

Abstract Submitted  
for the CAL12 Meeting of  
The American Physical Society

**Cold Plasma Characterization and Interaction with Materials<sup>1</sup>**

JUDE ROWE, Sonoma State University — The nature of cold plasma and the interaction it has on other surfaces and microbial organism is of great scientific and applied potential. Using a “starting from scratch” approach, a plasma chamber equipped with AC pick-up coils was designed and built to investigate interactions with the plasma state and other materials. Three main experiments were conducted, first plasma interacting with material within the chamber, second frequency change due to change in ionized gas, and finally methods of pumping energy into plasma were examined. AC Plasma was created using 60Hz power with voltage up to 1.5kV and 36mA in Helium and in air. Temperatures inside the chamber did not significantly increase and plasma temperature was derived from theory. Chamber pressure was measured down to 200 mtorr and averaged around 350 mtorr during measurements. The distance between electrodes controlled main plasma confinement for measurement within coil range. Fourier spectrum analysis was utilized in identifying and characterizing plasma internal characteristics. External macroscopic changes and wave form behaviors were observed and these behaviors will be discussed in context of current theories.

<sup>1</sup>Thank you Dr. Qualls and the SSU Physics department.

Jude Rowe  
Sonoma State University

Date submitted: 07 Oct 2012

Electronic form version 1.4