Time & Location: April 13, 2010 at 11:00 AM in CREOL 102
Title: Laser Plasma Radiation Studies for Droplet Sources in the Extreme Ultraviolet

The advancement of laboratory based Extreme Ultraviolet (EUV) radiation has escalated with the desire to use EUV as a source for semiconductor device printing. Laser plasmas based on a mass-limited target concept, developed within the Laser Plasma Laboratory demonstrate a much-needed versatility for satisfying rigorous source requirements. This concept produces minimal debris concerns and allows for the attainment of high repetition rates as well as the accommodation of various laser and target configurations.

This work demonstrates the generation of EUV radiation by creating laser plasmas from mass-limited targets with indium, tin, and antimony doped droplets. Spectral emission from the laser plasmas is quantified using a flat-field spectrometer. COWAN code oscillator strength predictions for each of the dopants were convolved with narrow Gaussian functions creating synthetic spectra for the EUV region between 10 nm - 20 nm.

A preliminary comparison was made between the theoretical spectra and experimental results. From this comparison, ion stage transitions for each of the hot dense plasmas generated were assessed.

Major: Electrical Engineering

Educational Career:
Bachelor's of Electrical Engineering, BS, 2007, University of Central Florida

Committee in Charge:
Dr. Martin Richardson, Chair, CREOL/Electrical Engineering
Dr. Samuel Richie, Electrical Engineering
Dr. Kalpathy Sundaram, Electrical Engineering
Dr. Donald Malocha, Electrical Engineering

Approved for distribution by Dr. Martin Richardson, Committee Chair, on March 30, 2010.

The public is welcome to attend.