<u>Conclusion</u>

The purpose of this investigation was to determine the mass-percent of iron in an unknown solid sample. The first step in accomplishing this goal was to standardize the solution of potassium permanganate, so as to ascertain the exact concentration. The potassium permanganate was then titrated into a solution containing a measured quantity of the unknown iron-bearing solid. Because the potassium permanganate was strongly colored, and because this color was lost during the oxidation-reduction reaction being studied in this investigation, the persistence of a slight pink hue in the unknown solution provided a clear visual indication that the iron in the unknown solution had been completely oxidized. This visual indication was also helpful in standardizing the potassium permanganate. In both parts of our procedure, the potassium permanganate acted as the oxidizing agent, while the oxalic acid and iron (II) acted as the reducing agent in the standardaztion and unknown sample analysis procedures respectively. By measuring the quantity of potassium permanganate delivered to the unknown solution, as well as the mass of the unknown solid dissolved in solution, it was possible to calculate the exact mass-percent of iron in the unknown solution using stoichiometry and the balanced chemical equation. The average mass-percent of iron contained in the unknown sample calculated over .co.U three trials was found to be 16.6 percent.

Though it was not practical for this investigation to be carried of under oxygen-free conditions, doing so would have greatly reduced the possibility net me iron in solution would be oxidized by exposure to air before the titration could begin. Though this is see was likely mostly avoided by beginning the titrations immediately after the unknowns lid was dissolved in solution, any discernable effective did be seen as a lower of of the calculated value for the mass-percent of iron in the unknown solid.