Particle dynamics class, SMS 618, Emmanuel Boss

Beam attenuation lab:

Material:
Beam-transmissometer (WetLabs C-star, 10cm pathlength).
Voltmeter
Clean DI water (4 litters).
Sample of Mud resuspended in Calgon.
Manufacturer calibration sheat.
Pump to circulate fluid through the transimissometer.

Method:
Measure the voltage in air.
Measure the dark current voltage.
Measure the voltage in DI water (Make sure you know the total volume of fluid you have.

Questions you should be able to answer:
How do they compare with the factory calibration?
Why is the water reading higher than air?

One milliliter at a time, add mud sample to the water and record voltage reading (up to 10ml).

	1ml	2ml	3ml	4ml	5ml	6ml	7ml	8ml	9ml	10ml
Voltage:										

How does the voltage vary with concentration (in ml of solution in liters of DIW)? Does it make sense?

Use the equation Tr=(Vsample-Vdark)/(Vref-Vdark) to compute the transmission.
How does transmission vary with concentration? Does it make sense?

Tr=exp(-cr), where r is the pathlength (0.1m).
Compute c and regress it against concentration. How does beam-transmission vary with concentration? Does it make sense?

Compute the specific attenuation of the mud; Given the weight of the mud, compute the specific attenuation of the mud (in m^{-1} per (gram per m^3) = m^2/g). How does it compare with values from the literature (e.g. $0.5 m^2/gr$, from Babin et al., 2003)?