



## Project Overview

The creation of an interactive, multiple-medium, resource illuminating the relationships between scientific endeavors and everyday experiences is proposed. The project theme is color — a topic of near-universal experience and fascination. Descriptions of color in scientific terms will be made in a way that eliminates the potential intimidation of scientific and technical discourse.

Once viewers work through an exploration series on color topics, they will discover they were learning about science without having to overcome any science anxiety. Innate curiosity is the driving force behind this mode of learning. The viewer will greatly increase knowledge about color, gain an appreciation of how science enriches everyday life, and perhaps be motivated to engage in additional exploration and education. This resource will be developed from the longstanding tradition of color science education and research at the Munsell Color Science Laboratory (MCSL, [mcsl.rit.edu](http://mcsl.rit.edu)), part of the Rochester Institute of Technology's (RIT, [www.rit.edu](http://www.rit.edu)) Chester F. Carlson Center for Imaging Science (CIS, [cis.rit.edu](http://cis.rit.edu)). The project principal investigator (PI) is Mark Fairchild, the Xerox Professor of Color Science and Director of MCSL.

The main resource will be a public website with 64 modules addressing actual student questions about color at eight levels spanning eight traditional disciplines. As viewers navigate the modules they will discover that science is ultimately about satisfying our natural curiosity. Further dissemination will be through a downloadable, navigable, electronic book, a free printable book, and potential development of a museum or science-center installation. The working title for the project is *Color Curiosity Shop* to exist at [whyiscolor.org](http://whyiscolor.org).

The website will be populated with common questions about color, their answers, and explanatory photographic and video illustrations. The modules will be arranged in a color-coded, two-dimensional array where one dimension is increasing level (pre-school to post-graduate) and the other is scientific discipline (mathematics to psychology). Eight disciplines, each represented at eight levels, will produce 64 modules, each addressing a different question. Viewers will optionally navigate at a constant level while exploring different disciplines, within a given discipline while increasing level, or through random topical selections. Design will be simple and uncluttered allowing exploration without distraction. Topics will be derived from surveys of schools and students assuring the questions are interesting and placed at appropriate levels. Disciplines will be designated with common terms (*e.g.*, light instead of physics, objects instead of chemistry, numbers instead of mathematics) until viewers reach the highest level where the scientific disciplines will be revealed with resources for ongoing exploration. Likewise, levels will be notated simply, not defined by age or grade level. Furthermore electronic and printable book versions arranged for the different methods of navigation will be created. Ultimately, the material will be made available for creating interactive exhibits allowing participants to physically navigate the two-dimensional array in a museum or science center.

## Objectives

A major project goal is to allay some fears of science. The problem addressed is one of motivation and interest. Science is widely held as one of the most respected career areas and the drive to understand the world is fundamental to our basic human needs. Scientists are also among the most satisfied with their personal careers. However, students at all levels can become discouraged from pursuing science because it is perceived to be difficult, boring, or impractical for their daily lives. The end result is that, for example, the United States has an unparalleled system of scientific research and education at the university level, but a lack of interested and motivated students to take advantage of those opportunities. This project aims to help bridge that disparity by encouraging a life-long interest in science among students of all ages from throughout the world by satisfying some of their natural curiosity about the world, specifically their color perceptions, through sound scientific explanations of phenomena illustrated with interesting and pleasing photographs and video segments. The burdensome overhead of science classes and textbooks will be absent. Only after viewers enjoy themselves and satisfy their curiosity will they discover that they have been learning some science and perhaps retain that connection.

## Approach

The first phase of the project is to secure funding. Further proposal development and planning are underway with the goal to have funding in place for the next several years. Proposals are planned, or have been submitted, to various



Photo: M. Fairchild

# Color Curiosity Shop Proposal Summary

*whyiscolor.org*

private foundations, the National Science Foundation, and potential corporate sponsors.

Appropriate questions will be obtained through teacher/student surveys completed using a variety of means. Answers will be prepared by the PI in consultation with teachers and students at various levels (several existing K-12 contacts will be utilized and more will be generated). The PI will create high-quality photographic and video images illustrating the concepts of the modules. Photographic and research experience on high-quality, high-dynamic-range imaging and computer graphics will be tapped to create unique, and memorable, images. The PI will also build upon previous experiences with on-line course development/teaching and the creation/maintenance of a successful *Ask-a-Color-Scientist* feature on the MCSL webpage. Upon completion of draft content, students and teachers will be asked to review the material for comprehension, appropriateness of level, and to assure modules hold the intended audience's interest. There will be an online feedback form for continuous improvement and a survey to assess effectiveness. Web development, design, and hosting will be completed through MCSL and RIT. Publication beyond the electronic format will be pursued through additional grants to preserve the free access goals of this project. Initially the electronic book will be a free download and a bound book will be available for the cost of printing. Collaboration with museums and science centers will begin through consultations during project development and beyond. The Rochester Museum and Science Center (RMSC) will be utilized as a key resource throughout the project. Lastly, accessibility will be addressed by assuring appropriate search inquiries are directed, and appropriate links are made, to the website.

The project is currently in the final planning and initial implementation stages. The first round of question gathering from schools will take place in the first half of 2006. It is expected that the major effort in resource development will commence in June, 2006 with the hope of completing a first full version within 2 years. The resources will be continually updated after that on an ongoing basis. Additionally, it is hoped to dedicate a full-time graduate student to the project for three or more academic years (2006-07, 2007-08, 2008-09) to begin initial investigations, assist in research and implementation, and perform follow-up work on publication, dissemination, and potential ongoing grants with museums.

It is hoped that the project will be successful and spawn follow-up activities and proposals for many years beyond the initial project.

## ***Become a Sponsor***

The total project budget is approximately \$594,000 over the three-year development period. RIT will provide approximately \$319,000 of internal funding through various mechanisms. The remaining \$275,000 must be obtained from external sources. The external total includes only direct costs. Indirect costs will be covered by the PI, Rochester Institute of Technology, and the Munsell Color Science Laboratory. These indirect costs include significant equipment, computational resources, student tuition, and technical/administrative staff that will be utilized to complete the project. Corporate and private sponsors are being sought to provide required external funds. Each sponsor will be prominently acknowledged both on the website and in publications. Please contact Mark Fairchild to become a project sponsor.