

## OPTI380A

### Prelab Questions – Lab 7 2009

All pre lab questions must be submitted at the beginning of each laboratory session. They are designed to prepare you for the lab so that you can finish the lab on-time. You will receive zero credit for the pre lab questions, if you come to the lab without answering the pre lab questions.

Prelab questions:

- 1.) Describe the following states of polarization mathematically and physically: linear polarization, circular polarization and elliptical polarization.
- 2.) How thick is a quarter-wave plate made of quartz at a wavelength of 632.8 nm? (You can get the  $n_e$  and  $n_o$  refractive indices of quartz from <http://www.luxpop.com/>) How does this thickness compare to the physical thickness of a plate of glass with refractive index  $n = 1.55$  that has an optical thickness  $n \cdot d$  ( $d =$  physical thickness) of  $632.8\text{nm}/4$ ?
- 3.) What is a Stokes vector and why is it used?
- 4.) What is the degree of polarization  $V_p$  with respect to a Stokes vector? What does it tell us about the light being analyzed if  $V_p = 0$  and if  $V_p = 1$ ?