Project 2 Reflection

For my second project, I decided to use Matlab relating to a topic I had learned in science. Something I found very interesting this year in AP Chemistry was to be able to find the order and rate of a reaction experimentally. In this project, I created my own experimental data for the decomposition of hydrogen iodide into iodide gas and hydrogen gas. As the concentration of the reactant decreased, it increased the production of the two products being given off. First, I plotted three graphs showing the concentration over time, the log of the concentration over time, and the inverse of concentration over time. To determine the order of the reaction, one of the graphs must show a straight line with the slope being equal to k, the rate constant. As done experimentally and with the graphs on Matlab, I was able to prove that the reaction was second order with respect to the concentration of HI. From this, I was able to determine the rate constant which is equal to the slope of the line of the inverse concentration. After solving and finding the rate constant, we can use this known value to determine the concentration of hydrogen iodide during any time of the reaction process. As shown in my project, I was able to input data for this experiment and plot the decrease in concentration of hydrogen iodide over time. I was able to use Matlab to prove this reaction was second order and also experimentally find the concentration on any time across the graph.