

Unit 5 - Construction of Ultrafast Laser and Measurement of Pulses

Course outline

How to access the portal?

Introduction and Mathematical Representation

Nonlinear Effects

Dispersion Effects and Transverse Electromagnetic Mode

Construction of Ultrafast Laser and Measurement of Pulses

- Construction of Ultrafast Laser
- Construction of Ultrafast Laser (Continued .)
- Construction of Ultrafast Laser (Continued ..)
- Measurement of Ultrafast Pulse
- Measurement of Ultrafast Pulse (Continued .)

○ Quiz : New Assessment week 4

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

New Assessment week 4

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

Due on 2019-08-28, 23:59 IST.

1) Pump-probe spectroscopy involves two time-delayed identical pulses:

1 point

- they are two neighboring pulses in a pulse train
- they are two pulses created from a single pulse by a beam splitter
- they are from two different femtosecond laser sources
- one of the from a femtosecond laser source and another from a nanosecond laser source.

No, the answer is incorrect.
Score: 0

Accepted Answers:
they are two pulses created from a single pulse by a beam splitter

2) A vibrational wavepacket is prepared when:

1 point

- excitation is performed by a short pulse
- excitation is performed by a broad pulse
- excitation is performed by sunlight
- excitation is performed by laser beam.

No, the answer is incorrect.
Score: 0

Accepted Answers:
excitation is performed by a short pulse

3) Time-correlated single photon counting (TCSPC) involves

1 point

- two optical pulses
- only electronics
- a pump-probe scheme
- a single pulse and an electronic detection system

No, the answer is incorrect.
Score: 0

Accepted Answers:
a single pulse and an electronic detection system

4) Fluorescence up-conversion involves

1 point

- two-photon photoemission process
- high harmonic generation process
- white light generation process
- sum frequency generation process.

No, the answer is incorrect.
Score: 0

Accepted Answers:
sum frequency generation process.

5) Transient absorption spectroscopy involves

1 point

- a broad white light source as probe
- a narrow bandwidth source as probe
- any source as probe
- only 800 nm pulse as probe

No, the answer is incorrect.
Score: 0

Accepted Answers:
a broad white light source as probe

6) In transient grating spectroscopy, pump involves

1 point

- one pulse
- two identical non-collinear pulses with zero delay
- two identical non-collinear pulses with 100 fs delay
- two identical non-collinear pulses with 100 ps delay.

No, the answer is incorrect.
Score: 0

Accepted Answers:
two identical non-collinear pulses with zero delay

7) Femtosecond stimulated Raman spectroscopy involves

1 point

- one pulse as probe
- two identical pulses with zero delay as probe
- two identical pulses with 100 fs delay as probe
- two identical pulses with 100 ps delay as probe

No, the answer is incorrect.
Score: 0

Accepted Answers:
two identical pulses with zero delay as probe

8) Rate of linear photo-absorption depends on

1 point

- only number of ground state species
- only intensity of the light
- both
- none of them

No, the answer is incorrect.
Score: 0

Accepted Answers:
both

9) An error function is obtained when a normalized Gaussian function is integrated within the limit

1 point

- $(-\infty, +\infty)$
- (t_1, t_2)
- $(0, 0)$
- none of them.

No, the answer is incorrect.
Score: 0

Accepted Answers:
 (t_1, t_2)

10) According to time-dependent quantum mechanics, time-dependent change in density is observed when

1 point

- a pure state is prepared
- a pure state with a time-dependent phase factor is prepared
- a pure state without a time-dependent phase factor is prepared
- a superposition state is prepared

No, the answer is incorrect.
Score: 0

Accepted Answers:
a superposition state is prepared