



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Ian R. McFarlane	Project Number S1218
Project Title Dynamics of Acid within a Magnetic Field	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Lorentz# Force Law states that a charged particle moving through a magnetic field is subject to a force. I propose this force can be used to concentrate ions in an acid by moving the acid through a magnetic field.</p> <p>Methods/Materials To test this I will attempt to write a computer simulation program in Java and solve for mathematical equations to predict the results of this yet to be preformed physical experiment.</p> <p>Conclusions/Discussion I succeeded in finding a mathematical formula to describe and predict the distribution of ions, however part of the equation requires one to solve for a limit of an integral. This results in the equation having a variable "l" that I am unable to solve for. I would need to consult with an expert to allow me to finish solving the formula. The computer simulation is based on using the force formulas independent of each other. The program computes the forces on every ion for every other ion, and exerts this force for a tenth of a second. This is less accurate than a solving the integrated formula mentioned above. This program is still being de-bugged.</p>	
Summary Statement I propose Lorentz# Force Law can be used to concentrate ions in an acid by moving the acid through a magnetic field.	
Help Received	