



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Jennifer Dong	Project Number S0506
Project Title Photooxidation of Cobalt-Bound Thiolato Ligands	
Abstract Objectives/Goals This project studies the reaction of the complex bis(ethylenediamine)-(SO)(N,S-2-aminoethanethiolato)Cobalt chloride(III) with singlet oxygen. Similar sulfur- coordinated to transition metal complexes are found in many biological systems. Oxidation at a metal-sulfur site may lead to deactivation at that site. Methods/Materials Reaction rates in different solvents, dimethylformamide (DMF) and water will be attained. The rate-constants in this experiment were recorded through time-resolved Laser Spectroscopy. The compound#s consumption of 1O2 was monitored by the singlet oxygen decay at varying concentrations of quencher. Data was processed using Microsoft Excel and Origin 5.0 computer programs. Results It was found that polar solvents typically display a slower rate of quenching Co(SO)Cystamine. Conclusions/Discussion Solvents that were more nonpolar were supposed to show a faster rate of reaction. The increase in 1O2 quenching rate on the polar solvents is believed to occur because of added stabilization caused by intermolecular hydrogen bonding from the amino protons to the sulfur	
Summary Statement Studying how solvent polarity affects the oxidation rate of reaction of Cobalt-Thiolato Complexes.	
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