

## INTRODUCING PROJECT MICRO

The popular press is full of articles about the poor state of science education, and the scientific press adds editorials about the need for help from science professionals. Microscopists are particularly valuable as volunteers in the schools, because a microscope is arguably the best “tool of science” to use to introduce scientific inquiry. It’s certainly exciting for a child who has never used one before! Because of this, the Microscopy Society of America has developed **Project MICRO**, an outreach program for middle schools. It provides teachers with microscopy-based teaching materials, member-volunteers to help in the classroom, and online resources.

Since middle school students are studying general science, rather than various elective sciences, it's possible to reach them all. MICRO's goal isn't to teach microscopy; the microscope is used to introduce critical observation and inquiry.

Teachers receive materials that present science as classroom-tested units which work reliably, even with minimal science knowledge.

MSA's **Microscopic Explorations** was written for grades 4-8; there is a real need for both high quality science curriculum material and teacher development at that level. It was written in collaboration with the science education specialists at the Lawrence Hall of Science (LHS), as part of the LHS **GEMS (Great Explorations in Math & Science)** program. **Microscopic Explorations** has sold over 12,000 copies since 1998 and is now in its fourth printing.

## WHY DOES MICRO WORK WITH GEMS?

The LHS is an international leader in science education. In 2001, its GEMS program was named one of just nine "exemplary and promising" national programs by the U.S. Department of Education. LHS has set the standard for an activity-based, inquiry-driven approach to teaching science. LHS materials are used in a third of the nation's schools.

GEMS began in 1984, and its influence has expanded rapidly in recent years. The program now includes a series of more than 70 teachers' guides and handbooks; more than 1.6 million copies of GEMS guides have been printed. Since MICRO's *Microscopic Explorations* is part of the GEMS series, it's accepted for use in almost any school district.

The GEMS national network is unique in U. S. science education; there are more than 2600 Associates who train other teachers in inquiry methods, and over 20,000 Leaders who know how to use GEMS in the classroom. More than 60 regional Sites and Centers provide direct support to teachers and other educators; a Site has two or more GEMS-trained Associates, and Centers have a larger staff and more extensive GEMS initial training. This network can help volunteers to learn how to be effective in a classroom, and find teachers who want help. It is estimated that more than 700,000 teachers and 12 million students have experienced GEMS activities. By working with GEMS, MSA/MICRO is introducing microscopy to many more thousands of students than MICRO could reach independently.

## FOR MORE INFORMATION

Local Outreach • Being a Volunteer

### Project MICRO:

[www.microscopy.org/ProjectMicro](http://www.microscopy.org/ProjectMicro)

### GEMS:

[www.lhsgems.org](http://www.lhsgems.org)

### Advice for volunteers:

National Academy of Sciences:

[www.nas.edu/rise/chap4.htm](http://www.nas.edu/rise/chap4.htm)

North Carolina Museum of Life and Science:

[www.noao.edu/education/ncmlssg.html](http://www.noao.edu/education/ncmlssg.html)



Microscopy  
Society  
of America



### Project MICRO Coordinator:

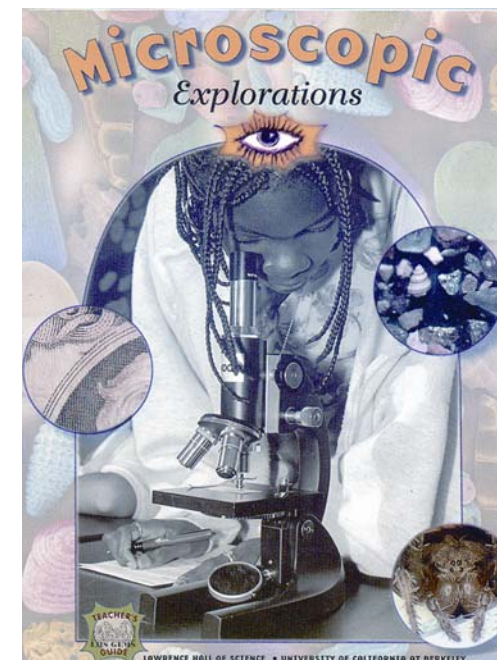
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### Photos:

Janet Schwarz, University of Vermont

### Brochure:

Edward L. Principe, Carl Zeiss SMT, Inc.



## Project MICRO

Microscopy In Curriculum -  
Research Outreach



## MICROSCOPIC EXPLORATIONS, The Manual

Microscopic Explorations is written in “festival” format for grades 4-8, with ten topics that can be presented simultaneously to circulating groups of students, or separately in a classroom. There is a rich assortment of supplemental information on microscopes and how to buy them, curriculum extensions, further reading, and sources of help. The units are more classic than unique; subjects include color printing, fingerprints, pond water, brine shrimp, crystals, etc. Its uniqueness lies in the carefully written “inquiry science” presentation of those topics and the thorough prepublication classroom testing of content that a GEMS guide receives. It will work well in any classroom; teachers aren’t expected to have special skills.

### Ordering information:



Susan Brady and Carolyn Willard, 1998; revised printings, 1999, 2003. Microscopic Explorations 165 pp, paperback, 8.5x11”, ISBN 0-924886-00-5. \$21.00 plus shipping;

Spanish-language student worksheets are available online from GEMS (MSA members may request a 15% discount). Lawrence Hall of Science, University of California, Berkeley, CA 94720-5200; (510) 642-7771, [www.lhsgems.org](http://www.lhsgems.org), [gems@berkeley.edu](mailto:gems@berkeley.edu). Available from many school supply catalogs, and any bookseller.

## PRAISE FOR MICROSCOPIC EXPLORATIONS:

“Microscopic Explorations is an outstanding example of curricula being prepared for the schools through collaboration between volunteer scientists and professional science educators... it also represents an important device for catalysing the effective participation of scientists throughout our nation with the teachers in their local schools. Intended to interest and involve all students in their middle school years, it is designed to harness the talents of an important scientific society as a resource in educational reform.”

*Bruce Alberts, President, National Academy of Sciences*

“Microscopic Explorations is an explicit and extensive resource for science teachers that is easy to use... The book is quality incarnate, there’s no question about that.”

*Appraisal: Science Books for Young People*

“As a community volunteer, I conduct science enrichment programs for elementary school children. I highly recommend Microscopic Explorations as a well-organized tool to introduce students to microenvironments in a fun, learning atmosphere.”

*Science Books and Films*

## DOES “MICROSCOPIC EXPLORATIONS” MEET MY STATE’S STANDARDS?

Since current education emphasizes standards and testing; teachers don’t have the time to use materials that don’t meet specific standards. GEMS manuals DO meet standards, see [www.lhsgems.org](http://www.lhsgems.org). If your state isn’t listed you can easily match the skills presented on the Microscopic Explorations title page with your state standards.

## LOCAL OUTREACH PROGRAMS

Several of MSA’s local affiliate societies and one university now have MICRO outreach programs; they are all a bit different. If you want advice on how to organize a workshop, contact the Burlington, Vermont program; Minnesota has an outstanding website, the New England local society has been very successful at fundraising, and Cornell has used grad students as volunteers effectively. If you want to join one of the programs, or if you want to learn more about what they’re doing, please contact the program chairs. You’ll find current addresses and other information on the MICRO website (URL below).

### HOW CAN I HELP MICRO?

Don’t be casual about volunteering; realize that you’re making a commitment that will take time and effort. Look at the **RISE (Resources for Involving Scientists in Education)** website of the National Academy of Sciences (URL below). Then take an in-depth look at the advice on the MICRO website.

#### Be a volunteer:

- Join one of MSA / MICRO’s local programs, or help develop a new one.
- Work with an existing outreach program sponsored by your university or employer.
- Help a GEMS Associate present teacher workshops.
- Use Microscopic Explorations independently. The reputation of GEMS will help you begin a relationship with a hesitant teacher.

## I don’t want to be a classroom volunteer:

- Assemble a kit of the supplies needed to present Microscopic Explorations. They’re low-cost common items, but teachers don’t have the time to do it. Give the kit to a school or a GEMS Site.
- Do you like to fix things? Offer to clean or repair microscopes at a school.
- Help a school get microscopes; ask your corporate employer’s “community” fund for ~\$1000 to buy a classroom set of microscopes for a school.
- Host a class field trip to your microscopy lab. If you choose this option, specific advice from the National Academy of Sciences will help ensure success: <http://www.nas.edu/rise/chap4.htm>

## HOW CAN MICRO HELP TEACHERS?

See the MICRO website for the following:

- A comprehensive bibliography of supplemental books, videos, CD-ROMs, and websites;
- Microscopist volunteers to help present Microscopic Explorations;
- Advice on selection of school microscopes;
- Supplemental materials to expand topics introduced by Microscopic Explorations;

And **Ask-a-Microscopist**, is a service for teachers providing prompt answers to technical questions.

See [www.microscopy.org](http://www.microscopy.org)