

Chemistry 264

Practical 2

Adam Menne
Stellenbosch University

Last edited on 9th August 2022

Abstract

In this practical a chloride solution is standardised by titration with Silver nitrate. From which the composition of the chloride solution was investigated

Contents

1	Introduction	2
2	Results	2
3	Discussion	3
	Appendix A Flow diagram	4

1 Introduction

In this practical we carry out a series of precipitation titrations in order to standardise a chloride solution containing NaCl and KCl. The percent composition of this solution was then found. Potassium chromate was used as an indicator

2 Results

We find that our titrations were relatively consistent, figure 1 shows the concentration of Cl^- , calculated over eight titrations. These values have a relative standard deviation of 3.548 as can be seen in table 1, which also shows the mean and CI values.

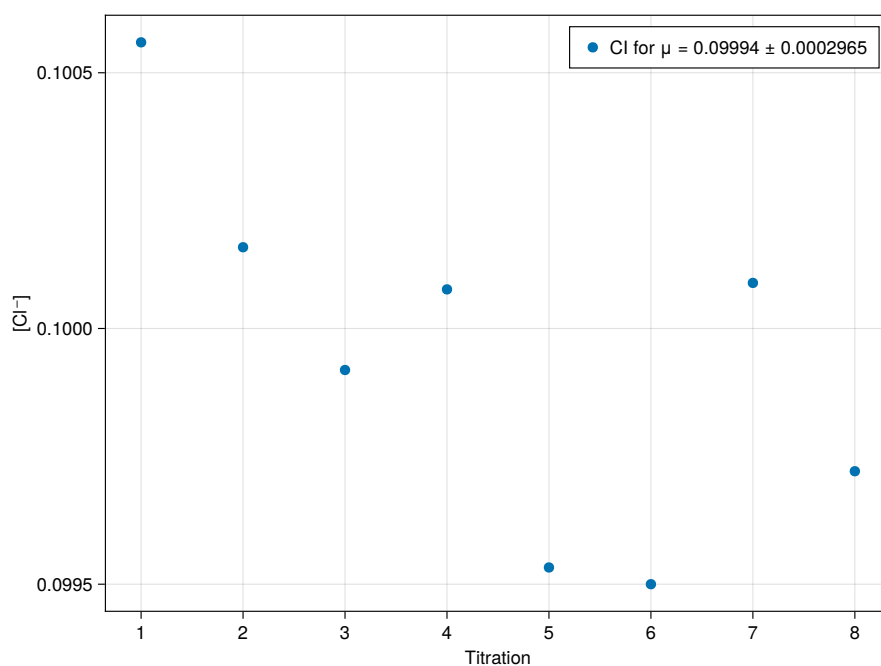


Figure 1: Concentration of Cl^-

Table 1: Supplementary Data

Mean	RSD	CI
0.09994	3.458	0.09965 - 0.1002

A static export of the notebook containing all analysis and figures is available at https://adammenne.github.io/chemistry_264/practical_2/plots.html. With full source code available at https://github.com/AdamMenne/chemistry_264/tree/master/practical_2

3 Discussion

From the titrations that were carried out, the metrics of relative standard deviation and confidence intervals for the mean, show that the titrations were consistent and precise.

However improvements are possible by increasing the number of titrations carried out, and utilising a more accurate and precise method of identifying when the equivalence point has been reached.

Appendix A Flow diagram

1. Fill one burette with chloride solution, fill another with Silver nitrate solution.
2. Add 1ml Potassium chromate to an Erlenmeyer flask. Add 10ml of the chloride solution.
3. Titrate, swirling constantly.
4. Tabulate titration values

Silver Nitrate

- Oxidising
- Corrosive
- Toxic
- Environmental Hazard
- avoid contact with skin and eyes
- may intensify fires
- wash immediately if contact occurs

Potassium Chromate

- Harmful
- Health Hazard
- Environmental Hazard
- avoid contact with skin and eyes, do not inhale
- wash immediately if contact occurs