Course outline

Introduction and Mathematical Representation

Week 1 Assessment

The due date for submitting this assignment has passed.

1. What is the center wavelength of the second harmonic of 800 nm light? 
   - 400 nm
   - 800 nm
   - 1600 nm
   - 3200 nm
   - 6400 nm
   - Not necessary in U.S. Wavelength, US#
   - Accepted Answer:
   - 400 nm

2. What is the center wavelength of the third harmonic of 800 nm light? 
   - 266 nm
   - 532 nm
   - 800 nm
   - 1600 nm
   - 2333 nm
   - Not necessary in U.S. Wavelength, US#
   - Accepted Answer:
   - 266 nm

3. What is the center wavelength of the fourth harmonic of 800 nm light? 
   - 208 nm
   - 400 nm
   - 600 nm
   - 800 nm
   - Not necessary in U.S. Wavelength, US#
   - Accepted Answer:
   - 208 nm

4. Does phase matching bandwidth depend on thickness of the SHG crystal? 
   - yes, phase matching bandwidth is inversely proportional to the thickness of the SHG crystal
   - no, phase matching bandwidth is inversely proportional to the thickness of the SHG crystal
   - Not necessary in U.S. Wavelength, US#
   - Accepted Answer:
   - yes, phase matching bandwidth is inversely proportional to the thickness of the SHG crystal

5. What light generation occurs due to second harmonic generation? 
   - self-phase modulation
   - third harmonic generation
   - frequency doubling
   - higher harmonic generation
   - Not necessary in U.S. Wavelength, US#
   - Accepted Answer:
   - higher harmonic generation

6. High harmonic generation creates: 
   - Only odd order harmonics
   - Only even order harmonics
   - Only odd order harmonics
   - Not necessary in U.S. Wavelength, US#
   - Accepted Answer:
   - Only odd order harmonics

7. Which axis is ozone? 
   - Not necessary in U.S. Wavelength, US#
   - Accepted Answer:
   - Not necessary in U.S. Wavelength, US#

8. Sum frequency generation beam appears in the middle of the two non-collinear beams. 
   - Second harmonic generation beam appears in the middle of the two non-collinear beams.
   - Second harmonic generation beam appears above the middle of the two non-collinear beams.
   - Not necessary in U.S. Wavelength, US#
   - Accepted Answer:
   - Second harmonic generation beam appears in the middle of the two non-collinear beams.

9. Double refraction occurs in: 
   - any medium
   - in a gas medium
   - in an ionized crystal
   - in a gas phase
   - Not necessary in U.S. Wavelength, US#
   - Accepted Answer:
   - in an ionized crystal

10. Refractive index of a medium in X-ray region is: 
    - less than 2 but greater than 1.5
    - greater than 1.5
    - greater than 3
    - Not necessary in U.S. Wavelength, US#
    - Accepted Answer:
    - less than 2 but greater than 1.5

11. Optical Kerr effect refers to: 
    - change of refractive index as a function of intensity
    - change of density as a function of intensity
    - change of polarization as a function of intensity
    - change of phase matching as a function of intensity
    - Not necessary in U.S. Wavelength, US#
    - Accepted Answer:
    - change of refractive index as a function of intensity

12. Optical Kerr effect refers to: 
    - change of refractive index as a function of intensity
    - change of density as a function of intensity
    - change of polarization as a function of intensity
    - change of phase matching as a function of intensity
    - Not necessary in U.S. Wavelength, US#
    - Accepted Answer:
    - change of refractive index as a function of intensity