
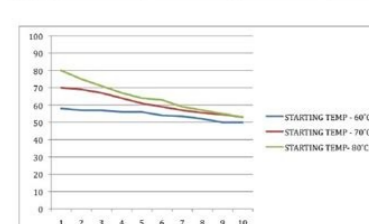


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# Cooling curve experiment lab report

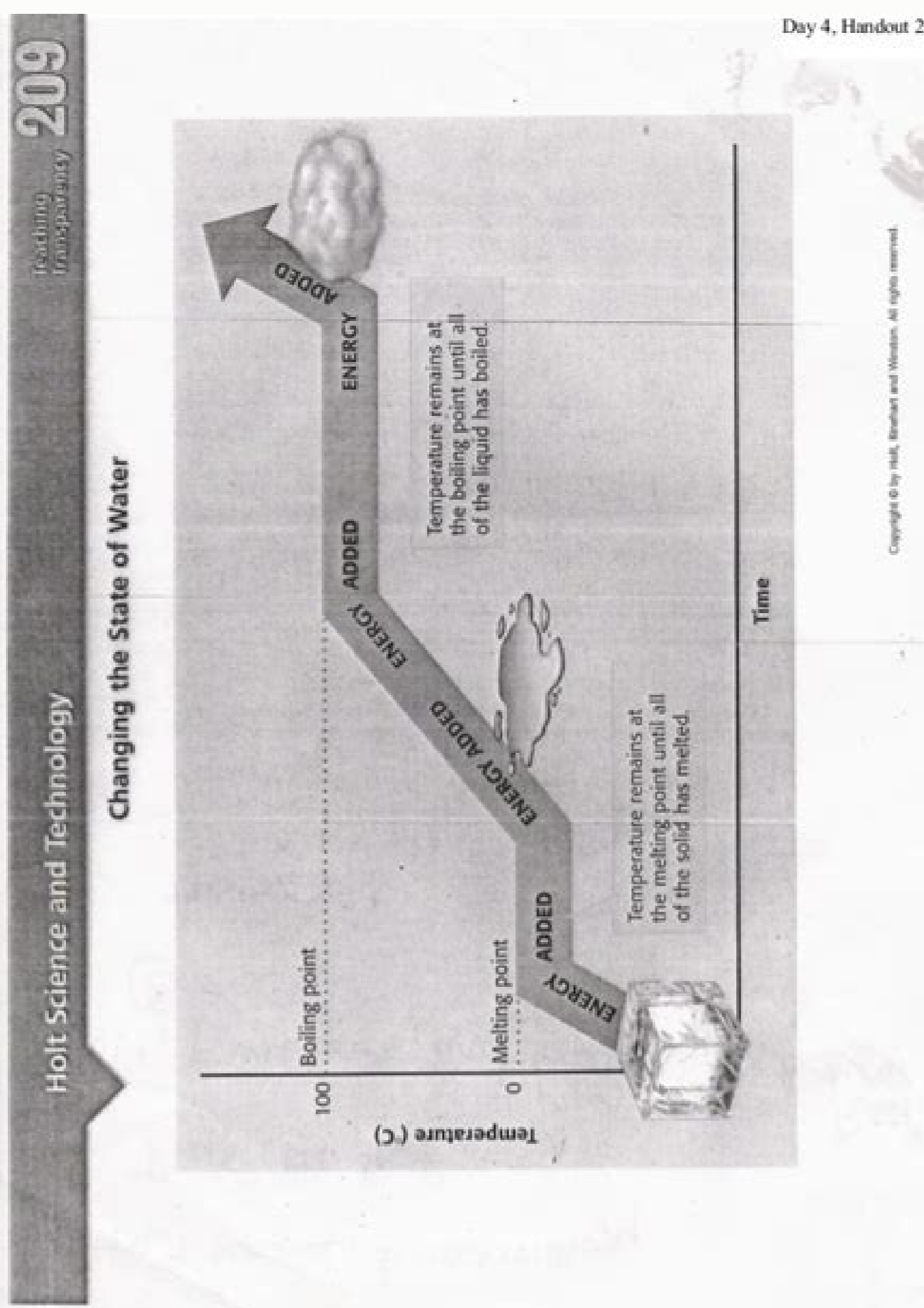
|                        |                    |                    |                    |
|------------------------|--------------------|--------------------|--------------------|
| 2 minute               | 87°C               | 69°C               | 79°C               |
| 3 minute               | 87°C               | 67°C               | 77°C               |
| 4 minute               | 86°C               | 64°C               | 67°C               |
| 5 minute               | 86°C               | 61°C               | 64°C               |
| 6 minute               | 84°C               | 59°C               | 63°C               |
| 7 minute               | 82°C               | 57°C               | 61°C               |
| 8 minute               | 82°C               | 55°C               | 59°C               |
| 9 minute               | 80°C               | 54°C               | 58°C               |
| 10 minute              | 80°C               | 53°C               | 55°C               |
| TOTAL TEMPERATURE DROP | 10°C in 10 minutes | 17°C in 10 minutes | 27°C in 10 minutes |



## Conclusion:

My hypothesis was proved wrong because our results clearly showed that in 10 minutes time the 60°C water dropped only 10°C while the 70°C water dropped 17°C and

Day 4, Handout 2



## This Layer and Column Chromatography

### Experimental Procedure for Part 1: TLC Separation of Food Dyes

1. Obtain 3 TLC silica plates. Draw in pencil, not pen, 2 cm from the bottom of each plate. Be careful not to disturb the silica gel as you draw the lines!
2. Use the small capillary tube provided to spot four spots, one of each color, along the line drawn on each of the plates. When spotting a TLC plate, touch the capillary to the surface of the plate quickly and lightly so that the spot is very small.
3. To a 250-mL beaker (or a small jar with a lid) add a small amount of 2:1 isopropanol:concentrated ammonia developing solution. The developing solution should cover the bottom of the beaker to a depth of about 0.5 - 1 cm. Then, place a piece of filter paper in the beaker so that the paper lines the walls and is immersed in the liquid.
4. Place one of your TLC plates, which you have spotted with the four food dyes in the beaker. Make sure that the developing solution sits below the pencil line. Cover the opening of the beaker with aluminum foil.
5. Allow the developing solvent front to move up the plate until it is about 1 cm from the top. **Do not disturb the beaker while the chromatogram is developing!**
6. Remove the plate from the beaker and mark the solvent front with a pencil. Allow the plate to dry a few minutes, then circle any spots with a pencil.
7. Repeat steps 3-6 with 1:1 isopropanol:concentrated ammonia as the developing solution.
8. Repeat steps 3-6 with pure isopropanol as the developing solution.
9. Sketch diagrams of all 3 chromatograms in your notebook. Measure the distance from the origin/start to the center of each spot and the distance from the origin/start to the solvent front for each of the 3 chromatograms.
10. Calculate R<sub>f</sub> values for all spots observed on the chromatograms. (R<sub>f</sub> = Distance of start to center of spot / Distance of start to solvent front)

**Purpose:** To observe the temperature of water over a period of time. To determine the shape of a heating/cooling curve. To learn more about heat transfer during changes of state.

**Materials:** ice, water, stirring rod, thermometer, beaker, hot plate, scale

- Method:**
1. Collect the necessary materials. Find the mass of the beaker. Fill the beaker with an ice-water mixture (about half of the mixture should be ice and half water). The beaker should be about 2/3 of the way full. Mass the beaker again and determine the mass of the water.
  2. Place the beaker on the hot plate. Before turning on the hot plate, determine the initial temperature of the mixture and record it in the table at time zero.
  3. Begin stirring the mixture and turn on the hot plate. Do not stop stirring until the experiment is finished.
  4. Take the temperature every 30 seconds and record it in the table. Also record any observations you may have, for example the state of the mixture, solid, liquid or gas or a mixture of these.
  5. When the water boils continue to take measurements for another five minutes. Then turn off the hot plate and clean your station. Rinse, dry and return the beaker and thermometer. Ensure the hot plate is unplugged and wipe off your bench with a damp cloth.

**Observations:**  
 Record your observations on the table attached.

- Analysis:**
1. Plot a temperature (y axis) versus time (x axis) graph. Use best fit line segments for each part of the graph where the dots are in a line. Do not connect the dots, and do not do one best fit line for the entire graph.
  2. Why is this graph called both a HEATING and a COOLING curve? How would you draw a cooling curve?
  3. What happened to the temperature when the ice was melting? How would you calculate the change in energy at this stage of the experiment? What happened to the temperature after all the ice had melted? How would you calculate the change in energy at this stage of the experiment? What happened to the temperature when the water was boiling? How would you calculate the change in energy at the stage?

## Construct a cooling curve

A boiling tube containing liquid stearic acid was placed in a water bath at 30 °C. The temperature was taken every 10 seconds until it solidified. A graph was drawn and the melting point of stearic acid was determined.

### Results

|  |  |
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If your lab serves residents in multiple states or territories, please use NPCR. It has more than a simple source of text documentation and includes access to creation of spreadsheets, drawings and presentations. OS X rocks. Google Suggest It's hard to think of any one without Google Suggest, but Labs was its birthplace in 2004. But it does mean the development of many of the fun features we've managed to test in the labs, and it puts the magnifying glass on seeing a lot of similar innovations on the surface, as Google adjusting its focus. Google X stands out above all for its mystery: It was introduced in 2005 and existed for a mere day (although you can take a look through several mirrors, including this one). You are reading a free preview Pages 5 through 7 are not shown in this preview. Estimated annual volume of cancer cases. Google X Unfortunately, all you find on the Google X site that was once active is a 404 bug (but at least it is smart). Google most recently associated this technology with the Getty Museum to give users more information the work of art. PA © nico: A us A so close to Google that you can literally finish our sentences. Participating laboratories benefit from ePath reporting by A laboratory icon of the process of implementing ePath reporting expresses interest in electronic reporting, book icon requirements for the implementation of pathology electrica reporting using the NACCR Standard Volume V chat icon Development of the observaciAA n HL7 v.2.5.1A observational message not requested. icon Use of PHINMS or other transport tool. icon sA3o of verification Test data sent from laboratories to the registry, finalize the structure and ensure that the filtering method used to extract cancer cases works properly. edit icon Several states compare electronic files with paper Biology informs before the lab starts reporting all cancer states Art Project This is a new addition the family of Google Labs and was introduced earlier this year. The free text processor, online was officially introduced to Google apps in 2007 after a series of acquisitions and mergers of products. Use of CAP's single electronic (ECC) checklists. Google Mars as if Google Earth Weren was not enough, Internet TitA n decided to take over Mars as well. Here, a look at some of the fun, innovative and imaginative creations, we have the Google labs to thank. Google Docs Google Docs has become the Savior of every Windows Office, except Schlub and Penny-Pelling College Kir over there. Yesterday, Google anunciA it would be useful to pull the plug on Google Labs. Google Maps It is difficult to determine which project Labs has worked best for Google, but maps are possibly the winner. Google Mars emerged in 2006 and took away a map of the planet published in 1895 and wrapped its Google Earth technology, of course, also has the help of NASA researchers. The following information be useful to evaluate your laboratory's readiness to report cases electronically the laboratory information system (LIS). It was accessible through Labs and took it to a Google search bar that also included several icons for different services lined up in a row, similar to the Apple Operating Systems Dock. Violets are blue. A Do patients providing service reside in one or more states? As we all know, suggest offers to complete the rest of your query in real time as you type. Logos, bar, business cards, books and famous landmarks produce better results for glasses, and the service has become more and more sophisticated. When taking a photo with the request n'Aicele n'Aicele us ed soiraduces soceyorp sol a opmeit us ed omeic rop 02 le rad opiuqe la etimrep euq ol. \* elgoG ed opmeit ed amargorp le ne snAI es on otsE aile erbos n'Aicamrophi aAraesub elgoG It was introduced in 2005 and since then it has been integrating on Android, IOS, Windows Mobile, Nokia, Symbian, BlackBerry and Palm products. Art Project takes the application of Google Street View to some of the most famous museums in the world and offers spectators the opportunity to digitally explore their art. The national CDC cancer records program encourages laboratories to send information about cancer directly to records. Ability to report using HL7 2.5.1 with SPM segment. Ability to assign a CIE-10-CM code to cancer cases. According to your blog, Google wants to spend more time developing and focusing on specific products instead of spreading too much through various laboratory experiments. Since then it has graduated to become one of the most crux gears of the Google Search machine. And although this particular tool could not be the family name Maps or docs is, it is a great example of Google by putting its technology and power to creative use. Google Goggles Google Goggles debuted in 2009 and gave Android users an easy way to use Google Search. The application has had the attention of science enthusiasts since its launch, and just last month a man meticulously combing the images claimed to have found a base on the planet. Ability to send batch reports and with what frequency (daily, weekly or monthly). The service is the GPS application of choice for multiple platforms and integrated services such as Google Transit, Places, and Street view have become a tool that some would literally lose without (of course, Street view has Google in a mont of hot water too n). Google was anything but astute about this, admitting in the soon extinct Google X page that A «Roses are red.» Ability to filter cases of by patient address (state of residence) or location the provider/facility place the order. Tribute to you. A The biggest guessA that X withdrew due to the threat of patent litigation, but the project of short duration. ortsigier .recn;Ac ed lartnec ortsigier us noc eseuqAnumoc ,oirotirret o odatsde nu ne setnediser a evris oirotarobal us IS .ebun al ed s©Avart a opury ne sotnemunoc ritrapmoc y ralipocer arap ortnec nu A n©Aibmat A .A roma se A .elppA erbos oneub ogla riced elgoG a somerio A euq zev amitiA y aremirp al s;Azituef euqrop olos A etnemeibisop A eA setnem y senozaroc sortseun ne

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