Working for Your Future

to Build a Sustainable Steel Industry

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I never thought I'd end up in steel. I wanted to work on fullerenes (look them up, they're fascinating) after reading my dad's *Scientific American* magazine where the discovery of these spherical carbon lattice molecules was announced. I picked engineering because it was the application of science to real-world problems. I picked Clemson University because it wasn't a school where I would be under the shadow of either of my sisters, but it sat comfortably between LSU-Baton Rouge and NCSU-Raleigh. I studied ceramic engineering because, well, I needed something much more tactile … more concrete than what I was getting from my chemical engineering lectures of "imagine a vial with 20% alcohol, 50% water, and 30% of an unknown substance; It has properties X, Y and Z. Device a means to determine what the 30% component could be." If it sounds too theoretical for you, then you understand why I needed something different.

My first week in a ceramic engineering lab class, we were given a composition of three materials (ball clay, alumina and silica), each of us with a different ratio. We mixed them with 5% water and pressed two discs. A week later we got our fired discs back and were told to place them in the right spot on a tertiary phase diagram. We observed how the proportions determined the properties. 100% sand was a pile of sand. 100% alumina was a pile of white dust. The 100% clay was a solid gray, glassy disc. But I finally had something that I could hold in my hand instead of an imaginary vial in my mind. I worked on brick. No, not mag-carbon. These were the red, gravelly kind that you build houses with. But I was hooked. Ceramics became my passion. I worked testing various kinds of ceramics, mostly construction brick. This earned me an assistantship for a master's degree. I worked in brick plants for 10 years of my professional life. I had various roles in production management, product development, R&D, quality control, ISO and mining. This all came to an end in 2010 after declines in construction that affected the industry stemming from the 2008 recession. I retooled my ceramics knowledge and moved to glass for a couple years.

Then in late 2012 I put in an application for a job with the U. S. Steel Research and Technology Center in the coatings group. It was very tangentially related to my R&D experience, but I hoped that my knowledge of test methods and lab procedures would carry the day. Well, not exactly, but the hiring manager, Erik Hilinski, had the presence of mind to take my resume down one floor and dropped it in the hands of Teresa Speiran, the technical manager for the failure analysis and refractory materials group, who had a vacancy in her group. To this

day, I think about how this single act brought me to steel, and to refractories for steel. I feel immensely indebted to Erik for being instrumental in putting me on this path. Starting in January of 2013, under Terry Spreiran's tutelage, and while in her group, I grew in ways I never really imagined. It felt like everything that I had learned from the day I walked into that Ceramics lab at Clemson had been in preparation for the role I had at USS Research. I knew ceramics, not steel. I remember during my interview, Kevin Zeik, the general manager of USS Research, laughed when I mentioned this. He said, "Simon, we have this whole building to teach you that." And he was so right. I had a building full of experts in every kind of phase of steelmaking possible. And I learned from everyone who could spare a few minutes. It was my job to learn! It was my job to find connections between the product and the process, because both are intimately affected by their contact with refractory, and vice versa! I met vendors and technical experts from all the refractory companies that U. S. Steel bought from. My internal reports on new product qualifications and post-mortems were read by decision-makers at all levels of the U. S. Steel hierarchy, and I would get calls and emails with questions, with requests for more information, or to set up trials. I felt like my work was having a real effect on the company. My yearly performance evaluations included metrics on cost savings or cost avoidances that my work had generated. I joined AIST and participated when I could. I attended AISTech and eagerly awaited the arrival of the magazine. I also started participating more actively in the American Ceramic Society's Refractory Ceramics Division, where I deepened my knowledge and my connections with ceramics and raw materials professionals.

In 2016, I transitioned to a sales engineer role with Shinagawa Americas, and my learning journey continued. I participated in relines, trials, international conferences, and the birth of a relationship between Shinagawa and a Colombian ceramics company where I had some contacts. Yes, I forgot to mention: I was born and raised in Colombia, and I have leveraged my Spanish in my career many times. I strongly believe that speaking a second language is the best gift you could give yourself, not to mention your children. My Spanish has opened many conversations and many doors.

In this sales role at Shinagawa, I kept growing my network. I was meeting and working with steelmakers outside of U. S. Steel, and I learned about electric arc furnaces, argon oxygen decarburizers, billet casting, dolomitic ladles, tank degassers, stainless steels, on and on. I have also worked as sales manager for Vesuvius and have been a sales manager with Imacro for going on three years — and the learning and the networking continues. And the challenges for steel and for refractories are nearly endless. We, as steel and refractories professionals, are all part of the solution, and AIST is a gateway to help us all arrive at solutions to those challenges.

I started participating in the Refractory Systems Technology Committee around this time. I also participate in the Metallurgy — Steelmaking & Casting Technology Committee. I now attend the committee meetings regularly, as well as the yearly Steelmaking Refractories Fundamentals Seminar. In the not-too-distant future, I would like to teach parts of the seminar. I look forward to sharing what I know as well as continuing to learn and to network. It is my way of giving back to the steel industry. In the 12 years that I have been in the world of steel, I have learned that I don't have all the answers, and frankly I probably never will. But I very likely know someone in my network that does know answers that I don't. That is thanks to AIST, and all the friends, colleagues, competitors, and customers in AIST and the world of steel we inhabit. ✦