

DEPARTMENT OF  

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**ENERGY AND MINERAL ENGINEERING**  

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COLLEGE OF EARTH AND MINERAL SCIENCES

EGEE/PNGE 590 Colloquium

**FUNGAL BIOMODIFICATION OF SULFIDES AND  
CARBONACEOUS MATTER IN REFRACTORY GOLD ORES**

**Presented by: Grace Sarpomah Darabor, PhD Candidate  
Energy and Mineral Engineering Program**

*Abstract:*

The very low grade of gold ore (< 10 ppm) requires that careful processes be used to make gold extraction economically viable while ensuring sustainable environment. It becomes even more challenging when the ore is refractory due to the presence of sulfides that inhibit gold dissolution and carbonaceous matter (CM) that adsorbs dissolved gold and sends it to the waste dam. Thus refractory ore requires pretreatment to decompose the sulfides and deactivate the CM. Conventional pretreatment processes have included roasting and pressure oxidation but attention is currently shifting to microbial processes. Bacteria oxidation is practiced on commercial scale today as it is well suited for relatively low grade ores and offers cost effective and environmentally friendly option. The current biooxidation makes use of sulfur and iron oxidizing chemolithoautotrophic bacteria which are able to decompose the sulfides. Unfortunately the CM are not attacked by these bacteria and this sets the platform for a novel process that can also deactivate the CM. The objective of this proposal is to use the oxidative enzymes/radicals produced by the white rot lignin-degrading fungus, *Phanerochaete chrysosporium* to degrade both sulfides and CM. Analysis of the data obtained from this study will produce exciting revelations that will be of immense benefit to both the academia and mineral production communities.

**Thursday, February 21, 2008  
1:00 – 2:15 p.m.  
157 Hosler Building**

*light refreshments will be served at 1:00 p.m.*