

DETERMINATION OF IRON (II) BY REDOX TITRATION

LAB

From NOVA Science Challenge, PSU Beaver, PA , April 2004.

PURPOSE

The purpose of this experiment is to determine the percent of iron in an iron (II) compound.

INTRODUCTION

Potassium permanganate is a strong electrolyte when dissolved in water. Under acidic conditions, the permanganate anion will react with aqueous iron (II) cations. This will be used in order to calculate the % iron in and unknown iron (II) compound. You will perform three trials and calculate the mean % iron of those three trials as well as the standard deviation in the mean.

MATERIALS

Unknown aqueous Iron (II) compound	125 ml Erlenmeyer flask
0.75 M Sulfuric Acid	0.02 M Potassium Permanganate
50 ml Burette	

SAFETY

Potassium Permanganate is a powerful oxidizing agent and Sulfuric Acid is a strong acid. Wear goggles and an apron for this lab.

PROCEDURE

1. Place 0.5 to 0.75 grams of the unknown compound into a clean 125 ml Erlenmeyer flask.
2. Add 50 ml of the Sulfuric Acid to the flask.
3. Swirl the flask until the iron compound is dissolved.
4. Titrate the iron compound with the Potassium Permanganate solution to the colorimetric endpoint.
5. Perform a total of three trials.
6. Calculate the % iron in the unknown compound for each trial.

7. Calculate the mean and the standard deviation.

DATA TABLE

	Trial 1	Trial 2	Trial 3
Mass of Unknown Iron Compound			
Molarity of KMnO_4 used (See bottle)			
Volume KMnO_4			
Moles of Iron (II)			
Moles of Iron (II)			
Mass of Iron (II)			
%Fe in Compound			

Mean % iron in compound _____

Standard Deviation _____

What is the balanced titration reaction equation?

Show Trial 1 calculations and the calculations for the mean and the standard deviation below.