I. The reaction of chromium ion with EDTA:

\[ \text{Cr}[	ext{H}_2\text{O}]_6^{3+} + (\text{HO}_2\text{CCH}_2)_2\text{N(CH}_2\text{)}_2\text{N(CH}_2\text{CO}_2)_2^2 - \text{EDTA} \rightarrow \text{Complex I} + \text{H}^+ \]

Complex I is a species in which the EDTA is wrapped around the chromium ion with the electron pairs from the two nitrogens and three of the carboxylate groups donated to the chromium ion to form a coordinate bond. The fourth carboxyl group remains protonated. For a Chime representation of this complex, go to the link immediately below the link for this page on the conference web page.

II. Student objective:

To show that the kinetics of a simple reaction can take on a simple order and to gain experience in determining rate laws from experimental data.

III. Techniques to be employed:

A. We will graph data on semi-log paper and determine rate constants from calculated slopes. (Be sure you know how to evaluate the slope of a straight line plotted on semi-log paper.)

B. Ultraviolet spectrophotometry will be used to measure absorbance, a quantity directly proportional to concentration.

C. The methods for determining the predicted rate law from a reaction mechanism, discussed in lecture, will be applied. You will be presented with a proposed mechanism for the EDTA-Cr$^{3+}$ reaction and asked to determine if it is consistent with the rate law found in the laboratory.

IV. Preparation for the laboratory:

A. Review the use of semi-log paper for plotting data and how to calculate slopes and intercepts from data graphed on semi-log paper.

B. Review your lecture notes on how to determine rate laws from proposed reaction mechanisms.

C. Review graphical techniques for determining the order of a reaction.

\textbf{BRING YOUR CALCULATORS TO THE LABORATORY}