



**Witte Family Endowed Faculty Fellow in Mining Engineering  
Annual Report 2023-2024**

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**Overview:**

In the past year, the Witte Family Endowed Faculty Fellow funds were strategically utilized to support research initiatives, professional development, and graduate student support within the mining engineering program. This report provides a detailed account of these activities, showcasing our commitment to advancing the field and fostering student success.

**Graduate Student Support:**

The majority of the endowed funds were allocated to tuition support for my graduate students. Ongoing funded projects in our department do not cover student tuition; therefore, the Witte Family Endowed funds were crucial in filling this gap. This financial flexibility has been instrumental in attracting and retaining talented students, providing them with the resources they need to succeed in their academic and research endeavors.

**Research Activities:**

Over the past year, our accomplishments have been notable and encompass various areas. We achieved the publication of six peer-reviewed journal papers, with an additional four papers currently under review and three papers under preparation. Furthermore, I co-edited a Special Issue for the *Remote Sensing Journal* titled "*Hyperspectral Remote Sensing from Spaceborne and Low Altitude Aerial/Drone-Based Platforms—Differences in Approaches, Data Processing Methods, and Applications.*" Our research team, including dedicated graduate students, attended the prestigious Society for Mining, Metallurgy, and Exploration (SME) Annual Conference held in Phoenix, AZ.

Currently, we have a group of Ph.D. and M.S. students diligently working on diverse mining-related projects. This year, we established a fruitful collaboration with esteemed mining researchers from renowned institutions such as Penn State and the South Dakota School of Mines. We have submitted several research proposals, which are under consideration for future funding. Celebrating our students' achievements, two of our M.S. students graduated this year and secured job offers from prominent mining companies. Recently, we recruited one Ph.D. student, who will start this coming fall and work on hydrogen energy storage and recovery.

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:**

This year, our research team participated in various conferences, including the prestigious SME Annual Meeting, where we made oral presentations. We acquired two mining software packages,



donated by mining software companies, to support our students' success. Additionally, I attended a mining software training workshop focused on optimizing energy and transportation costs and time through mining equipment selection.

At the SME Annual Meeting in Phoenix, AZ, three of my graduate students attended, and one of them made an oral presentation. These invaluable experiences showcase our team's commitment to scholarly engagement and provide a platform for our students to enhance their presentation and networking skills.

Recognizing the importance of staying up-to-date with the latest advancements in mining software, I actively participated in online training on Haulsim. By acquiring these new skills, I aim to better support our students and contribute to the advancement of our research endeavors. I also enrolled in an online course on the ethical use of Artificial Intelligence (AI), which will help me guide my students in using AI ethically for research and classroom activities. Furthermore, I participated in National Science Foundation (NSF) organized training on CMMI's Game Changer Academies for the panel review process.

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 served as the search committee chair for faculty recruitment in our geological engineering program. The committee successfully attracted several high-quality candidates and successfully hired one of them. This role allows me to contribute to our department and college missions. Additionally, I had the privilege of being invited as a distinguished speaker at two notable events, allowing me to engage with fellow professionals and contribute to academic discourse. Within the SME, I serve on the Educational Sustainability committee, which is responsible for Ph.D. fellowship and Faculty Career Grant selections.

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.

### **Conclusion:**

Conducting research and mentoring graduate students are deeply fulfilling aspects of my role. The continued support provided by the Witte Family Endowed funds has been instrumental in advancing our research initiatives and supporting our students. This financial assistance has enabled us to achieve significant milestones and foster a productive academic environment.

I extend my heartfelt gratitude to the Witte Family for their generous sponsorship. Their unwavering support has made a profound impact on the success and progress of our work, and we remain committed to utilizing these funds to drive innovation, professional growth, and academic excellence within the mining engineering program.