***Email your final spreadsheets to*** ***sara.hashmi@yale.edu***

***Include your name in the filename of the spreadsheets.***

**GRAPHENE OXIDE MEASUREMENTS**

1. Does GO have a well-defined PZC? Yes or no, and why?
2. Plot average size vs. pH for the samples prepared at 1.1, 3.2, 7.4, and 9.6. Also plot zeta potential as a function of pH.
3. Discuss/explain the trend of size vs. pH in light of the zeta potential results.
4. The image shows 3 of the graphene oxide samples, at pH 1.1, 3.2, and 9.6. Guess which is which. How do you know?



**STATIC LIGHT SCATTERING**

1. Given the compilation of the SLS data obtained on the 800nm particle standard during class, and the 50 and 200nm samples which were measured outside of class class, do the following:
2. Compute columns O through T. The column labels describe the quantity to compute, including units when appropriate. Use the data given in columns A through N.
3. Compile all three data sets onto a single spreadsheet, and plot the form factor *P*(*q*) vs. *qR* for all three samples on a single curve. Is there any overlap between the three samples? Why or why not?
4. Compare the resultant plot with the plot we saw in class (below), which shows the calculated form factor for spheres. Does it agree well? Discuss the salient features which are observed in both your plot and the predicted curve.

1. The Guinier approximation, *P*(*q*) ~ 1 – (*qRg*)2/3, allows us to obtain the radius of gyration, *Rg*, from a linear fit of *P*(*q*) as a function of *q*2. Using the data from the 50nm particles, now plot *P*(*q*) as a function of *q*2 and extract *Rg* from a linear fit. Obtain the “shape factor” *p* = *Rg* / *RH*, where *RH* is the radius measured at an angle of 90. How close do you get to the expected value for spheres?

