



**CALIFORNIA STATE SCIENCE FAIR  
2012 PROJECT SUMMARY**

<b>Name(s)</b> <b>Ian Borchard; Colin Wikholm</b>	<b>Project Number</b> <b>S0604</b>
<b>Project Title</b> <b>Electronegativity and Reaction Violence</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of this experiment is to discover the relationship between electronegativity and reaction violence (energy release). <b>Methods/Materials</b> To measure reaction violence, zinc, iron, magnesium, copper, and calcium are separately reacted with iodine in a water-vinegar solution. The temperature change of the solution caused by the reaction is measured with a calorimeter. <b>Results</b> The temperature rise of the vinegar/water solution was inversely proportional to the electronegativity of the reducing agents (ones that give up their electrons, namely Zinc, Iron, Magnesium, Copper, and Calcium). The larger the difference in electronegativity between the reducing agents and iodine, the more energy was released during the reactions. <b>Conclusions/Discussion</b> Data gathered from this experiment suggests that reactants with greater differences in electronegativity release more energy when reacted. This information could be applied as a general rule to industries and laboratories that use large amounts of chemicals. Knowing the possible danger of deliberate or accidental chemical mixtures could ensure safety and avoidance of disasters.	
<b>Summary Statement</b> This project investigates and reveals a relationship between electronegativity and energy released in reactions	
<b>Help Received</b> Used lab equipment at Villanova Preparatory School under the supervision of Mrs. Terry Maulhardt	