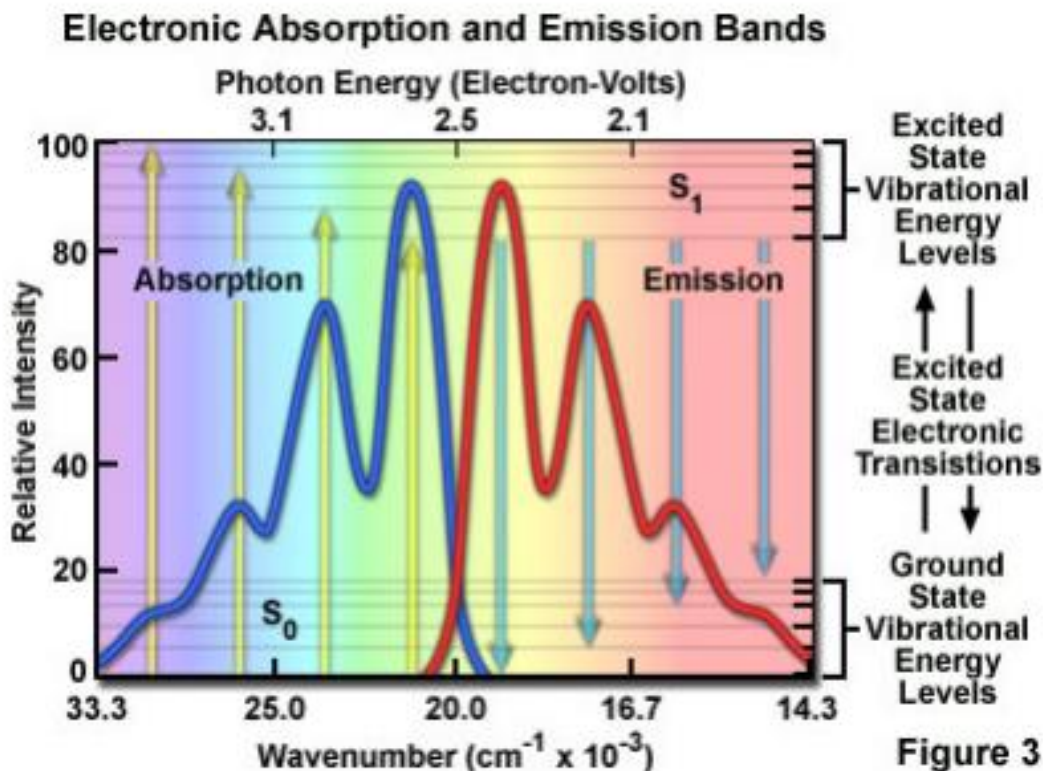


# Fluorescence Spectroscopy

Its not just your bright yellow biking shorts

# What is fluorescence?

- Light is absorbed by the sample and reemitted at a lower wavelength
- Light kicks the molecule into an excited state
  - Usually the first singlet state
- Broad spectrum emission is the result of nonradiative energy transfer between different molecules and multiple relaxation pathways



# Applications

- Fluorescence Microscopy
  - Tagging of proteins, antibodies etc with fluorescent molecules
  - You know what color to look for and roughly where to look
- Autofluorescence Imaging
  - how the sample itself fluoresces, often used to measure retina health
    - Pretty sure its the blue light at the optometrists
- Qualitative Spectroscopy
  - Detect the presence of chemicals, EG oil on a piece of steel
- Quantitative Spectroscopy
  - You can “tag” things using fluorescent molecules and then track the tags
  - Quantity of fluorophores affects intensity of the fluorescence signal
- What are a few applications?

# What we're doing

- Measure the fluorescence spectrum of Kiton Red 620 laser dye
- Measure the fluorescence spectrum of canola oil
- Measure the fluorescence spectrum of corn oil
- Measure the fluorescence spectrum of EVOO
- Measure the fluorescence spectrum of boring olive oil
- Maybe we'll look at principle component analysis!!!!!!!!!!!!!!

# Papers

- [https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0208640\](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0208640)
- <https://www.sciencedirect.com/science/article/pii/S0956713514003594>
- [https://pubs.acs.org/doi/full/10.1021/jf048742p\](https://pubs.acs.org/doi/full/10.1021/jf048742p)
- <https://academic.oup.com/jaoac/article/83/6/1435/5656401>
- <https://link.springer.com/article/10.1007/s10895-022-02997-0>