CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
J0623

Project Title
How Does Your Crystal Grow? Understanding the Effects of Temperature and Water Purity on Crystal Growth

Abstract

Objectives/Goals
The objective of this science fair project is to use alum crystals to better understand crystal growth and formation in different temperatures, and in purer and less pure water.

Methods/Materials
I grew alum crystals at three different temperatures, in distilled and tap water. I grew the crystals in cold, warm and hot environments. I measured the growth of the crystals and observed their structure and clarity to determine the effects of the different temperatures and the different water purity on crystal growth and formation.

Results
Ideally, alum crystals grow in a regular, repeated fashion, resulting in the shape of an octahedron. The alum crystals in my experiment that most resembled an octahedron grew in the warmest temperature and in purer, distilled water.

Conclusions/Discussion
My conclusion is that crystals form best (1) at warmer temperatures, due to the greater solubility of the crystal salt dissolved in the water, and (2) in purer water, where the crystal can grow in its regular, repeated fashion, without having to reject so many impurities. Warmer temperatures and purer water mean the crystal has ample time to grow, and time to eject impurities that otherwise would disfigure the crystal.

Summary Statement
This project is about the impact of temperature and water purity on crystal formation and growth.

Help Received
My mother supervised my measurements and heating in the kitchen.