

# Leaf Chromatography

## Analyzing Your Chromatogram

1. The colors on your chromatogram will fade within a few days. By recording data from your chromatogram in Table 1 on the report sheet, you will have a lasting record of your chromatogram. In Table 1, list the colors of each pigment band starting at the pointed end of the chromatogram and moving upwards. Measure the height of each pigment band from the bottom pencil line. This is the distance traveled by the pigment. Record this distance for each pigment listed.

2. Scientists identify pigments on a chromatogram both by color and by computing a figure known as the **R<sub>f</sub> Value**. This value is a ratio of the distance traveled by the pigment in solution, to the distance traveled by the solvent you used. Under controlled conditions, the R<sub>f</sub> values will be relatively constant for a given pigment in a given solvent. Use the formula below to compute the R<sub>f</sub> value for each of the pigment lines of your chromatogram. Record the R<sub>f</sub> values in Table 1.

$$\text{Rf value} = \frac{\text{Distance traveled by pigment}}{\text{Distance traveled by solvent}}$$

**Table 1**

Color	Distance traveled by leaf pigment	Distance traveled by solvent	R <sub>f</sub> value for your chromatogram

1. Table 2 identifies the leaf pigments by their color. Use this information to complete Table 1, identifying the leaf pigments on your chromatogram.

2. Leaf Pigments separate at different rates from a given solvent. List the pigment with the slowest separation rate at the beginning of your list and the pigment with the fastest separation rate at the end of your list.

3. Were any colors visible on your chromatogram that were not visible in the leaves before they were ground up? Explain.

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4. The thickness and intensity of each band of color on your chromatogram indicates the relative amount of pigment present in the ground-up leaves. Using the criteria of band thickness and intensity of color, which pigments are most abundant in your leaves? Least abundant? \_\_\_\_\_

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5. Two types of chlorophyll, **chlorophyll a** and **chlorophyll b**, are found in plants. Does your chromatogram give evidence to support that statement? Explain. \_\_\_\_\_

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**Table 2**

Leaf Pigment	Color
Chlorophyll b	Light yellow-green
Chlorophyll a	Dark Blue-green
Xanthophyll	Yellow
Carotene	Orange
Anthocyanin	Red or purple

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