

The Refractory Division and St. Louis Section of the American Ceramic Society in cooperation with ASTM International Committee C08 on Refractories and the Refractories Institute selected me for reimbursement for some of the funds required for me to attend the UNITECR 2017 in Santiago Chile. I would like to take some time to report on my experience of the conference and to express my gratitude for the amazing opportunity that was made possible through allocating these funds to me.

I am a post graduate student at the University of Pretoria in South Africa. As an undergraduate the focus of the course was on metallurgical engineering with refractory materials forming a small part of this. In my final year, we were required to do a project – like a mini thesis. My project was on refractory materials and this is when refractory materials first really started appealing to me. This was part of the motivation for continuing with a master's degree in refractory materials after completing my undergraduate degree.

I particularly enjoy considering refractories in combination with pyrometallurgical processes. I believe a good understanding of the process as well as the refractories is crucial for ensuring improvements in either the process or the refractories. My own work aligns with this interest, as it considers the interaction between PGM matte and the refractory bricks and tap-hole clay within a platinum smelter.

The advantages of attending the conference can be summarised into four sections:

1. Experience gained through presenting a paper

One of the biggest advantages of the conference was the opportunity for me to present work that I have done on analysing a tapping channel after use. The process from experimental work, submitting the abstract and the paper, as well as the presentation itself are all meaningful experiences.

The process of writing the paper and ensuring that everything could be adequately explained ensures that good, logically sound research is being done.

The presentation itself was practice in communication and public speaking –skills that are useful in everyday life. It also provided the opportunity for people who are more experienced in the field, to become aware of the work that I am doing, which can also lead to future collaborations. This ties up with the second advantage of the conference.

2. Exposure through networking

The conference allowed me to meet and exchange contact details with many people. Understandably, some of the people I met, might never be directly involved with any of the work that I will do. But many will. And knowing some people, also opens doors for contact with all the people that each of those individuals know.

Despite the challenges of networking, especially when you know very few people and are young and inexperienced (as yet) in the field, I believe I made valuable connections with people from all over the globe. I trust that these relationships will grow and still be very meaningful for future endeavours.

3. Knowledge gained through attendance of presentations

Another key advantage of the conference is getting a better idea of work that is being done in various aspects of the field of refractories. The overview of the raw materials and the world

economics affecting refractory manufacturing and use provided valuable insight into the industry as a whole.

In contrast with the broad outlook, many presentations focussed on very specialised aspects of refractories. Some of these presentations left me very aware of the fact that I am only starting with my career now – there are still a lot of things that I know very little about. But the conference provided an opportunity for me to learn more, and it also sparked interests in aspects of the field that I otherwise might not have gotten exposure to.

I found some of the presentations particularly interesting because of the way they related to work I am doing. One of these included the paper on the “Thermomechanical behaviour of high-alumina refractory Castables containing partially stabilized zirconia with different grain shapes”. The platinum producing industry partner my work is based on uses different refractories – some containing zirconia grains and others not. Another relevant presentation was on the “Mechanisms of Pt-Rh thermocouple failure by gaseous phosphorous in high temperature processes”. In the lab work we do, we use Pt-Rh thermocouples in an induction furnace. Thermocouple failure is a constant problem that needs to be addressed and the presence of phosphor and sulfur in the system can possibly be responsible. There were many other such papers that were relevant, or that were interesting, despite being in a slightly different field.

I feel like my knowledge of the field of refractories especially, has been broadened because of the conference. I look forward to still working through the full papers of many of the presentations that I found interesting.

4. Personal growth through travelling

The final point that I want to stretch, although it is more difficult to define, is the growth as an individual I believe occurred due to the whole process. Going to a foreign country, the independence of traveling by oneself, the diligence of preparing for the trip and ensuring all the paper work is in order; having to deal with changes in plans, and make spur of the moment decisions. Having to communicate through a combination of hand signals and Google translate, organising transport in a country using different systems to your own, experiencing a different culture and seeing different sights – there are a million little things that I believe adds to the person I am as a whole.