Sitthiphol Yuwanaboon
Chemistry 101 lab 2B

Chemicals in Everyday Life: Investigating Some of Their Reactions

Part I & Part II: Tests for Chloride Ion and Sulfate Ion, Test of Acidity

Procedures	Observations	Conclusions	Balanced Equation
Part I: 1. Prepare 3M HNO3 by diluting with deionized water and 6 M of HNO3 2. Add Epsom salt to test tubes (size of a pea) and put 1 mL of deionized water in the test tubes. 3. add one one drop of 3 M HNO3 to the tube and Two drops of 0.2 BaCl2 solutions to the test tube and Discover the observation of the test tube such precipitation. 4 Set for ten minutes and get some solution from 3rd step to the test tube and put Silver nitrate and try to discover the reaction in the test tube.	Part I: White precipitate on the top of solution 3 M HNO3 and BaCl2. So there is a solid matter on the top of solution that we have mixed. // By getting the solution from step 3 rd, and we mixed the solution of silver nitrate and became cloudy throughout the solution like silver is the solution that precipitates on the solution.	There is participate which is BaSO4(s) in part A . and when we mixed with AgNo3 we got the silver chlorine as the result of precipitate product which making chemical reaction in the systems Because Ag and Cl is not soluble with each other so that are the reason it precipitate in the last part.	1. $MgSO4(aq)+BaCl_2 \rightarrow BaSO_4(s)+MgCl_2(aq)$ NIE: $Ba^{2+}+SO_4^{-2} \rightarrow BaSO_4(s)$ 2. $MgCl_2(aq)+AgNO_3(aq) \rightarrow Mg(NO_3)_2(aq)+AgCl_2(s)$ NIE: $Ag^{2+}+2Cl^{-} \rightarrow AgCl_2(s)$
Part II: 1.burn the strip of magnesium in a hood. 2. place ashes to a small beaker and add 2 mL of deionized water. 3. add one drop of phenolphthalein and mix it. Record observation of the experiment. 4. choose HCl or HNO3 to put the solution above. Just a few drops. Then record the observation that I find the experiment on part II	**Part II:** When a strip of magnesium burns, the bright light coming out the strip the flame is bright // After put a drop of phenolphthalein and add HCl to the beaker. The solution turns a little bit pink	There is combustion and base are formed in the reaction since the water has been produced in last equation. So it would be type of chemical reaction that has been occur of sequence of the experiment on part II	A. $2Mg(s)+O2(g) \rightarrow 2MgO(s)$ b. $MgO(s)+HOH(l) \rightarrow Mg(OH)2$ c. $Mg(OH)2+2HCl \rightarrow MgCl2(aq)+2H2O(l)$ NIE: $H^{+}+OH^{-} \rightarrow H_2O$

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Part III: Test for Carbonate Ion

Procedures	Observations	Conclusions	Balanced Equations
Part III: 1. Pick one of the following items to experiment: eggshell, chalk, seashell, or antacid 2. Put an item to the test tubes; one of them has to add the vinegar on it, and one of these has to add the dilute the HCl in the test tube 3. Record the observation 4. Repeat steps 1st and 2nd by putting a baking soda to what is the result. 5. Discuss the result with other students and exchange the information that you have with people surround you	1. Chalk with HCl: the bubbles came out rapidly faster than the bubbles of vinegar, and both stand for acidic matrix 2. Chalk with vinegar is less active than HCl and the bubbles are formed a little bit less than chemical reaction with HCl 3. Chalk with baking soda form bubbles fastly compare to HCl which both have a rate of breaking the particle a part of each other.	The strong basic and strong acid are actively reacting the relatively the same amount of reaction which makes its result a bubbles gas and chemical reaction and different products that we would get. Relatively the vinegar has higher pH value which make reaction swiftly the product of carbonate will be the carbon dioxide mixed water;	A. $CaCO_3(aq)+2HCl(aq) \rightarrow CaCl_2(aq)+H_2CO_3(aq)$ NIE:$2H^+(aq)+CO_3^{-2}(aq) \rightarrow CO_2(g)+H_2O(l)$ B. $CaCO_3(aq)+2HC_2H_3O_2(aq) \rightarrow Ca(C_2H_3O_{2)})_2(aq)+H_2CO_3(aq)$ NIE:$2H^+(aq)+CO_3^{-2}(aq) \rightarrow CO_2(g)+H_2O(l)$ A. $NaHCO_3(aq)+HCl(aq) \rightarrow NaCl(aq)+H_2CO_3(aq)$ NIE:$2H^+(aq)+CO_3^{-2}(aq) \rightarrow CO_2(g)+H_2O(l)$ B. $NaHCO_3(aq)+H\ C_2H_3O_2\ (aq) \rightarrow Na\ C_2H_3O_2\ (aq)+H_2CO_3(aq)$ NIE:$2H^+(aq)+CO_3^{-2}(aq) \rightarrow CO_2(g)+H_2O(l)$

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Part IV: Test for Iron (III) Ion

procedures	observations	Conclusions	Balanced Equations
Part IV: A: 1. Dilute 0.5 M Iron (III) chloride solution to 20 times its volume with deionized water and add 1 mL ammonium thiocyanate solution 2. Take one 0.5mL of the reaction of the mixture and add deionized water to the test tube. And record the observations. B: 1. Put iron to the tube and fill with a dilute nitric acid solution to the test tube. Be sure put on the goggle 2. Record your observation and make sure which of iron ion products are formed. 3. Wait for 3 minutes and add the test tube with 3 mL deionized water. Mix it. 4. Extract the iron the free test tube and put ammonium thiocyanate solution 5. And compare it from part A.	After ammonium thiocyanate the color has color to red. When we put deionized water in the new test tube with the solution we got to dilute the solute. The color became less concentrated the solution // When we add the Iron (III)chloride with Nitric acid, it starts forming gases in the test tube that we put in and it create the color brownish and some sticky particle in the test tube When we put with the water, the color is diluted with lighter color in the test tube The color show different kind of color change in the particle // In part C the grounded pill that we put with water, it become green particle inside the test tube and when we put with ammonium thiocyanate, it turns red afterward // C.2 when we mix pill with deionized	From the first experiment. We can conclude the particle forming which product gain the No and No2 or No3 ion. NO which makes any things changes form the result because of the color is colorless. The particle of NO2 make a different because it make it form brownish color in the experiment Water makes the particle become less concentrate and color is less playful than we mix it with the original It use to determine what color it get, which was the reactant for particle to form the solution and color has been changed because of those reason.	1.$Fe(s)+NO_3^- \rightarrow Fe^{2+}(aq)+No$ Balanced redox: $3Fe(s)+8H^++2NO_3^- \rightarrow 3Fe^{2+}+2NO+4H_2O$ 2.$Fe(s)+NO_3^- \rightarrow Fe^{3+}(aq)+NO_2$ Balanced redox: $Fe(s)+6H^++3NO_3^- \rightarrow Fe^{3+}+3NO_2+3H_2O$

C: 1. Put iron grounded pill to 2 test tubes. 2. For test tube 1, add the 3 mL deionized water and mix well and add the ammonium thiocyanate solution 3. Record the change in solution 4. 2nd test tube add 1 mL of dilute nitric acid solution 5. Record the change in solution 6. After two minutes add 1 mL of water and ammonium thiocyanate solution 7. And record it observation.	water with nitric acid , it became powder forming white milky color then we add the ammonium thiocyanate, the color start change to red color		

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Part V & Part VI: Test for Chlorine, Testing for Zinc

Procedures	Observations	Conclusions	Balanced Equations
Part V: 1. Dissolve a small amount (one scoop) of sodium iodide, NaI, in 1 ml deionized water 2. Add five drops of bleach and mix well 3. Note color changes 4. Repeat with table salts. 5. See color changes 6. Record your observations to the experiment.	1. When we put in HCl in NaI dilute solution. The color change to red like a pink color. 2. There is nothing change for HCl put Table salt, there is no any color changes in solution	The Cl present when the color to change because the chemical reaction due to the I^- that makes color change to pink or red. And there forming of salt solution in the test tube. It is single replacement.	a) $2NaI\,(aq)+Cl_2\,(aq) \rightarrow 2NaCl(aq)+2I^-(aq)$ B) There are no reaction on the system
Part VI: 1. Take penny from 1982 or later than and clean with steel wool 2. Determine the mass of a penny in gram 3. Place in 5o mL in the beaker 4. Add two mL of HCl solution and swirl several times 5. Cover with plastic wrap 6. Rinse with tap water and describe what you see. 7. Measure a mass of penny again	1. Mass of coin (penny) = 2.4226 g 2. The coin is formed bubbles around it and the black color mass in the test tube. 3. After long times, the mass starts not to change to any bubbles stop forming gas in the beaker.	After rinse to the water the mass of coin relatively decrease in relatively small amount. And there are formed solution of salt in the solution but we can extract it to it to complete ionic There are chemical reaction within the systems so it would be consider as decomposition reaction	a) $Cu(s)+HCl\,(aq)) \rightarrow CuCl_2(aq)+H_2(g)$ CIE: $Cu(s)+2H^+(aq)+2Cl^-(aq)) \rightarrow Cu^{2+}(aq)+2Cl^-(aq)+H_2(g)$ NIE: : $Cu(s)+2H^+(aq) \rightarrow Cu^{2+}(aq)+H_2(g)$ b) .$Zn(s)+HCl\,(aq)) \rightarrow ZnCl_2(aq)+H_2(g)$ CIE: $Zn(s)+2H^+(aq)+2Cl^-(aq)) \rightarrow Zn^{2+}(aq)+2Cl^-(aq)+H_2(g)$ NIE: : $Zn(s)+2H^+(aq) \rightarrow Zn^{2+}(aq)+H_2(g)$

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Part VII & VIII: Testing Relative Acidity, Testing for ammonia/ ammonium ion

procedures	Observations	conclusions	Balanced equations
Part VII: 1. Label four clean, dry test tubes as follows: Vinegar, lime juice, apple juice, 7-up 2. Add a drop of phenolphthalein to each test tube and mix 3. add 1.0 M NaOH, and count each drop to change the color of phenolphthalein to pink to neutralize the solution in each test tube. 4. Record your answers.	**Drops:** Vinegar: 18 drops Lime juice:14 drops Apple juice: 4 drops 7-up: 1 drop Color: Vinegar: pink Lime juice: red/ pink Apple juice: red/pink 7-up: pink	From what we know, the vinegar has the lowest pH value than others in the experiment. Ascendingly from observation the more drops that make solution change its color, the acidic it is Everything turns pink because phenolphthalein is an indicator in the solution	a. $HC_2H_2O_2(aq)+NaOH\,(aq) \rightarrow H_2O(aq)+NaC_2H_2O_2(aq)$ NIE:$H^+(aq)+(OH)^-(aq) \rightarrow H_2O(l)$ b. $H2C_2H_2O_2(aq)+2NaOH\,(aq) \rightarrow 2H_2O(aq)+NaC_2H_2O_2(aq)$ NIE:$H^+(aq)+(OH)^-(aq) \rightarrow H_2O(l)$ c. $H3C_2H_2O_2(aq)+3NaOH\,(aq) \rightarrow 3H_2O(aq)+NaC_2H_2O_2(aq)$ NIE:$H^+(aq)+(OH)^-(aq) \rightarrow H_2O(l)$
Part: VIII 1. Place 5 mL of household ammonia solution in a 150 mL beaker 2. Moist red litmus paper with deionized water and hold over the top of the test tube. To see color changes 3. Put fertilizer in a test tube, add 1 mL NaOH and test as the second step. 4. Record the data	**Change in litmus** Ammonia: change to blue color Fertilizer in a test tube with NaOH: Change to blue color.	Both the solution is basic because it changes the color of litmus paper to blue color. But ammonia is transformed to gas quickly than the fertilizer with NaOH because there are radically change fastly in color of litmus of ammonia rather than the color of fertilizer	a) $NH_3(g)+H_2O(l) \rightarrow NH_4OH\,(aq)$ b) $NH_4NO_3\,(aq)+NaOH\,(aq) \rightarrow H_2O(l)+NH_3(g)+NaNO_3(aq)$ CIE: $NH_4^+(aq)+NO_3^-(aq)+Na^+(aq)+OH^-(aq) \rightarrow H_2O(l)+NH_3(g)+Na^++NO_3^-$ NIE: CIE: $NH_4^++OH^- \rightarrow H_2O(l)+NH_3(g)$