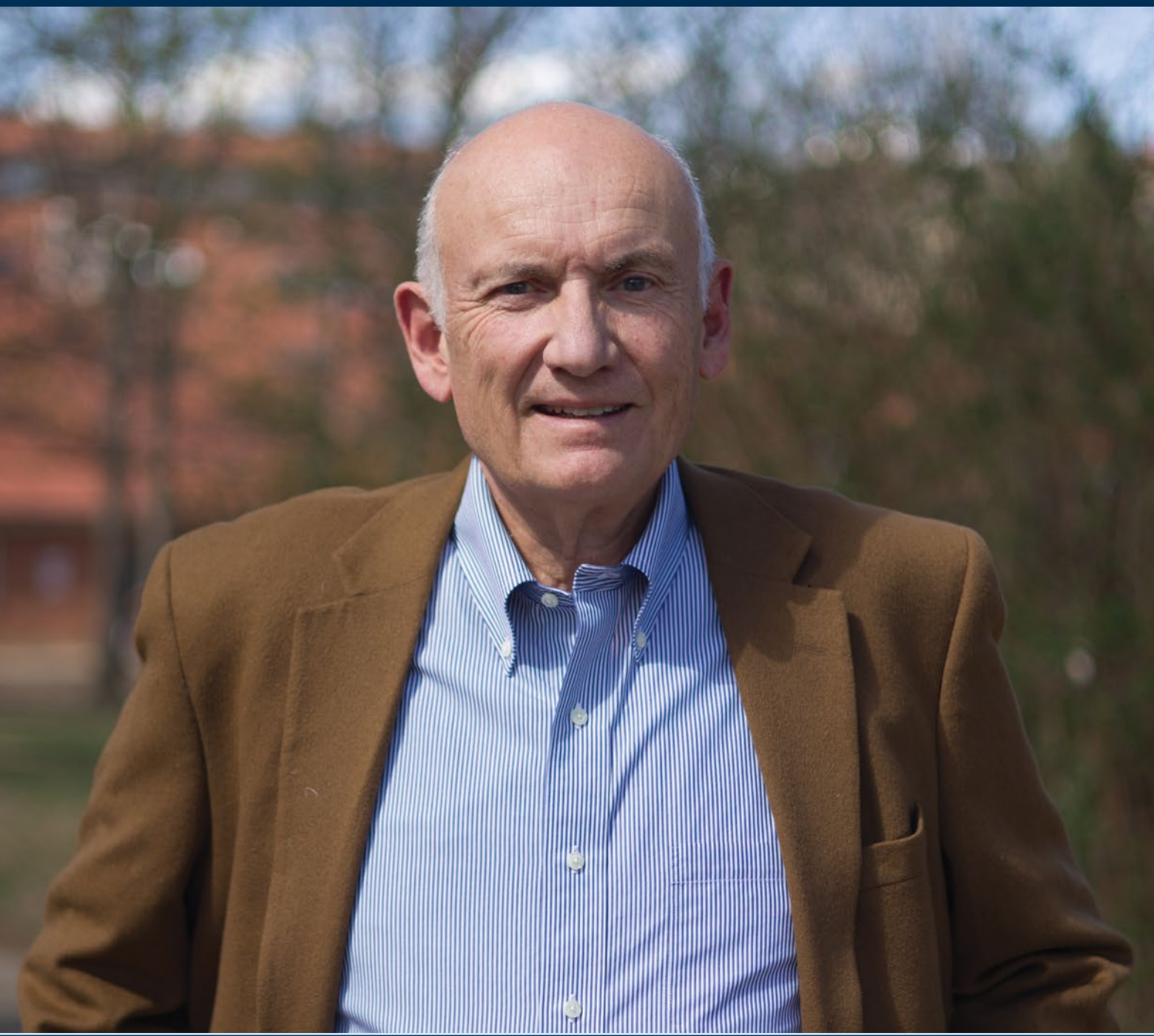

An Interview With
2026–2027 AIST President John G. Speer

by Amanda Woods

John G. Speer is the American Bureau of Shipping Chaired Professor at Colorado School of Mines, and director of the Advanced Steel Processing and Products Research Center. He received a B.S. degree from Lehigh University in metallurgy and materials engineering, and a doctorate in physical metallurgy from the University of Oxford, U.K. He was affiliated with the Homer Research Laboratories of Bethlehem Steel Corp. from 1983 to 1997, where he was involved in product research, customer and operations support, and research management. He became a professor in the Department of Metallurgical and Materials Engineering at Colorado School of Mines in 1997, where he teaches metallurgy at the undergraduate and graduate levels, and participates in research activities with the Advanced Steel Processing and Products Research Center. Speer also served as Mines' associate vice president for research from 2008 to 2013. He is a Distinguished Member and Fellow of AIST, member of the U.S. National Academy of Engineering, Fellow of ASM International, an Iron & Steel Society Professor, past chairman of the Ferrous Metals Committee of SAE, and served as AIME president in 2017–2018. His background is in physical metallurgy and solid-state phase transformations, and steel product development, including alloy design/processing response/application and performance. *Iron & Steel Technology* recently spoke with Speer on his upcoming term as AIST president.

AIST ASSOCIATION FOR IRON & STEEL TECHNOLOGY

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COLORADO SCHOOL OF MINES

With your roots in Bethlehem, Pa., steel has been a large part of your life. How have you seen the steel industry change over the years?

The structure of the industry has changed a lot. The steel industry of my childhood and my early adulthood into my actual professional career largely involved well-established integrated steel producers, and has been reorganized and modernized. The scrap-based mini-mill industry also evolved during my professional lifetime, very significantly in the U.S.

There were financial challenges back in the '80s, '90s and early 2000s that affected the structure of the industry, and those of us who participated in it, due to legacy costs from longtime liabilities for healthcare and pensions and things like that, so those have been very important.

Technology developments — both steel products and processing technology — have just been marching on and on and on. These are really inseparable; you can't create a new product without the process development that goes with it and sometimes the capital investment needed to implement that process commercially. The public might think we know everything there is to know about steel, but we're learning new things every day. That's one of the things I'm passionate about, because we don't always recognize the steel industry as high tech and how critical it is to modern society. I think steel remains the glue that holds the country together.

Globally, early in my career, the steel industry in Japan was growing and was becoming very technologically advanced and successful. More recently, China has grown dramatically and now the steel industry in India is growing quickly. So I think there's always a dynamism to the steel industry; we've been doing this for more than 150 years in the modern steel industry and it's always changing and growing, but the area of steel product technology — the field of development that I work in — has been very significant over the last 50 years.

2011–2012 AIST president R. Joseph Stratman (left) presented John Speer (right) with the AIST Distinguished Member and Fellow Award in 2012.

As a researcher, how are you seeing artificial intelligence being applied in steel research?

It's an important, active area for all of the different subcategories of the AIST membership; I think everybody's working on it. It's developing quickly. So the way you answer that question might change frequently.

How can artificial intelligence impact steel development? I work within a department that deals with materials, and we are trying to figure out how artificial intelligence will be most effectively used in materials development, broadly speaking. So that's an area we're trying to get our arms around; our steel research consortium supported some machine learning activities in a graduate student project a few years ago, and that was a learning experience for us. AI is a dynamic area and we're studying and following it individually and collectively. There's more to come, not just with our academic steel research, but also in terms of our educational processes in the universities involving our students, classes and curricula. College campuses are trying to assess how we most effectively employ AI in the educational process and expose our students. One of our responsibilities is to prepare our students to continue learning in their professional lives, after they leave the university and start working in the real economy.

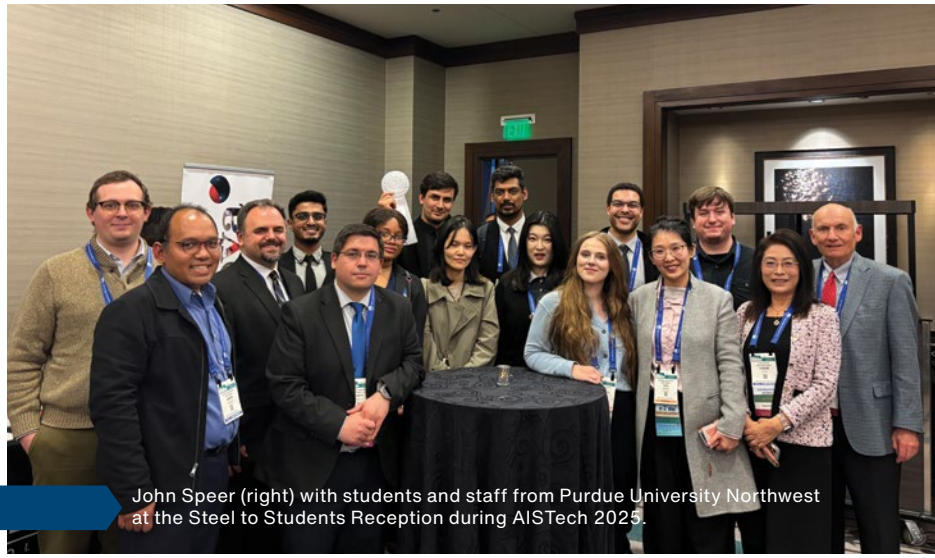
"Steel remains the glue that holds the country together."

When a new area is developing, graduates have to address the future as it comes at them; we can't teach them everything they will ever need to know. It's interesting and challenging for faculty to keep up as well, because sometimes you're learning things at the same time the students are — the technology is just changing so fast.

What are some of the most exciting research activities going on at Colorado School of Mines?

We always have a broad portfolio of steel product–focused projects going on because we have a breadth of

2017–2018 AIST president Randy Skagen (left) presented John Speer (right) with the J. Keith Brimacombe Memorial Lecture Award in 2018.



John Speer (right) with students and staff from Purdue University Northwest at the Steel to Students Reception during AISTech 2025.

interest among the companies who are supporting our students. Automotive high-strength steels continue to be an important area, both flat and long products. In the sheet product area, spot welding and even coatings development and press hardening have also been active areas.

There's been great interest in sustainability in the last few years. Decarbonization of the economy in general is driving higher-performance steels for transportation, improved fuel economy, etc.

These trends have also driven renewed interest in effects of residual chemical elements that might be encountered in higher concentrations through increased use of scrap-based steelmaking, and plate product development for steels used to transport and store hydrogen or carbon dioxide, which might be needed in a future low-carbon economy.

Another area related to decarbonization is electrification of process heating. Our program has a long history of induction heating studies, and my philosophy about that area is we want to try not just to replace furnace heating for the sake of electrification, but also to find a way to make a better product through some metallurgy tricks that you might be able to employ related to the process signature of the new heating technology.

Did you have mentors at different stages of your career and when you were in college?

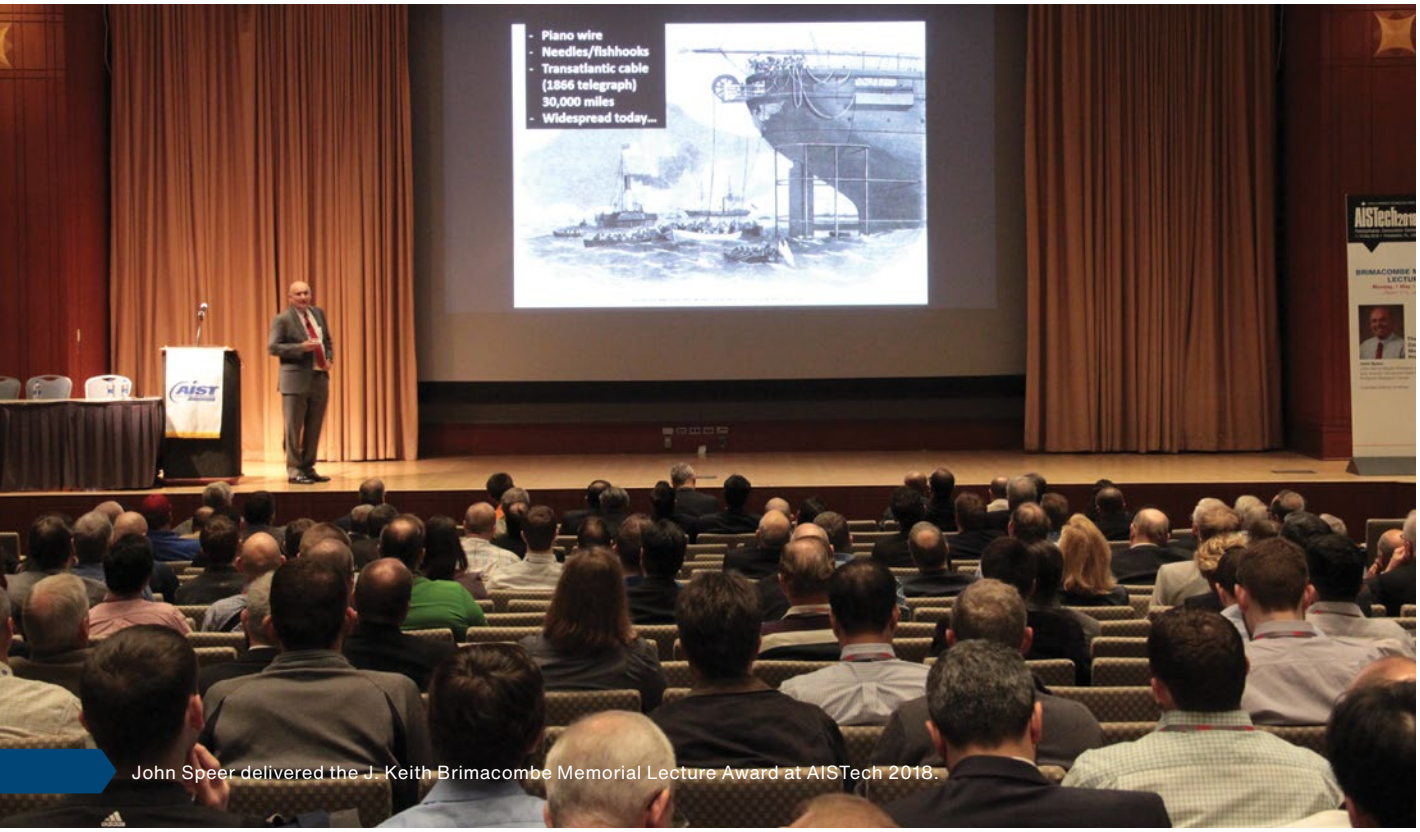
I did have mentors all through my life, though I didn't always think of them that way at the time I was growing up. Professionally, a couple of people particularly come to mind. When I was at Bethlehem Steel, Steve Hansen hired me and taught me a lot about steel. Then David Matlock at Colorado School of Mines, who took a risk and hired me — we worked together closely for a long time and he taught me how to function in a university environment. I had really helpful professors in college, but also some tennis coaches and others you could think of as mentors as well.

Do you yourself mentor students?

I do, and I think of it more as an opportunity than an obligation. And I have really appreciated the interactions I've had with those students and professionals that I worked closely with. I guess my style is perhaps less like having a formal mentor, but always watching people around me perform at a high level and just observing and sort of saying, "why are they so good at what they do? Is there anything that I can learn from that?" So I think the most effective mentoring is just kind of working alongside somebody who's really good at what they do. I've learned a lot that way through my volunteer activities at AIST. Watching other volunteers at AIST who are involved in Technology Committees or who are involved in leadership. AIST is a very effective organization. I think it's very well run, and you can also learn a lot by watching Ron Ashburn and his staff do what they do.

When did you first become involved in AIST and/or its predecessor societies?

I was a member of ISS (Iron & Steel Society) when the merger occurred, and I had actually been involved with AISE (Association of Iron and Steel Engineers), although I was not a member. AISE was organizing the Cold Rolling Fundamental Training symposium. That started before the merger, and I've been involved in it since the



John Speer delivered the J. Keith Brimacombe Memorial Lecture Award at AISTech 2018.

beginning. AISE called me out of the blue one day in 1997 and asked if I would I participate.

The champions of those kinds of programs are the Technology Committees. The committee sort of tweaked the content over the years, and when different presenters have retired they've refreshed the program. It's a successful program, though, and a meaningful service that AIST can provide to the industry — and there are suppliers who are actively volunteering to help contribute as well. It's a pretty impressive program. There are a lot of really good people contributing to those programs; I'm just a little cog in that wheel.

What has your experience been like serving on AIST's executive committee these past couple years?

You know, it's nice. You get to look under the hood at how AIST operates. It's pretty interesting and you can see some things that are coming in the future and how all of the activities come together. Because as a member and a member of a Technology Committee, everything looks like it just happens. It happens with pretty great success. And you might take for granted all of the effort that goes on to making it effective. So you get a pretty good look at that when you're a part of the executive committee, how effectively managed AIST is.

And it's nice to be a part of the executive committee meetings. Many of the members are senior leaders at companies, so they're quite gifted, and it's interesting to watch and learn from them, and hear what they have to say about different programs or issues. It's a pretty nice opportunity to be able to participate in the AIST leadership.

"You get to look under the hood at how AIST operates."

What do you plan to focus on during your term as AIST president?

I don't individually set the agenda of AIST. Some of the directions that AIST focuses on come out of the Leadership Conference, where leaders from the Technology Committees and the Member Chapters come together and talk about the future of AIST. That then gets condensed down into some priorities.

40th anniversary celebration of the Colorado School of Mines' Advanced Steel Processing and Products Research Center.

What I hope from my perspective is to contribute anything I can to support the basic "blocking and tackling" that the AIST staff have to do to put on a successful AISTech, Foundation activities on behalf of students, training and conference programs, etc., anything I could do to help.

One of the things that we're trying to do is to grow the Young Professional membership.

There's also a big initiative now related to improving the public perception of the steel industry. I think that's something we've needed for my whole professional life, having started my career around the time that the term "rust belt" was coined. If you think of me as a steel product developer, my role is to develop concepts for new recipes, to make new steels with improved performance. The public doesn't understand when they look at a car, for example, that nearly all the steels are different than they were 50 years ago. To them, it looks like it's just steel. So we have this public perception that's difficult to overcome because nobody really understands the details of steel technology, and they hear things on the news that make them wonder if we still even have a steel industry in this country. I'm really looking forward to seeing how that initiative evolves.

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I'm also involved in the discoverability of publications and technical content project. There's a small group of us working with AIST staff to put processes in place to enhance the value of AIST's current information products, as well as their historical and legacy information products from AIME, AISE and ISS.

It's like everything else: there's a lot of hard work and chaos that goes into making something look effortless. ✦