Time & Location: April 6, 2017 at 1:00 PM in Engineering I 288
Title: Implementation of Optical Interferometry and Spectral Reflectometry for High Fidelity Thin Film Measurements

An in-house reflectometer has been built to investigate the varying curvature and thickness profiles in the contact line region of acetone, iso-octane, ethanol, and water on various types of substrates. Light intensity measurements were obtained using our reflectometer and then analyzed in MATLAB to produce thickness and curvature profiles. The apparatus is based on the principle of a reflectometer, consisting of different optical elements, probe, light source, and spectrometer. Our reflectometer takes measurements in the UV-VIS-IR range (200nm-1000nm). This range is achieved by using a light source that has both a deuterium light (200nm-400nm), a tungsten halogen light (400nm-800nm), a Metal-Core Printed Circuit Board LED (800nm-1000nm) and a Metal-Core Printed Circuit board LED(9600K). A UV-VIS-IR spectrometer reads the light response after light is focused on the region of interest. Then a CCD camera (2448x2048) records the profiles for image analyzing interferometry. The readings were then validated with based on results in the literature and studies with cylindrical lens samples.

Major: Aerospace Engineering

Educational Career:
Bachelor's of Mechanical Engineering, BS, 2015, University of Central Florida

Committee in Charge:
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Approved for distribution by Shawn Putnam, Committee Chair, on March 21, 2017.

The public is welcome to attend.