



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> <b>Emily E. McDermott</b>	<b>Project Number</b> <b>S1819</b>
<b>Project Title</b> <b>Light Absorption: A Project to Dye For</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective is to understand how light is absorbed by pigments. <b>Methods/Materials</b> Different concentrations of food coloring were contained in small vials. Light was shown through them and the amount of light let through to the other side was measured by the analog light meter. A spectroscope was then used to identify what light waves were being absorbed. <b>Results</b> When graphed, the light was shown to be absorbed nonlinearly. More dye absorbed more light, but, with the smaller concentrations of dye absorbing more light per particle than the heavier concentrations. After a certain concentration, there is a point where light will still shine through, though adding more food coloring will have no effect. <b>Conclusions/Discussion</b> The ratio of pigment concentration to light is nonlinear. This means the electrons in the dye's atoms absorb certain energies of light more quickly than others, but once they are absorbed they can no longer be absorbed again.	
<b>Summary Statement</b> I measured the amount of light that escaped through different concentrations of food coloring.	
<b>Help Received</b> My father gave me ideas for this project, I then relied on him for financial support.	