

Unit 2 - Introduction and Mathematical Representation

Course outline

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Introduction and Mathematical Representation

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Quiz : Week1 Assessment

Nonlinear Effects

Dispersion Effects and Transverse Electromagnetic Mode

Construction of Ultrafast Laser and Measurement of Pulses

Measurement Techniques in Ultrafast Spectroscopy, and their kinetic and quantum mechanical models

Ultrafast Processes in Physical Chemistry – Photophysics, Photochemistry, Solid State, Transition Metal Complexes and Biomolecules

Maxwell's Equations

Ab Initio Molecular Dynamics of Photochemistry and Photophysics – Part 1

Ab Initio Molecular Dynamics of Photochemistry and Photophysics – Part 2

Attosecond Chemical Dynamics – Theoretical Point of View

Attosecond Chemical Dynamics – Experimental Point of View

Femtochemistry of Nanocatalysis

Week1 Assessment

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-08-14, 23:59 IST.

1) What is the center wavelength of the second harmonic of 800 nm pulse? 1 point

- 600 nm
- 800 nm
- 266 nm
- 400 nm

No, the answer is incorrect.
Score: 0

Accepted Answers:
400 nm

2) What is the center wavelength of the third harmonic of 800 nm pulse? 1 point

- 400 nm
- 266 nm
- 400 nm
- 800 nm

No, the answer is incorrect.
Score: 0

Accepted Answers:
266 nm

3) What is the center wavelength of the fourth harmonic of 800 nm pulse? 1 point

- 800 nm
- 200 nm
- 266 nm
- 600 nm

No, the answer is incorrect.
Score: 0

Accepted Answers:
200 nm

4) Does phase matching bandwidth depend on thickness of the SHG crystal? 1 point

- yes, phase matching bandwidth is proportional to the thickness of the SHG crystal
- yes, phase matching bandwidth is inversely proportional to the thickness of the SHG crystal
- no, phase matching bandwidth does not depend on the thickness of the SHG crystal
- no, phase matching bandwidth only depends on refractive index of the SHG crystal.

No, the answer is incorrect.
Score: 0

Accepted Answers:
yes, phase matching bandwidth is inversely proportional to the thickness of the SHG crystal

5) White light generation occurs due to 1 point

- second harmonic generation
- self-phase modulation
- third harmonic generation
- sum frequency generation

No, the answer is incorrect.
Score: 0

Accepted Answers:
self-phase modulation

6) High harmonic generation creates 1 point

- all (including odd and even) harmonics
- only even order harmonics
- only odd order harmonics
- only second harmonic

No, the answer is incorrect.
Score: 0

Accepted Answers:
only odd order harmonics

7) White light generation occurs due to 1 point

- second harmonic generation
- self-phase modulation
- third harmonic generation
- sum frequency generation

No, the answer is incorrect.
Score: 0

Accepted Answers:
self-phase modulation

8) Which one is correct? 1 point

- Sum frequency generation beam appears in the middle of the two non-collinear fundamental beams
- Second harmonic generation beam appears in the middle of the two non-collinear fundamental beams
- Third harmonic generation beam appears in the middle of the two non-collinear fundamental beams
- Difference frequency generation beam appears in the middle of the two non-collinear fundamental beams

No, the answer is incorrect.
Score: 0

Accepted Answers:
Sum frequency generation beam appears in the middle of the two non-collinear fundamental beams

9) Double refraction occurs in 1 point

- any medium
- in isotropic medium
- in birefringent crystal
- in gas phase

No, the answer is incorrect.
Score: 0

Accepted Answers:
in birefringent crystal

10) Refractive index of a medium in X-ray region is 1 point

- less than 2 but greater than 1.5
- less than 1
- greater than 1
- greater than 2

No, the answer is incorrect.
Score: 0

Accepted Answers:
less than 1

11) Optical Kerr effects refers to 1 point

- 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.

No, the answer is incorrect.
Score: 0

Accepted Answers:
change of refractive index as a function of intensity

12) Optical Kerr effects refers to 1 point

- 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.

No, the answer is incorrect.
Score: 0

Accepted Answers:
change of refractive index as a function of intensity