



California Science Center
CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.) Kathleen E. Francisco	Science Fair Use Only S0811
Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) Photodegradation of Crystal Violet using Titanium Dioxide as a Catalyst	Division <u>S</u> Junior (6-8) <u>S</u> Senior (9-12)
Preferred Category (See page 5 for descriptions.) 8 - Environmental Engineering	
Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.	
<p>Over the past decade, photo-assisted catalytic degradation of organic dyes in aqueous solutions has become a subject of interest. As more dye chemicals are being dumped into the environment, an efficient method of waste treatment is needed.</p> <p>In this experiment, the photodegradation of Crystal Violet, a triphenylmethyl carbocationic dye, a type of organic dye, with the assistance of Titanium Dioxide as a catalyst, was observed. Solutions with and without TiO₂ were placed under four conditions: No light, room light, sunlight, and UV light. Control solutions were either covered with foil or contained no TiO₂. In the experimental setup, solutions were exposed to light and/or contained TiO₂. After times ranging from zero to sixty minutes, a sample of each solution was taken, centrifuged, and analyzed with a spectrophotometer at 630 nm.</p> <p>The results indicate that significant degradation does occur with solutions containing TiO₂ when exposed to sunlight and/or UV light for long periods (15-60 min.) of time.</p>	
Summary Statement (In one sentence, state what your project is about.) The effectiveness of Titanium Dioxide as a photocatalyst in the degradation of Crystal Violet, an organic dye, was studied for several light conditions and exposure times.	
Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4.	