

Solubility of Calcium Benzoate Expectations and Grading (**Due April 14, 2022**)

Chem 113000-2: Section-33

April 13, 2022

Molecular Weight of EDTA: 372.24 g/mol!

1 General Remarks

This must be typed. Any portion that is handwritten will not be graded. Furthermore, please use the equation editor for any mathematical equations that you use! Points will be deducted for messy equations and sample calculations. Make sure your lab partner's name is on the report as well as my name. All figures and tables should have a caption explaining what they contain. Lastly, do not plagiarize the lab manual! Ensure you cite where necessary, and all citations follow ACS style (see Journal of the American Chemical Society for examples of what this looks like in publications). Note this assignment is due Friday **April 14, 2022** at 5:30 pm.

If something still doesn't make sense, please email me!

2 Pre-Lab Questions (20 points)

Each will be worth 10 points each. No late submissions will be allowed.

3 Notebook Pages (5 points)

Already turned in.

4 Introduction (10 points)

Provide any background information regarding solubility as needed as well as the general purpose of the lab. Show how what experimental quantity we will be measuring can allow us to directly (or indirectly) calculate K_{sp} . That is, introduce any equations that you will use to calculate K_{sp} . You should also mention dissolution reaction that you performed in

lab (make sure proper formatting!). Make sure to cite your sources and do not plagiarize the lab manual!

5 Experimental Procedure (0 points)

Only report deviations from the lab manual here. A citation is required here.

6 Data Analysis (40 points)

Molecular Weight of EDTA: 372.24 g/mol! You should report the final concentration of EDTA solution you used during your titration.

Create a table that contains the raw data from your experiment. The columns should contain

Solution	T	$[\text{Ca}^{2+}]_i$	$[\text{Bz}^-]_i$	V_i	V_f	ΔV

Create a second table that summarizes the following information

Solution	$[\text{Ca}^{2+}]_f$	$[\text{Bz}^-]_f$	K_{sp}

Report the mean K_{sp} from the second table. Finally, calculate K_{sp} at 20° C given that K_{sp} increases by 2.5% for each degree.

Be mindful of significant figures and units! Also, include a caption for every table.

7 Discussion (10 points)

Summarize the main results of the experiment (K_{sp} and K_{sp} at 20° C). Try to compare your computed values to those in the literature (perhaps the textbook?). Discuss any deviations from the perspective of experimental errors. What can be done to improve the experiment and mitigate these errors?

8 Sample Calculations (10 points)

You need to provide sample calculations for the following:

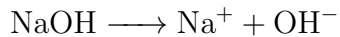
1. Concentration of EDTA solution used during titration
2. The $[\text{Ca}^{2+}]_f$
3. The $[\text{Bz}^-]_f$

4. K_{sp}
5. K_{sp} at 20° C

Do not include more than this or points will be deducted. Sample Calculations can be included at the end of the Data Analysis section, or at the end of the lab report in an Appendix section. This is a matter of preference.

9 Organization and Writing (5 points)

A lab report is a formal document. It should be well written and properly organized. This document I provide to you should give you the proper framework of what to include in the report and where to include. Make sure you cite your sources using ACS style, all equations and chemical equations are formatted properly using the equation editor, and all graphs and tables have a caption and proper labeling. For example, do NOT write $\text{NaOH} \rightarrow \text{Na}^+ + \text{OH}^-$, this is sloppy. Instead



is much neater.