CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
S0618

Project Title
Do Different Salts Have Different Levels of Electrical Conductivity?

Abstract

Objectives/Goals
What are the relative conductivity of salts compared to one another? Is there a conductivity trend across the periodic table among the cations of salts? Theoretically, electrical charge between the cation and anion of an ionic compound should increase if the number of valence electrons donated and accepted among the two increased.

Methods/Materials
1 M LiCl, Gel electrolysis box,
1 M CaCl(2), Power Supply,
1 M AlCl(3), Four 15-mL conical tubes,
1 M CuCl(2), Analytical balance

Results
The conductivity levels increased from LiCl with an average 0.17 Amps to CaCl(2) which had an average .38 Amps but AlCl(3) had a lower average .25 Amps. However, CuCl(2) had an average .43 Amps, making it the most conductive salt out of the four.

Conclusions/Discussion
In conclusion, while the number of valence electrons donated and accepted does greatly impact conductivity, other lurking variables such as bond strength might have impacted conductivity as well. Interestingly, a precipitate formed on the cathode side of the gel box when it was running CuCl(2). This must have been a result of OH- from the lysis of water combining with Cu^2+ ions, becoming copper (II) hydroxide.

Summary Statement
The purpose of my project is to test if a trend exists across the periodic table concerning electrical current produced after ionic compounds are disassociated.

Help Received
Used lab equipment from my high school's chemistry lab