



Emmanuel De Moor Colorado School of Mines

KENT D. PEASLEE JUNIOR FACULTY AWARD

A variety of activities toward building and expanding connections with the steel industry were originally proposed and a summary of activities is provided herein.

I would particularly like to highlight my visit to voestalpine Texas, as this represented my first visit to a direct reduced iron (DRI) production facility and was very instrumental toward more effectively teaching about DRI and hot briquetted iron (HBI) production. The interactions with the staff have resulted in the development of a new research program funded by voestalpine to study DRI and HBI, which will fully fund a graduate student for two years with the student joining fall 2018.

Activities toward building student interest in the steel industry that were organized inside and outside the classroom include:

- A focus on industrial technology and engineering in addition to iron- and steelmaking fundamentals in the class.
- Plant tours to EVRAZ Rocky Mountain Steel and AK Steel – Dearborn Works.
- A number of lectures and homework developed for junior-level thermodynamics pertaining to iron ore reduction and microalloying solubility in steel alloys as examples of practical applicability of thermodynamic principles in the steel industry.
- Visit to two ArcelorMittal plate steel mills in Pennsylvania with a graduate student.
- A steel day was organized in collaboration with the Colorado School of Mines (CSM) career center. A panel of steel industry professional engineers from Nucor and EVRAZ discussed working in the industry, a graduate student discussed his research on interphase precipitation in plate steels, an announcement was made for free pour Fridays where students can work in the foundry on metal castings, and an overview of AIST programs was presented. The CSM career center is interested in making the steel day an annual event.
- Five seminar presentations on ferrous metallurgy were organized to showcase the high-tech fundamental research going on serving the steel industry and to excite graduate students about ferrous metallurgy and professional research opportunities.
- A display case titled “Journey to steel” was designed and built by a group of sophomore students for the CSM geology museum. The display case illustrates various steps in the reduction of iron ore and the production of steel. The geology museum holds a vast collection of minerals including iron oxides, sulfides, carbonates etc. and the museum was enthusiastic about including a display detailing the utilization and processing of iron ore. The display was included in a year-long exhibit.