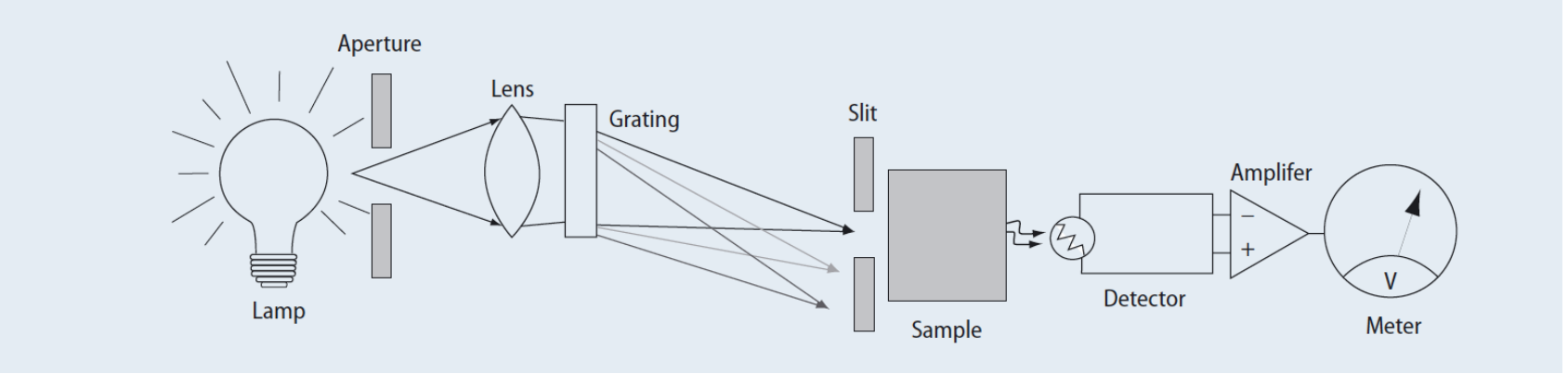
First Update - 7/10/14

Buffy and Stephanie

Creation of Spectrometer

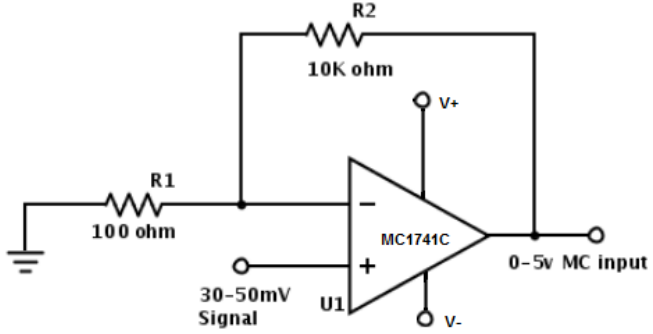
Rough Diagram:

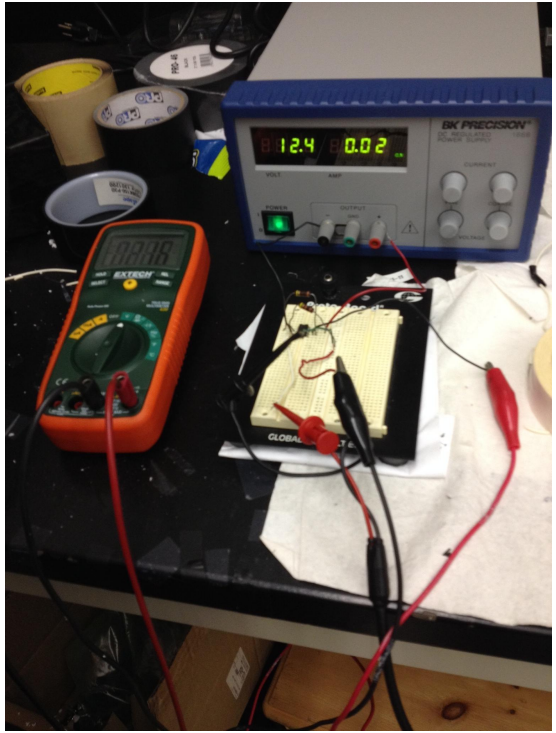


Source:http://www.rsc.org/images/EiC-05_2007-spectrophotometer_tcm18-214788.pdf

Amplifier

- Input voltage - 20.6 millivolts
- Output voltage - 2.18 volts
- Amplifies 100x
  - Voltage supply to op amp - 12.4 volts, 0.02 amps, C.V





Diffraction Equation

$$d\left(\sin\theta_m + \sin\theta_i\right) = m\lambda.$$

where

- θ_i is the angle at which the light is incident,
- d is the separation of grating elements, and
- m is an integer which can be positive or negative.

d = 1/1,200 grooves per mm

Unknown = wavelength of diffracted light

Calculating Luminous Intensity

- Luminous intensity - luminous flux per solid angle
  - Luminous flux - perceived power of light
  - Magnitude of solid angle - A/r^2
  - Flux = luminosity/$4(pi)r^2$
  - Luminosity = power x luminous efficiency provided by manufacturer
  - Power = IV

$$\frac{IV\eta}{4\pi r^2}$$

$$\frac{A}{r^2}$$

$$\frac{IV\eta}{4\pi A}$$