

Dyeing Red Insects

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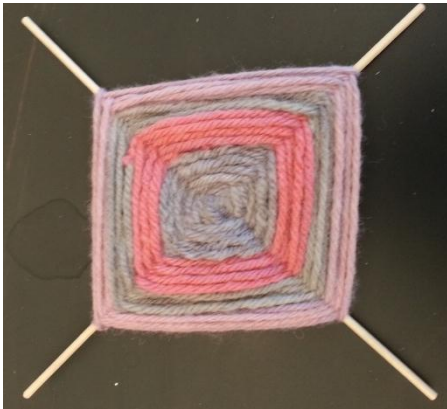
Molecular Interactions

Dyes have been used for many centuries, dating back to ancient cultures B.C.E. One of the first known instances of indigo was its use in Persian rugs, created over four thousand years ago. Dyeing may seem like a simple process, but there is a very complicated science that explains why certain dyes and fibers react the way they do when combined. There are many factors that affect how dyes are classified which includes its solubility, method of application and chemical composition/ structure. Because of these factors, some dyes are only composed of two products, a dye and a fiber. Other dyes however, will not bond well enough to the fiber so a third element is added. This element is called a mordant and is used to pretreat the fibers to form a stronger bond between the dyestuff and fibers. In our lab, I chose copper as the mordant and iron as the modifier to create the colored yarn shown above.



Historical Significance

Similar dyeing techniques were used in the past to dye articles of clothing. Cochineal dyeing for example, popular in Europe during the 15th and 16th centuries, produces a deep red color in clothing. This color was widely used and considered a specialty for many years until synthetic dyes became available and replaced natural dyes like cochineal. Cochineal, because it produced a red dye was used for quite some time to produce clothing for royalty and wealthy people because red was the color of riches and desire. To create a red article of clothing, the liquid dyestuff is mixed with a mordant to help to color bind to the fibers. The fabric soaks in the mixture for a few minutes, depending on how deep the desired color is. Then, if wished, a modifier is used to adjust the color produced.



Personal Reflection

This lab activity helped us to understand the development of chemical processes, allowing us to do so through physical action. We were able to watch the reaction as it was happening, so we saw how the wool yarn once fully submerged collected some color, but every five minutes, when I would check on the yarn, the color would get deeper and deeper purple. We also developed an understanding of artistic tradition because for many years, dyers had to go through a similar process of using dyes and mordents to transform an article of clothing into a masterpiece. This is actually a very lengthy process and we only dyed a small yarn of yarn. Being a dyer would take much patience because it would take much longer to dye a coat and they would have to put up with the terrible smell.