Topics for Paper #1. Due Tues Oct. 7.

Instructions:

(a) Choose one of the following topics and respond to it in an essay of no less than 5 pages and no more than 7 pages (not including title page and bibliography). Your paper should be typed, 10- or 12-point, double-spaced and spell-checked.

(b) Your essay should conform to the guidelines handed out in class. *Make Absolutely Certain that you have read and understood these guidelines before you attempt to begin writing your paper.* Please submit both a hard-copy in class on the due date, and an e-copy to SafeAssign. Make sure to retain an extra copy for your own records.

(c) Your essay must include a bibliography that minimally lists the relevant course texts. Your essay must use this bibiliography as a source to cite for all claims and quotes you attribute to authors.

(d) Lecture notes should ***NOT*** be listed and/or referred to in your essay. Lecture notes merely summarize topics in the texts or related material. Online websites that have not been peer-reviewed should ***NOT*** be listed and/or referred to in your essay. This encompasses (but is not limited to) online lecture notes, personal websites, and Wikipedia. If you find an online source that you'd like to use, but are in doubt over whether it is legitimate, please email me for advice.

(e) Please make use of Poly's Writing Center <www.poly.edu/academics/support/polytechnic/writing> if you have trouble with spelling and/or grammar. If your essay contains so many spelling/grammatical errors that a reader cannot comprehend what your claims are, then your grade will suffer.

1. This topic concerns Malus's theory of partial reflection. What was the "imperfect analogy" that motivated Malus's theory? How does Malus's theory account for partial reflection? In what sense is his theory emissionist? In what sense is it selectionist?

2. This topic concerns Biot's theory of mobile polarization. Explain the purpose of Biot's rotary ray detector. How did Biot apply Malus's Law to derive formula for the number of rays of different types that emerge from his device? How did he interpret this formula to provide an account of chromatic polarization in terms of "mobile" polarization? In what sense was Biot an emissionist? In what sense was he a selectionist?

3. This topic concerns Fresnel's "binary ray" account of diffraction. How did Fresnel's binary ray theory explain the diffraction of light around a narrow object? Discuss the differences between this initial account of diffraction and an account based on the wave theory. How did Fresnel's later introduction of the "efficacious ray" hypothesis address problems associated with the binary ray theory?