, where I was responsible for the research and development of blast furnace ironmaking. After working at Ansteel for 10 years, I decided to move to Canada to pursue higher education.

In September 2002, I started my master's degree at McMaster University in Canada, under the supervision of Ken Coley. I completed my master's degree in gas slag reaction kinetics in January 2005, using sophisticated isotope exchange techniques. Upon making tremendous strides, Dr. Coley encouraged me to continue for a Ph.D. During my Ph.D studies, I worked on kinetics of basic oxygen furnace (BOF) steelmaking, kinetic modeling, analysis, and I developed skills in x-ray fluoroscopy, chemical analysis and electron microscopy.

After 6 years of studies at McMaster University, I joined ArcelorMittal Global R&D, where I was responsible for developing, evaluating and implementing novel technologies for direct reduced iron (DRI).

#### What brought you to the steel industry?

Steel is in my blood! I was born in a town with a large refractory company. My family and many others in the town worked in the refractory company and Ansteel. Growing up in a steel industry environment helped

foster my passion. Therefore, it was natural that I studied ferrous metallurgy at Northeastern University and started a career at Ansteel.

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#### Can you talk about support you've received to advance your career (i.e., mentors, etc.)?

I joined ArcelorMittal with the good fortune to be mentored by one of the world experts in direct reduction iron, George Tsvik. His passion for DRI was contagious and inspiring. Dr. Tsvik introduced me to the knowledge gap in direct reduced iron and how we developed laboratory tests to fill in the knowledge gap. Together, we developed a novel test of catalyst activity, which better simulates the industrial situation, a non-destructive test of reformer tube, which can help prolong the reformer tube life. From Dr. Tsvik, I learned many things, but most importantly I learned how to be a good researcher in the DRI world, and how to successfully apply my knowledge to help plants solve production problems and improve plant productivities.

After 12 years of working at ArcelorMittal Global R&D, I joined voestalpine Texas LLC (now

ArcelorMittal Texas HBI) to advance my career. During my 22-year career in the steel industry, I have spent the majority of my time in research centers and labs. Because of this, I knew I needed to be in the field and see the real applications of my research. I am very fortunate to work alongside Michael Spitz, chief technical officer of ArcelorMittal Texas HBI. Dr. Spitz is very talented and has always supported and encouraged me. From Dr. Spitz, I learned how to build relationships with colleagues and how to effectively manage the plant.

### What are you most proud of in your career?

Together with ArcelorMittal Lázaro Cárdenas, we were the first to install the larger reformer tube and novel shape catalyst. These two technologies debottlenecked the plant production. I am also proud that we successfully simulated DRI fires at the East Chicago laboratory, as DRI fires can mysteriously occur. Because of this simulation, we better understand this phenomena and can better control DRI fires.

The pinnacle of my career (so far) is currently being responsible for the first-ever fines recycling plant (FRP). FRP is a cold briquetting process; unlike a sinter or pelletizing plant, it will not generate greenhouse CO<sub>2</sub>. Thus, FRP has the potential to contribute to “green steel” as the industry shifts toward decarbonization.

### Why do you feel diversity and inclusivity are important in the workplace, and the steel industry as a whole?

During my career and studies, I've worked with a diverse set of people who have unique experiences, skills, insights and backgrounds. From them, I not only gained a wide range of knowledge, but also my work and projects would not have succeeded without their support. The same applies within the workplace and any industry as a whole. A diverse workforce, with its multitude of varying experiences, is more likely to be empathetic to customers' needs and come up with a variety of ideas to bring them to life. Workplace diversity will also lead to better decision-making results as it allows for a variety of perspectives. It increases morale and instills a desire to be more effective and work more efficiently. Inclusion in the workplace is one of the most important keys to retention. All of these will help improve the business productivity and help the business stand out amongst competitors.



### What advice do you have for young women who are interested in pursuing a career in a field that is typically male-dominated?

I would encourage them to find a mentor. A mentor can help them gain insight into professional and personal growth opportunities. Throughout my career, I have been fortunate to have mentors who coached me and trusted me and my abilities. Professional events and conferences offer opportunities to expand the network and aid in professional development. Associations such as AIST can help build a network with colleagues from other companies. ♦