Abstract Submitted for the OSF08 Meeting of The American Physical Society

**Production of Singlet Oxygen within a Flow Discharge** MATTHEW LANGE, GREG PITZ, GLEN PERRAM, AFIT — The Airborne laser program is an Air Force sponsored program to place a laser on the battle field for use as a tactical weapon. The chemical oxygen iodine laser offers the powers necessary for this weapons application, but it requires significant logistical support. The goal of this current research program is to demonstrate an oxygen-iodine laser with electrical discharge production of singlet oxygen. Optical diagnostics have been applied to microwave and radio frequency discharges within a pure oxygen flow. The  $O_2(a)$ emissions within a discharge are complicated by atomic oxygen emission requiring care in determining gas concentrations from optically measured emissions. Thermal effects also complicate optical emissions. The inclusion of vibrationally excited oxygen as a quencher of the  $O_2(a)$  state appears to be the limiting rate for production of  $O_2(a)$  within the electric discharge conditions studied in this research.

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Date submitted: 29 Sep 2008

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