CHM311 Study

Pretest

Select the best answer. If you do not know the answer select “I don’t know”

1. Which fact about molecular fluorescence is true:

* a molecule absorbs a photon of light and changes its chemical structure.
* It is a process whereby an electron undergoes an intersystem crossing before emitting a photon of longer wavelength
* It is a process by which a molecule in its ground state absorbs a photon of light and releases that energy by radiating a photon of light.
* I don’t know

1. Besides releasing energy by radiating a photon, how can a molecule lose energy from its excited state? (select all that apply)

* Reacts and changes its chemical structure
* Loses energy through collisional quenching
* Remains in its excited state indefinitely
* Enters forbidden spin state before releasing a photon
* I don’t know

1. Electronic excitation of molecules by absorption of radiation occurs on the order of:

* 1ps
* 10ns
* 1fs
* I don’t know

1. Internal conversion refers to what process?

* The transition from an allowed spin-state to a forbidden one
* A non-radiative electronic relaxation from a low vibrational level of an excited electron state to high vibrational lower level of a lower electronic state
* The association of a fluorophore with a quencher molecule, which dampens fluorescence.
* An intramolecular cyclization that occurs due to the promotion of an electron with no observed fluorescence
* I don’t know

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Posttest

Select the best answer. If you do not know the answer select “I don’t know”

1. Which fact about molecular fluorescence is true:

* It is a process by which a molecule absorbs a photon of light and changes its chemical structure.
* It is a process by which a molecule in its ground state absorbs a photon of light and releases that energy by radiating a photon of light.
* It is a process process by which a molecule absorbs a photon of light and emits a photon of shorter wavelength.
* It is a process whereby an electron undergoes an intersystem crossing before emitting a photon of longer wavelength
* I don’t know

1. Select the three general types of quenching processes? (select all that apply)

* Perrin Quenching
* Collisional Quenching
* Spontaneous Quenching
* Pre-association Quenching
* I don’t know

1. Molecular vibrations occur on the time scale of:

* 0.1 – 1 fs
* 100 - 1000 ns
* 1 – 10 ps
* 10 - 100 fs
* I don’t know

1. Generally, electronic excitation occurs between?

* The LUMO of the excited state and the HOMO of the ground state
* The HOMO of the excited state and the LUMO of the ground state
* I don’t know