We appreciate the response to this publication feature and welcome all contributions. Contributions may be sent to José A. Mascorro, our Technical Editor, at his e-mail address: jmascor@tulane.edu. José may also be reached at the Department of Structural and Cellular Biology, Tulane University Health Sciences Center, 1430 Tulane Ave., New Orleans, LA 70112 and Ph: (504) 584-2747 Fax: (504) 584-1687

Petrographic Slides Projected in a 35mm Slide Projector

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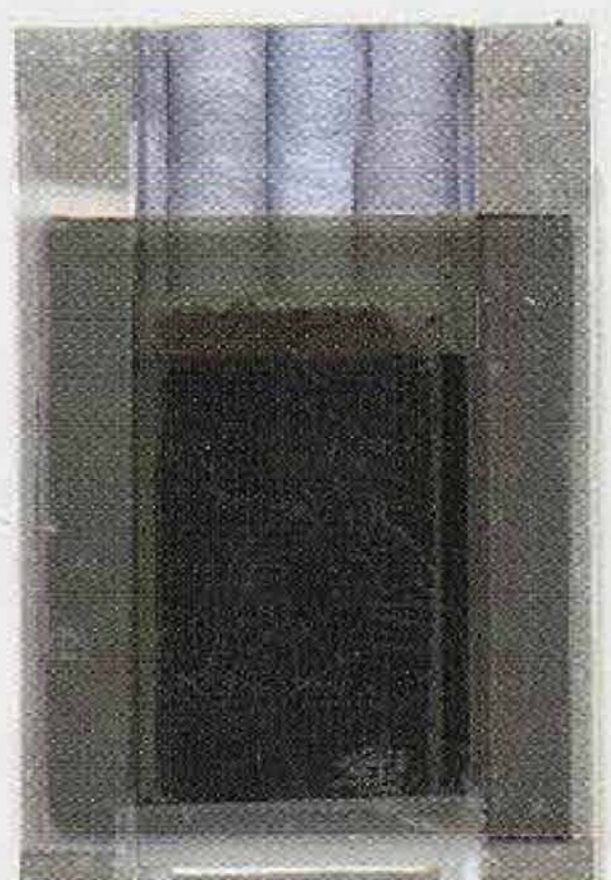
In a second year geology class, students begin to explore the use of the petrographic microscope to look at the optical properties of rocks and minerals in thin section. The petrographic microscope is configured with a polarizing plate (polarizer) below the stage that transmits light in the N-S direction and an additional polarizing plate (analyzer) in the tube above the stage that passes light in the E-W direction. This configuration allows students to use various optical techniques for mineral identification taking advantage of the isotropic and anisotropic properties of the crystal and the way light is transmitted through it in thin section. As students generate questions about their observations, the lab instructor is required to move from student to student looking through their microscope to describe the effects. In an effort to find a more efficient way to present this information to the class as a whole, we began to explore the various ways available for us to project the slides onto a large screen in real time.



Slide holder showing slide in pocket behind polarized film

The most obvious method was to use a high-resolution color video camera coupled to a microscope with the output sent to a LCD projector. Cost was the major drawback of this technique and it limited us to a small field of view depending upon the microscope magnification used.

Another method we explored was to sandwich a thin section slide between two pieces of polarizing film and place it in a microfiche reader. This method still had the limitation of a small field of view and the slide sandwich was much thicker than the microfiche was designed to handle. The resulting viewer image gave poor resolution and was not bright enough to be easily seen.

Projector slot with holder in place

Looking at the design of a commercial petrographic slide holder (GeoScan Enabler from Meyer Instruments, Inc., Houston, Texas) we typically use for scanning glass slides in a 35mm slide scanner, I realized that a similar design might allow us to put the thin section sandwich into a 35mm slide projector. After a few tests, I was convinced this would work for our purposes.

Working with our machinist, I was able to rough out a holder that would allow us to put a petrographic slide between two pieces of polarizing film taped to both sides. With the projector slide tray removed, the holder can then be placed into the optical path of the projector in the same location that a normal 35mm slide would occupy. Using tape on the polarizing films allows them to be added or removed as needed to demonstrate various properties. The bright projected image displays a large portion of the slide and can be sized by placing the projector at different distances from the viewing screen.

EMBEDDING MEDIA HEALTH HAZARDS AND MEDICAL DOCUMENTATION

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Questions have been raised from time to time on the MSA list server about potential health hazards associated with embedding media. Documentation of these health hazards in the biomedical and microscopy communities is extensive; however, many microscopists are not familiar with the occupational medicine literature. Articles directed to the microscopy community date back to the 1980's, but they appeared in publications which were not available to all university libraries or those using embedding techniques[1-4]. Hazards in the use of embedding media include exposure to carcinogens, irritants, allergens, and systemic toxicants. Although many of the chemicals used in dehydration, infiltration, and embedding are listed as potential carcinogens (these effects usually take years to appear), the most significant problems manifest themselves as a result of irritation or allergic reactions. These problems result either from low dose-long term (chronic) exposure, or short term-high dose exposure (accidental spills). This article will present documentation from the medical literature, as well as the author's personal experience gained over more than thirty years in electron microscopy research laboratories. A future article will address the use of personal protective equipment and laboratory safety involving embedding media.

Amine accelerators are strong irritants and probably represent the greatest hazard of all embeddding media components[5]. Commonly used accelerators such as benzyldimethylamine (BDMA), tris(dimethyl amino ethyl) phenol (DMP-30), and dimethyl aminoethanol (DMAE or S-1) are extremely volatile and should be used only in a properly functioning hood. DMAE has been documented as a cause of allergic asthma in industry[6].

Although it was thought that low molecular weight compounds used in dehydration, as transitional solvents, and as embedding media were either irritants or possible carcinogens, there