



**Witte Family Endowed Faculty Fellow in Mining Engineering  
Annual Report 2022-2023**

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During the past year, I allocated the funds towards research, professional development, and providing support for graduate students. A significant portion of the funding was dedicated to covering the tuition expenses of our graduate students. Although my ongoing project, sponsored by the National Institute of Occupational Safety and Health (NIOSH), does not include provisions for supporting students' tuition, I am fortunate to have the Witte Family Endowed funds that grant me the flexibility to address this need. I am immensely grateful to the Witte Family for their generosity. Looking ahead to the coming year, I intend to prioritize the utilization of these funds primarily to enhance the success of our students. In this report, I will provide a concise overview of the research activities, professional development, and service initiatives undertaken by my research team in the past year, as well as highlight some of the notable successes we have accomplished.

**Research Activities:**

In the previous year, our accomplishments were notable and encompassed various areas. We achieved the publication of seven (7) peer-reviewed journal papers, with an additional three papers currently under review. Furthermore, our research team, including dedicated graduate students, had the opportunity to attend the prestigious Society for Mining, Metallurgy, and Exploration (SME) Annual Conference held in Salt Lake City, Utah.

Notably, I authored a book entitled 'Optimization Techniques and Their Applications to Mine Systems,' which was successfully published by CRC Press last year. This publication contributes to the field and showcases our expertise. At present, we have a group of Ph.D. and M.S. students diligently working on diverse mining-related projects. Additionally, this year has brought fruitful collaborations with esteemed mining researchers from renowned institutions such as the Colorado School of Mines (CSM), Virginia Tech, the University of Arizona, and the National Institute of Occupational Safety and Health (NIOSH). Celebrating our students' achievements, three of our M.S. students graduated this year and have secured job offers from prominent mining companies. Furthermore, I am proud to have served as a co-advisor for a mining engineering Ph.D. student from the Polytechnic of Namibia, who successfully completed their degree this year.

None of these accomplishments would have been possible without the invaluable support of the Witte Family Endowed funds. I am immensely grateful for their ongoing support, as it has been instrumental in enabling us to reach these remarkable milestones.

**Professional development:**

Throughout this year, I have actively participated in three noteworthy conferences: the SME Annual Meeting, the Geological Society of America (GSA) North-Central Section meeting, and the 2nd North America Mining Digitalization conference. Moreover, to ensure optimal support for our students, I personally attended a mining software training workshop focused on Vulcan.



At the SME Annual Meeting, four of my exceptional graduate students had the opportunity to attend. One of them delivered a captivating poster presentation, while another confidently delivered an oral presentation during the conference. These invaluable experiences not only showcase our team's commitment to scholarly engagement but also provide a platform for our students to enhance their presentation and networking skills.

Additionally, my attendance at the GSA North-Central Section meeting and the 2nd North America Mining Digitalization conference further expanded my knowledge base and strengthened my professional network. These conferences served as forums for the exchange of groundbreaking ideas and the exploration of emerging trends within our field.

Recognizing the importance of staying up-to-date with the latest advancements in mining software, I actively participated in a training workshop centered around Vulcan. By acquiring these new skills, I aim to better support our students and contribute to the advancement of our research endeavors.

Attending these conferences and workshops holds immense value for both our students and the advancement of our research efforts. It provides a platform for knowledge dissemination, fosters professional growth, and facilitates meaningful connections within the academic community.

**Service:**

This year, I was honored to assume the role of Associate Editor for the esteemed Mining, Metallurgy & Exploration journal, an Official International Peer-reviewed Journal of the SME. This position allows me to contribute to the rigorous evaluation and publication of cutting-edge research within the field of mining.

Additionally, I had the privilege of being invited as a distinguished speaker at two notable events. Firstly, I delivered talks at the 2nd North America Mining Digitalization conference, where I had the opportunity to share insights and expertise on machine learning on mine health and safety. Furthermore, I was invited to present at the mining engineering department in the renowned Indian Institute of Technology, Kharagpur, India. This platform allowed me to engage with fellow professionals and contribute to academic discourse.

Recognizing the importance of fostering meaningful discussions and knowledge exchange, I took the initiative to co-organize a session on Critical Minerals' exploration, mining, and processing at the GSA North-Central Section meeting held in Grand Rapids. This session provided a valuable platform for researchers and industry experts to collaborate and address key challenges and advancements in this critical field.

These engagements and leadership roles highlight my dedication to advancing the mining and metallurgy disciplines, both academically and professionally. I am grateful for these opportunities to contribute to the broader scientific community and foster the exchange of ideas and knowledge.

I find great satisfaction in conducting research and mentoring graduate students. The continued support of the endowment funds remains instrumental in facilitating my research endeavors. Once again, I would like to express my heartfelt gratitude to the Witte Family for their generous sponsorship, which has made a significant impact on the success and progress of my work.