Memorandum

To: Deborah Sills

From: Tyler Zbytek

Date: September 23, 2013

Re: Results from Nonlinear Curve fitting

**Objective:**

The objective of this lab is to find fits for raw data that is nonlinear in form, using KaleidaGraph. Also to create high quality graphs that illustrate the points clearly and be able to analyze the graphs once they’re created. Determine which model fits the data better, linear or Freundlich, when plotting the concentration of dissolved carbon-C*aq* and absorbed Carbon-C*absorbed*.

**Method:**

Using KaleidaGraph and the data that’s given plots will be made and then nonlinear fits will be created accordingly. To create the fits a new fit made using the equations given for first order, second order, and zero order, and substituting in the proper values from the given data. For Freundlich model the following equation was used.

(1)

The following equation was used to determine the linear fit model.

(2)

These equations were used when creating a new model fit in KaleidaGraph.

**Results and Discussion:**

The results for the data set are shown below in Figure 1. The K value, or Freundlich’s Coefficient, was found to be 2.5 . The linear fit was much less accurate fit with this data than the Freundlich model which was a near perfect fit.



Figure 1: the data points for the Caq vs. Cabs are represented as points; the curve represents a nonlinear fit for the data