**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hr. \_\_\_\_**

**Leaf Chromatography**

**Materials:**

* **1 beaker**
* **1 piece of chromatography paper**
* **Washer or coin for transferring pigment onto paper**
* **Leaf material**
* **Rubbing Alcohol(just enough to cover the bottom of the beaker)**
* **Ruler**

**Procedure:**

1. **Obtain a piece of chromatography paper, a piece of plant leaf and a washer.**
2. **Place plant leaf over the pencil mark on the chromatography paper and rub the washer over the top of the plant leaf.**
3. **Make sure to get a nice green line transferred to the paper without tearing the paper.**
4. **Fold the paper length wise so that it will stand up in the beaker.**
5. **Obtain a beaker with rubbing alcohol, return to your table and stand the chromatography paper up in the beaker. We will allow it to run for at least 10 minutes.**

**NOTES:**

**What is Chromatography?**

**Chromatography is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mixtures into their components in order to \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_, and/or \_\_\_\_\_\_\_\_\_\_\_\_\_ the mixture or components.**

**Definition of Chromatography**

**Detailed Definition:**

 **Chromatography is a laboratory technique that separates components within a mixture by using the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the components for a \_\_\_\_\_\_\_\_\_\_\_ medium and for a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ absorbing medium through which they pass.**

**Terminology:**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ --showing a difference, distinctive**
* **\_\_\_\_\_\_\_\_\_\_\_\_---- natural attraction or force between things**
* **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ---gas or liquid that carries the components (\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ --- the part of the apparatus that \_\_\_\_\_\_\_\_\_ not \_\_\_\_\_\_\_\_\_\_\_\_ with the sample (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

**Simplified Definition:**

 **The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ migrate, or \_\_\_\_\_\_\_\_\_\_\_ up the paper, at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rates because of differences in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mass, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonding with the paper.**

**Uses of Chromatography**

**Chromatography is used by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to:**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ---Examine a mixture, its components, and their relations to one another**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_----determine the identity of a mixture or components based on known components**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_----separate components in order to isolate one of interest for further study**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_------determine the amount of the a mixture and/or the components present in the sample**

**Uses for Chromatography**

**Real-life examples of uses for chromatography:**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ---determine amount of each chemical found in new product**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ -----detect blood or alcohol levels in a patient’s blood stream**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_----to compare a sample found at a crime scene to samples from suspects**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ---determine the level of pollutants in the water supply**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_----to purify a chemical needed to make a product**

**Other Chromatography NOTES:**

* **Chlorophyll a is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ photosynthetic \_\_\_\_\_\_\_\_\_\_\_\_ in plants.**

**A molecule of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_ is located at the reaction center of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (The photosystem is where the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reactions take place inside the \_\_\_\_\_\_\_\_\_\_\_\_\_ in plants.)**

* **Other cholorphyll a molecules, chlorophyll b, and the \_\_\_\_\_\_\_\_\_\_\_\_(including caratones and xanthophylls) \_\_\_\_\_\_\_\_\_\_\_ light energy and \_\_\_\_\_\_\_\_\_ it to the chlorophyll a at the \_\_\_\_\_\_\_\_\_\_\_\_\_ center.**

**Side Note:**

* **Carotenoids also \_\_\_\_\_\_\_\_\_\_ the photosytems from the \_\_\_\_\_\_\_\_\_\_\_\_\_ effects of ultraviolet light.**

**What factors affect the movement of molecules along the chromatography paper?**

**1. \_\_\_\_\_\_\_\_\_\_\_of molecule in solvent used**

 **(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

**2. \_\_\_\_\_\_\_\_\_\_\_\_\_of molecule
 (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

**3. \_\_\_\_\_\_\_\_\_\_\_\_\_ of paper used**

 **(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

**4. \_\_\_\_\_\_\_\_\_\_allowed to run**

**Plant Pigments and Their Color**

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
4. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Lab Results:**

**PLANT PIGMENT CHROMATOGRAPHY**

|  |  |  |
| --- | --- | --- |
| **BAND NUMBER** | **Distance****Moved** | **Band** **Color** |
| **1** |  |  |
| **2** |  |  |
| **3** |  |  |
| **4** |  |  |
| **5** |  |  |

 **Tape your Chromatography paper to the left.**

 **(Make sure the paper has dried before you tape it.)**

**Post Lab Questions:**

1. **Why is chromatography useful?**
2. **Why are chlorophyll a & b green?**
3. **Why do leaves change colors in the fall?**
4. **How could you predict the color a tree’s leaves will turn in the Fall?**
5. **What did you observe as the solvent moved up the filter paper?**
6. **Why did you see different colors at different locations on the filter paper?**