

## PROJECT SUMMARY

### FACULTY GRANTS FOR INTERNATIONAL CONNECTIONS LEHIGH UNIVERSITY - Office of International Affairs (OIA)

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#### **OVERVIEW**

Host: Dr. Hartmut Polzin  
Gießerei-Institut (*Foundry Institute*)  
Technische Universität Bergakademie Freiberg (*Freiberg University of Mining and Technology*)  
Freiberg, Saxony, Germany

Goal: The goal of this trip was to cultivate an international collaboration with Dr. Hartmut Polzin of Freiberg University of Mining and Technology, specifically aimed at pollution prevention technologies for foundries. Beyond this, University impact is expected by developing a relationship that benefits both Universities with student and scholar exchange opportunities.

Date: August 2013

#### **OUTCOME**

With regard to starting an international research collaboration. During the trip Dr. Hartmut Polzin and I mapped out a research project to begin our collaboration. We aim to begin our work investigating the gas evolution of different foundry binder systems. Specifically, we will build upon the laboratory strengths of Freiberg and the laboratory strengths of Lehigh. Freiberg has one of the most comprehensive foundry sand testing labs in the world. To build upon this, various binders (furan resins, phenolic resins, protein binders) and sand mixes will have the gas evolution quantified at Freiberg. These same sand mixes will be qualitatively measured at Lehigh University for gas evolution. The evolved gases will be measured via thermal gravimetric – gas chromatography coupled to mass spectroscopy. Within this project we plan to compare the qualitative and quantitative results so that we can compare the results from the binders from United States and from Germany. Beyond this first collaboration, we plan to pursue other topics related to pollution prevention in manufacturing.

Freiberg University of Mining and Technology currently hosts an internationally diverse student population. Due to this pre-existing international presence, Freiberg is well situated for both short-term and long-term student exchange opportunities.

## **ACCOMPLISHMENTS**

**Short-Term Outcomes:** The immediate outcome identified a collaborative research project assessing the gas evolution from foundry binders. Dr. Polzin and I also started a dialogue to identify student and scholar exchange opportunities.

**Long-Term Outcomes:** The anticipated long-term outcomes include; ongoing research efforts, pursuit of internationally funded research opportunities, mutual sabbatical opportunities, student and scholar exchange, and research publications on collaborative topics.