

**Particle dynamics class, SMS 618, Fall 2009**  
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Beam attenuation lab:

In this lab you will build an attenuation meter as well as use a commercial one. First, familiarize yourself with Beer Law and the processes responsible for attenuation (i.e. scattering and absorption). Once you feel comfortable follow the instructions in the associated worksheet to construct a transmissometer with which you will determine the specific attenuation of a bentonite slurry. In parallel you will be using a commercial beam attenuation meter (WETLabs C-star).

Homework:

- Complete the tables in the worksheet and graph transmission and beam attenuation as function of concentration.
  
- Are the changes in transmission and attenuation as function of concentration sensible?
  
- What are the major differences between the home-made and commercial transmissometers?
  
- Compute the specific attenuation of the mud (in  $\text{m}^{-1}$  per (gram per  $\text{m}^3$ ) =  $\text{m}^2/\text{g}$ ) for the two systems. How does it compare with values from the literature (e.g.  $0.5\text{m}^2/\text{gr}$ , from Babin et al., 2003)?