



CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s) Seowoo Choi	Project Number S0608
Project Title Investigating the Behavior of Cobalt(II) Chloride and Its Intermediate Complex Ions	
Abstract Objectives/Goals The purpose of this experiment is to investigate the reaction of hydrogen peroxide, sodium potassium tartrate, and cobalt(II) chloride. The current literature does not present a definitive and detailed explanation of the reaction. This is an attempt to contribute to the understanding of this interesting reaction. Methods/Materials Cobalt(II) chloride, hydrogen peroxide solution(30%), Potassium sodium tartrate solution, tubes, beakers, distilled water, graduated cylinders, hot plate, spatula, stirring rod, thermometer, pH meter, and glowing splint method Results The catalyst cobalt(II) chloride is not consumed during the reaction. Speed of reaction increases as the temperature and molarity of the catalyst are increased. Conclusions/Discussion Many literatures say that the products of this reaction are carbon dioxide, water, sodium hydroxide, and potassium hydroxide. I did glowing splint test to show that the product of this reaction is oxygen. pH meter showed that the solution is not basic, which indicates that the sodium and potassium hydroxides are not produced. I formed my own explanation for this reaction. The first step of this experiment is heating the sodium potassium tartrate. When heat is applied to it, it would rotate to form a ring structure. Added hydrogen peroxide and cobalt(II) chloride would react with the ring-structured sodium potassium tartrate to form a final structure, 3,4-Dihydroxydihydro-2,5-furandione molecule. Therefore according to my explanation, the product of this reaction seemed to be oxygen gas, restored hydrogen peroxide, unconsumed cobalt(II) chloride, and 3,4-Dihydroxydihydro-2,5-furandione molecule.	
Summary Statement This project is performed to see if the result of reaction of cobalt(II) chloride, hydrogen peroxide and sodium potassium tartrate agrees with the current literature that does not give a definitive and detailed explanation of the reaction.	
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