

Revised August 2012

AP LAB 5c: REDOX Titration Simulations

Manganate(VII)/Fe²⁺ titration

1. Given that aqueous manganate(VII) (permanganate) ions will be converted to Mn²⁺ ions in acid solution, write a half equation to summarize this process.
2. Write a half equation to summarize the conversion of Fe²⁺ to Fe³⁺.
3. Combine the equations in #1 and #2 above to form a complete REDOX equation, and clearly identify the oxidizing agent and the reducing agent.

4. The REDOX titration computer simulation to accompany this LAB is located at www.chem.iastate.edu/group/Greenbowe/sections/projectfolder/flashfiles/redoxNew/redox.html

Go to the computer simulation and do the following:

- (a) Select the reaction: Choose KMnO₄. The buret will automatically fill with the selected oxidizing agent. The computer will automatically assign a molarity for the oxidizing agent.
 - (b) Use the slider to add a few mL of the oxidizing agent to the Fe²⁺ solution. Repeat this process until a slight pink "flash" of color is observed and then disappears. This is the signal that you are near the endpoint of the titration.
 - (c) Titrate to the end point. Getting the exact end point, requires great care (adding dropwise) and will be reached when there is a permanent pale pink color in the flask. Avoid adding too much oxidizing agent (dark purple) and having to start over.
5. Fill in the table below.

Molarity of oxidizing agent	
Volume of oxidizing agent added	
Volume of Fe ²⁺ solution	

6. Calculate the molarity of the Fe²⁺, enter this number (to three sig. figs) and click-on "OK". If you have done the titration accurately and correctly completed the calculation then you will have the correct answer. If NOT, then repeat the titration until the "Correct" message is seen.

Ap Lab 5c Redox Titration Simulations Adrian Dingles

RD Boyd



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