

Leaf Impressions (a model for carbonization)

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Introduction

Living organisms (including you and me) are composed of the elements carbon, hydrogen, and oxygen. Carbonization is when living tissue leave a carbon film in sediment and rock. Many plant fossils are preserved through carbonization. Soft parts of animals including skin and fur have also been preserved as fossils through the process of carbonization. To illustrate how carbonization works, students will make leaf impressions on paper. This is the old leaf press activity, but instead of being used to preserve leaves, the activity is used to demonstrate the staining as a model for carbonization. You can see examples of fossil impressions on-line at the Kentucky Geological Survey's **pictures of different fossil types**.

Grade Level : K-8

Time : 15-30 minutes in class or at home and then a week or more to make an impression.

Materials :

- Leaf or leaves (not dried out). Fall leaves work well. A selection of different types is useful for comparisons.
- 2 sheets of white typing paper per leave or impression
- Thick book or books for pressing the leaves

Exercise:

- Look at your sample leaf. The leaf is made of water and elements. The color of a leaf is caused by the chemistry of the leaf. Chemicals are composed of elements.
- Place your leaf between two pieces of white typing paper. Put your name in the upper corner of the paper.
- Stack heavy books over the paper in a corner of the classroom where they can be left for a week or more, or place within a thick book. If placed within a book, use 2 pieces of paper on each side of the leaf so that any stains left by the leaves do not stain the pages of the book.
- Let sit for 1 to 4 weeks. The teacher or student can spot check the progress of the impressions to determine the best time to continue the demonstration.
- Remove the paper and leaves from the books.
- Peel off the leaves.
- The color left behind on the paper contain elements that were in the leaf. This is how carbonization works, although in carbonization heating within the earth also is part of the fossil-forming process. In nature, elements in the leaf, skin, or fur are left in the surrounding mud or clay. If bacteria do not eat the elements (usually requires low-oxygen conditions), a carbon impression may remain.
- Compare impressions. Different types of leaves, and different weights can form different quality of impressions. The same thing happens in nature. Carbonized fossils vary in quality. Some preserve only the shape of the original organic material, for example a leaf. Better quality fossils may preserve details of organic structures, such as the veins on the leaf.