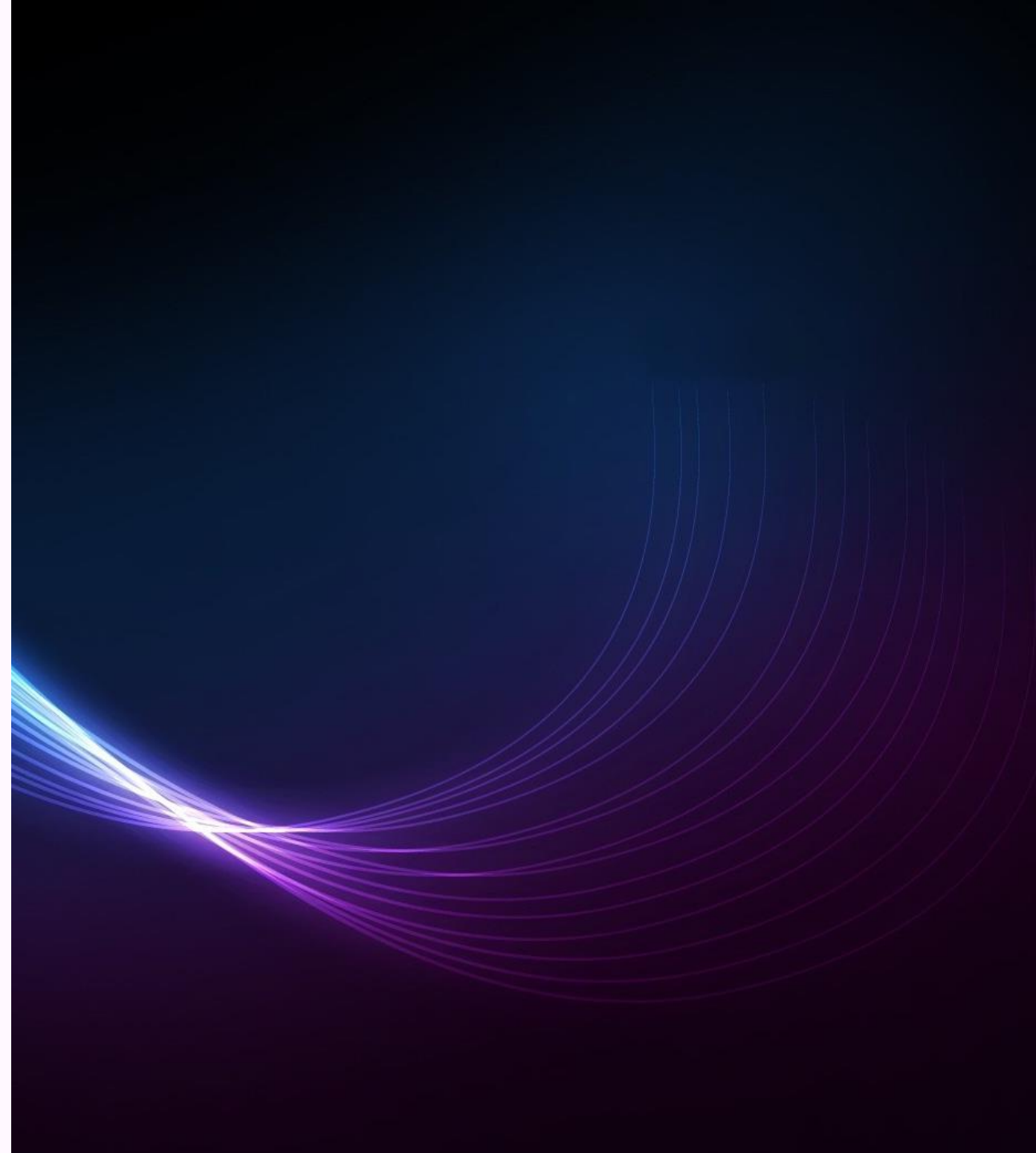
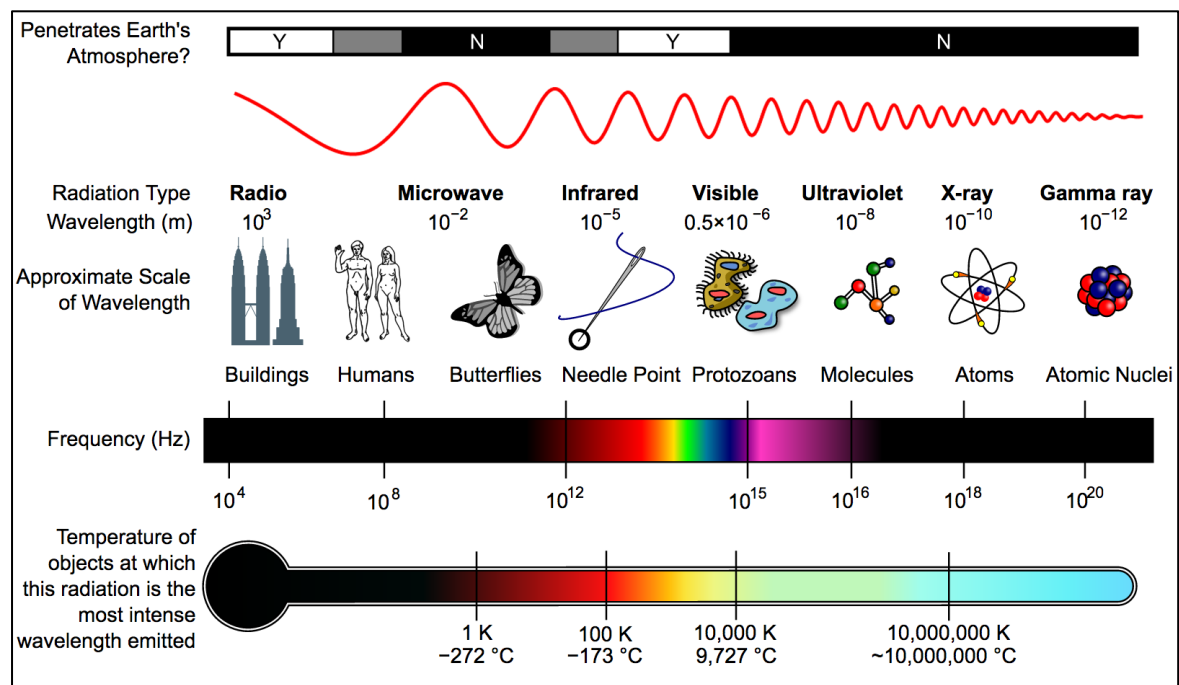


How-To Talk
Shaw Group Meeting
Dec 14, 2023

UV-Vis



Fundamental concepts of UV-Vis

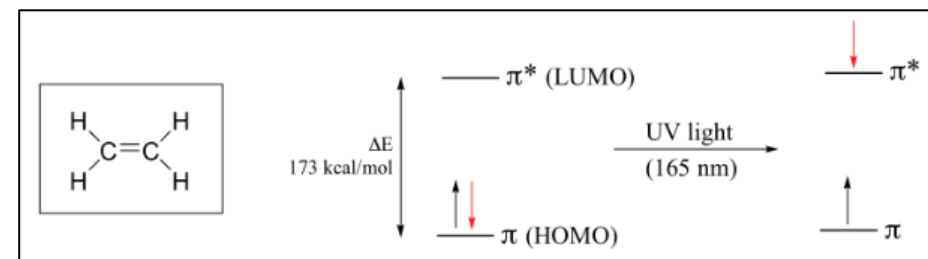


$$E = h\nu$$

Energy (J) Planck's Constant
(6.626×10^{-34}) Frequency (s^{-1})

$$V = c/\lambda$$

Speed of light (3×10^8 m/s) Wavelength (meters)

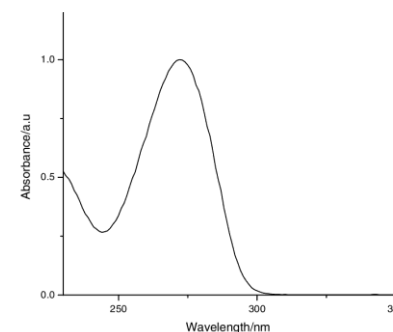


Absorption of UV (light [energy])
Electronic – Vibrational – Rotational

Light is absorbed

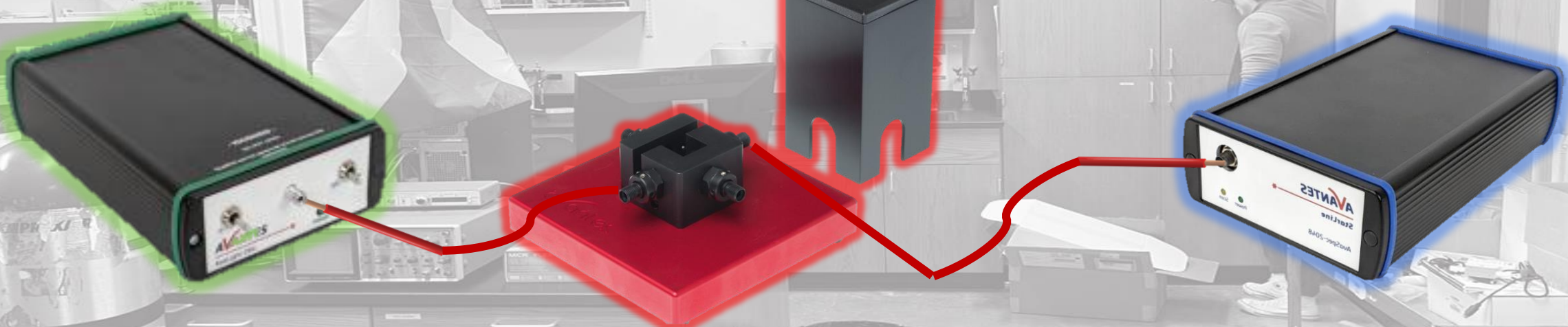
$$A = \epsilon bC$$

Molar absorptivity Path length (cm) Concentration (M)





Instrument Setup



Light Source

Spectrometer

- Plug the grey chord into the USB port of the computer and connect it to the Spectrometer
- Plug the black chord into the outlet and into the Light Source
- Wait 15 minutes to warm up the instrument

Important Specs

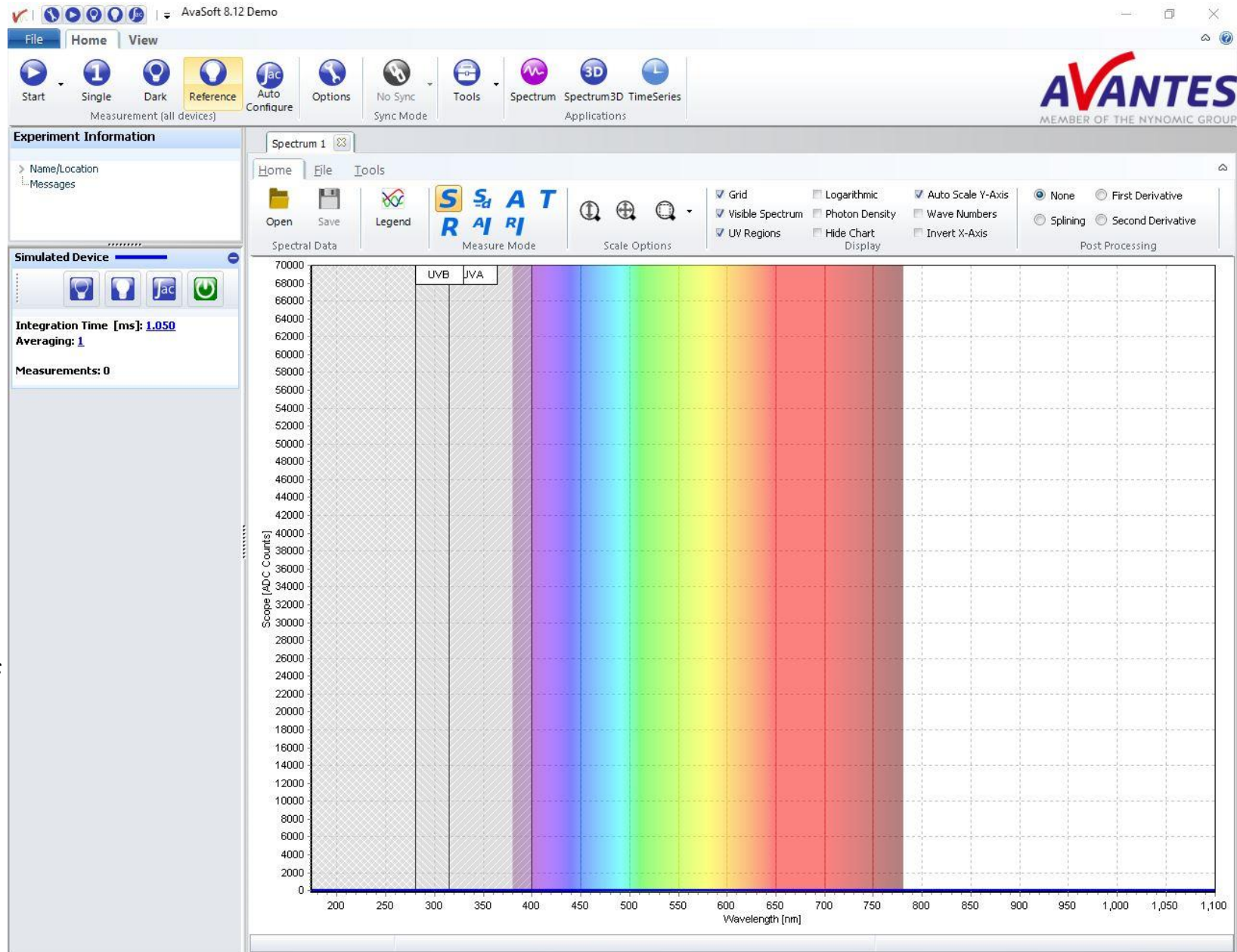


TLL = Shutter
On = Light source on
Off = Light source off

Launching program and collecting data



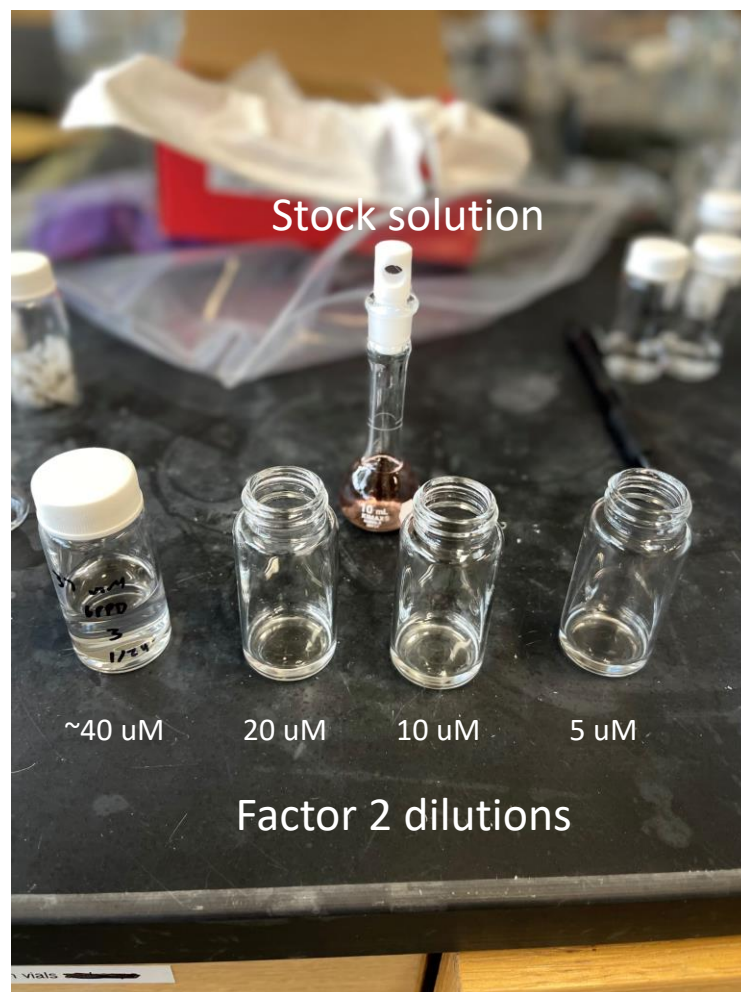
- Launch AvaSoft 8 Program
- Place blank in stage and cover
- Save file name as blank
- Select scope mode
- Press start and autoconfigure
- Take light background measurement
 - Light on -> Shutter on -> Shutter off
- Take dark background measurement
 - Shutter on -> Click 'dark'
- Ready to analyze sample!
- Export as .csv to Excel and save to One Drive or flash drive



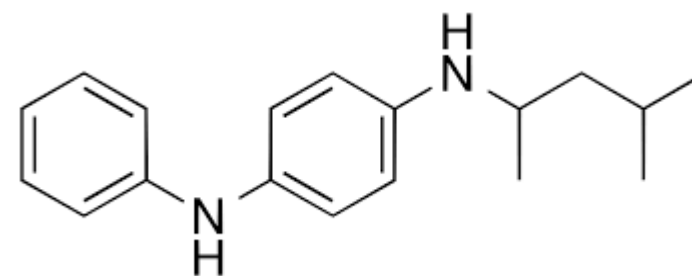
Data Collection Example

Preparation of solutions for UV-Vis

Serial dilution from
stock solution



Chemical : N-(1,3-dimethylbutyl)-
N'-phenyl-p-phenylenediamine
(6PPD)



Example of collected data

