

## Borax Dissolution Lab Report

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### Borax Dissolution Lab Report

Evaluate the enthalpy change ( $\Delta H_0$ ) for borax dissolution using equation 5 where  $K_2$  is the solubility product constant at room temperature in Kelvin,  $T_2$  and  $K_1$  is the solubility product constant at ice bath temperature in Kelvin,  $T_1$ . Show your calculation and report the enthalpy change in kJ/mol.  $R = 8.314 \times 10$

### Thermodynamics of Borax Dissolution

Table 1: Standardization of HCl. Table 2: Preparation of Borax. Experiment 26: Thermodynamics of the Dissolution of Borax. Results: Trial 1 Tared Mass of  $\text{Na}_2\text{CO}_3$  (g) 0.2 g Moles of  $\text{Na}_2\text{CO}_3$  (mol) 1.8910<sup>-</sup> Buret reading, initial (mL) 72.0 mL Buret reading, final (mL) 91.0 mL Volume of HCl added (mL) 19.0 mL Moles of HCl added (mL) 3.7710<sup>-</sup> Molar Concentration of HCl added (mL) 0.1984 M Average ...

### Chem 2 Experiment 26 Thermodynamics of the Dissolution of ...

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The borax should be dissolved into water at three different temperatures: one room temperature (294.5 K), one in an ice bath (273.0 K), and the other on a hot plate (303.5 K). There should still be borax leftover in the bottom of the flasks to ensure that the solutions are fully saturated.

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The literature values for enthalpy and entropy of the dissolution of borax in water are 110 kJ/mol and 380 J/mol-K, respectively. Determine the percent error in your experimentally determined values. 4. Answer the following questions by discussing pertinent observations and data: a.

## **ENTHALPY AND ENTROPY OF A BORAX SOLUTION**

the aqueous ions. If there is solid borax in the mixture, you can assume the water is as saturated with dissolved borax as it can get, and this is the condition you want. 5. While the borax solution stirs, continue with part B of the lab. Part B Preparation and Standardization of HCl 1.

## **Experiment 8 The thermodynamics of the solubility of borax**

WASTE DISPOSAL: All solutions used in this lab must be disposed of in the proper chemical waste container. CLEAN-UP: Borax crystals are difficult to remove from glassware and the bench tops once dry. Be certain to rinse all glassware that comes into contact with the borax thoroughly using warm water at the end of the experiment.

## **11: Solubility and Borax (Experiment) - Chemistry LibreTexts**

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From the experimental data the enthalpy and entropy for the dissolution of borax were respectively determined to be 133 kJ/mol and 396 J/mol•K, with 20.9% and 4.21% percent difference from accepted literature values. The positive Gibbs energies obtained from the experimental results were in conflict with expectation and experimental observation.

## **Using Ksp for the Dissolution of Borax in Water to ...**

Calculations: Determine the concentration of the dissolved  $B_4O_5(OH)_4^{2-}$  in each 5 mL sample. Calculate the  $K_{sp}$  of each Borax solution at the various temperatures. To determine  $H$  and  $S$ , make a plot of the experimental data on Excel using the equation developed in the introduction. Determine the slope of the best-fit line through the experimental data.

## **Thermodynamics of the Solubility of Borax**

The measure sign of  $\Delta G$  was positive which indicates the dissolution of borax is an endothermic reaction (absorbs surrounding energy). Moreover, the measured sign of  $\Delta S$  was found to also be positive which indicates the disorder of the system increases. There were few errors attributed to this part of the experiment.

## **Seminar Assignments, Experiment 21 - Chemical Principles ...**

Borax Dissolution Lab Report enthalpy, and standard entropy changes for the dissolution of borax in an aqueous solution by standardizing a hydrochloric acid solution. An acid-base titration was utilized for this experiment with  $B_4O_5(OH)_4^{2-}$  (Borax) being titrated with the strong acid titrant, HCl. A graph was formed using the data found in Table 4.

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Thermodynamics Of Borax LAB REPORT Thermodynamics Of Borax LAB REPORT This experiment was conducted to determine the standard entropy and enthalpy of the dissolving reaction of borax in water. The thermodynamic properties of the reaction helped to determine the change in heat and spontaneity within the system.

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Experiment 21 in CHEM 1212K is titled "Thermodynamics of Borax Dissolution." The purpose of the experiment is to use titration of a saturated solution of the borate anion to determine the...

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CHEM 162 Thermo Dissolution of Borax CHEM 182: Experiment #10 Thermodynamics of the Dissolution of Borax Objectives • • To determine the solubility product of borax as a function of temperature To determine the standard free energy, standard enthalpy, and standard entropy changes for the dissolution of borax in an aqueous solution Introduction In this experiment, you will determine the values of  $\Delta H$  and  $\Delta S$  for the reaction which occurs when borax (sodium tetraborate octahydrate).

## **This Is A Thermodynamics Of The Dissolution Of Bor ...**

Experiment 26: Thermodynamics of the Dissolution of Borax Abstract: The purpose of this experiment was to determine the thermodynamic properties of the changes in entropy, enthalpy and free energy, as well as the solubility product of borax as a function of temperature from the dissolution of borax in an aqueous solution. The thermodynamic properties of the reaction helped to determine the change ...

## **Experiment 26 - Experiment 26 Thermodynamics of the ...**

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By dissociating Borax in DI water into Borate and Sodium ions, an acid-base titration allowed the group to calculate the aforementioned quantities. The major findings of the lab was that the Enthalpy of the titrated solutions was equal to 23.25 kJ/mol, while the entropy of the solutions was 27 J/mol\*K.

### **Thermodynamics Of Borax Free Essay Example**

Thermodynamics Dissolution of Borax Lab Report 1. Read the lab in lab manual pages 231-237 and fill out data table by completing the calculations using the raw data.

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