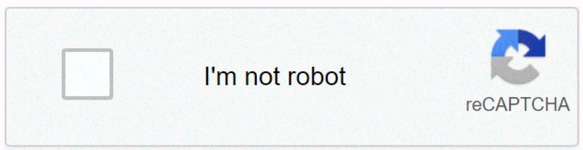

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Flame test lab pre lab questions answer key

Flame Test Lab: Introduction to Flame Test Lab: The Flame Test lab was a class lab where we tested chemicals in the flames to see the wide range of colors in the color spectrum. The secondary purpose of the lab was to identify unknown compounds that we would test and then guess what they were. The first one that I will focus on is the Pre Lab question: Pre Lab matters: This is a replication of the article used in the pre lab: Introduction By placing atoms of a metal in a flame, electrons can be induced to absorb energy and jump to an excited energy state, a quantum leap. They then return to their soil state by emitting a photon of light (the energy saving law indicates that the emitted photon will contain the same amount of energy as that absorbed in quantum leaps). The amount of energy in photon determines its color; red for the lowest energy of visible light, increasing energy through the rainbow of orange, yellow, green, blue, indigo, and finally violet for the highest energy visible light. Photons outside the visible spectrum can also be emitted, but we can't see them. The location of electrons in an atom determines the size of quantum leaps, and thus the energy and colors in the collection of photons emitted, known as the emission spectrum. In this way, the emission spectrum acts as a fingerprint of the element to which the atoms belong. We can see the emission spectrum of colours at once with the naked eye. It will appear to be a color that we will carefully describe. A flame test is a procedure used for quantitative testing for the presence of certain metals in chemical compounds. When the compound to be examined is agitated by heating it in a flame, the metalions will begin to emit light. Based on the substance's emission spectrum, the compound will turn the flame into a characteristic color. This technique of using certain chemical compounds to color flames is widely used in pyrotechnics to produce the range of colors seen in a fireworks display. In this laboratory we will detect the flame test color of several metals by making solutions of salts, or ionic compounds, of these metals and then igniting them with a match. We will observe the separate colors of emission spectra as the solution burns. If time allows, we will also compare the flame testing of crystals of a compound with a solution of the same connection. Background: The electrons in an atom absorb different energy levels, as you know. When all electrons are at the lowest possible energy level, they are said to be in earth mode. Electrons do not always stay in ground mode. Sometimes they can be promoted to a higher energy electron shell. There are two ways to do this. First, the electron can absorb a photon of just the right amount of energy to move from a quantum quantum to someone else. Second, when atoms are heated their electrons can get energy from the heat. This promotes them to higher energy shell. When an electron is in a higher energy shell it is said to be in an agitated state. Electrons in agitated states don't usually stay in them for very long. When electrons lose their energy, they do so by emitting a photon of light. Photons are particles with energy, but no mass. Their energy is directly proportional to the frequency of light (remember: E=hf). The photons emitd exactly the corresponding quantum energy difference between agitated state and earth state. For different elements, the distance between the soil state and the higher energy levels is different. This provides a way to uniquely identify elements based on their spectrum. A spectrum is the scientific name for a rainbow: light divided into the different wavelengths that make it up. Pre lab Q&A: Send your answers to these questions (on a separate sheet of paper if more space is needed) before you begin the lab. What color of light is the lowest in energy? Red has the lowest amount of visible light energy. What color of light is the highest in energy? Violet has the highest amount of visible light energy. What color of light has the highest frequency? Violet has the highest frequency because the amount of energy is directly proportional to the frequency. What color of light has the lowest frequency? Red has the lowest frequency because it is directly proportional to the energy quantity. How are electrons excited? When atoms are heated their electrons get energy from the heat. What does it mean when the electrons are excited? This means that they are in a higher energy state. If you test 2 solutions and find that they both produce a red flame, how can you determine for sure if they contain the same metal? Different elements have different distances between their soil state and higher energy state. This provides a way to identify elements by their spectrum. In your own words, write a brief explanation of how an electron absorbs energy and emits it again as light, and why different elements have different spectra. Electrons absorb energy and become excited and re-emit it by shooting a photon out to lose their energy. Flame Test LabPurposeObserve the characteristic colors produced by certain metallic ions when evaporated in a flame. Identify unknown metallic ions using the flame test. Materials5 watch glass, clean and dried1 glass dropper1 thin glass touch rod (this glass touch rod is very delicate, handle carefully!) 1 100mL cup containing methanol4 known test solids as directed by instructor1 unknown test resistant as directed by instructor1 box of matches1 paper lab notebook (stored in the tray under the desk when performing flame test)1 pencil Slic pencil goggles at all times while in the classroom, or risk sitting out of labWear lab apron at all times while in the classroom, or risk sitting out of labWear gloves when handling all chemicals, or risk sitting out of labTie back hair and loose clothesDo not use chemicals to touch bare skin, wash well with water immediately if you touch something accidentalUse caution with matches. The fire is hot. Don't stare into the flame for longer Spend caution with glass after creating the flame, watch glasses can stay warm for up to 10 minutesWash your hands with soap and water after handling chemicals *** NEVER add more methanol to a watch glass that has already been burned! EVen if you think the flame is out, it can still be burning. The flame can not be visible to the naked eye *** Place backpacks and bags outside the classroom doorPut on all necessary safety equipmentObservate instructor demonstrationsSThrate questions as needed! Collect all glassware, matches and paper towels to bring back to your lab stationOpen your lab stationDetermine your roles with your partnersAn of you will remain at your station at all times (Station Host)The second will be Runner who will gather connections for testing as needed when specified by instructor Runner will acquire 1 cup of methanol from instructorAdd 10 drops methanol to a clean glass watch. Turn on a match and gently ignite methanol on the edge of the clock glassObserve the color of control flame and record it in your lab notebook Runner will bring a clean, dry clock glass to the instructor to acquire a small amount of the first sampleMake a note of the start sample in your lab notebookAt lab station (Station Host) will add 10 pipettes full of methanol to the solid compound on the uretStir to dissolve solid matter in methanol as completely as possible fight and gently ignite methanol on the edge of the clock glassIt should take a few seconds for the full intensity of the flame color to be visibleObserve the color of the flamePlay the color of the corresponding compounds in the data tableRepeat the above process for each known and unknown sampleReny glassware, tidy laboratory tables, put all supplies away and wash hands with soap and waterCommitt name Formula Flame ColorLithium Chloride LiCl RedCopper (II) Nitrate Cu(NO3)2 GreenCalcium Chloride CaCl2 Orange/RedSodium Chloride NaCl Blue/OrangeCalcium Carbonate CaCO4 BlueMagnesium Sulfate MgSO4 VioletPotassiumChloride KCl Weak Purple Cream of Tartar KC4H5O6 BlueCopper Nitrate/LithiumChloride Cu(NO3)2+LiCl Green/Yellow/Red/BluePage 2 Page 3Lab: Protein Denaturation Question: This Was a Chemistry Lab, as We Did. A chemistry lab is the place where you conduct an experiment and record the results. I was the one who had to put baking soda in both milk proteins and egg white proteins. This is the teacher's lab description sheet:DENATURATION OF PROTEINSObjects: To experiment with different methods of denaturing the protein, there are inegg white (albumin) and milk (casein)Materials:Hot Plate((2)) 400 ml cup4 Plastic cups and 3 Spoons1 raw eggs/groupNaC1 (Sodium chloride-table salt)NaHCO3 (Sodium Bicarbonate – Baking powder)Lemon juiceIsopropyl AlcoholPineapple JuiceSing rootBackground: Proteins are large molecules consisting of small amino acids. Proteins are kept in a natural form due to the interaction of side groups on the amino acids from one part of the demolecule to another area of the molecule. These interactions may be hydrogen bonds or disulfide bonds. We can de-correct the proteins by interfering with the H bonds that lie within the structure. When this happens the overall form of protein changes and newproperties can be observed. The shape of a protein is associated with the processing of food clotties, such as solubility, gel formation, and enzyme activity. In the egg whites, albumin changes from ready to white. We will examine how thefollowing denature egg albumin as well as milk casein. Heat – made from cooking Acid & bases – can form ions on some side groups of amino acids Organic compounds – forming their own hydrogen bonds with the amino acidsYoung metals – with disulfide bondsProcedure for Egg Albumin Denaturation:Group 1 and Group 2-Denaturation by HeatPlace 300 ml water in a 400 ml beaker, place on ring rack and heat for boiling. Separately 1 egg white, place egg whites in a plastic cup. Discard the egg yolk. Note: The clarity of egg white this is your baseline or control. Transfer about 15 ml of egg white into 1 test tube for heating. Place the test tube in the boiling water and boil until the egg turns white. Record your observation in the Egg Albumin Data table below. Now make milk (Casein) Denaturation.Groups 3 and 4 - Denaturation of Ionic Compound (NaCl -Table Salt) Separate 1 egg white, place egg whites in a plastic cup. Discard the egg yolk. Note: The clarity of egg white this is your baseline or control. Add about 1 teaspoon (~15 grams) NaCl (Table Salt) to the cup containing an egg white and tube. Keep adding NaCl until you notice a change in egg white. Record your observation in the Egg Albumin Data table below. Now Make Milk (Casein) Denaturation.Groups 5 and 6 - Denaturation of Base (Sodium Bicarbonate-baking soda) Separate 1 egg white, place egg whites in a plastic cup. Discard the egg yolk. Note: The clarity of egg white this is your baseline or control. Add about 1 teaspoon of NaHCO3 (Sodium Bicarbonate – Baking Soda) to the cup containing an egg white and tube. Keep adding NaHCO3 one 1/2 teaspoon at a time until you notice a change in egg white. Record your observation in the Egg Albumin Data table below. Now Make Milk (Casein) Denaturation.Groups 7 and 8 - Denaturing of Acid (Lemon Juice) Separate 1 egg white, place egg whites in a plastic cup. Discard the egg yolk. Note: The clarity of egg white this is your baseline or control. Add about 1 teaspoon (~5 ml) of lemon juice to the cup containing an egg white and stir. Record your observation in the Egg Albumin Data table below. Now make milk (Casein) Denaturation.Groups 9 and 10 - Denaturation of Organic Solvent (Rub alcohol-Isopropyl AlcoholCH3-CH (OH)-CH3)Separate 1 egg white, place egg whites in a plastic cup. Discard the egg yolk. Note: The clarity of egg white this is your baseline or control. Add 1 teaspoon (5ml) of alcohol to the cup containing an egg white and stir. Record your observation in the Egg Albumin Data table below. Now Make Milk (Casein) Denaturation.Groups 11 and 12 - Denaturation of Acid (Pineapple Jucie) Separate 1 egg white, place egg whites in a plastic cup. Discard the egg yolk. Note: The clarity of egg white this is your baseline or control. Add 1 tsp (5ml) Pineapple Jucie to the cup containing egg white and tubes. Record your observation in the Egg Albumin Data table below. Now make milk (Casein) Denaturation.Egg Albumin Data – Ionic Compound5,6NaHCO3 – Base7, 8Lemon Juice - Acid9, 10Rubbing Alcohol – Organic Liquid11, 12Pine Apple JuiceControl or BaselineNothingProcedure for Milk (Casein) Denaturering:Place 3 teaspoons (~15 ml) each of milk in two cups. Place 1 Tsp (5ml) of lemon juice in one of the cups containing milk and tubes. Record observations on the table below:Milk Casein Data TableGroupAddedObservationsALLLemon Juice – AcidPost Lab Questions:1. Why is milk given to a person who accidentally ingests a heavy metalion such as silver or mercury? 2. Why is heat and alcohol used to disinfect medical devices? Here are my answers to these questions: These questions are on the subject of Protein Denaturation. Proteins are molecules that can be opened by other substances such as baking soda to egg white and lemon juice to milk.1. What was the purpose of the lab? The purpose of the laboratory was to find out which substances (like baking soda) deature egg white proteins (albumin), and milk proteins (caesin).2. What is a physical change in chemistry? A physical change is where something changes its physical properties.3. In a short write up, describe what your method of the lab was? The method was stirring baking soda along with egg white.4. What was your observation of the denaturing of proteins in egg white (albumin) and milk (Caesin)? My observation was that I found out that albumin had a reaction to baking soda. It just started to bubble because a gas was created. Caesinen began to smell.5. Why is milk given to a person who accidentally ingests a heavy metalion such as silver or mercury? Chelat is where people get milk to absorb into the metal, which will then make the person vomit out metals.6. Why is heat and alcohol used to disinfect medical devices? Heat and alcohol are used to disinfect medical devices to kill bacteria that break down bacterial protein walls. I feel like I did a good job with this lab as it was my first chemistry lab. I took the comments and answered the questions as best I could. Could.

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