SEM-FIX

Rick Mott, Princeton Gamma-Tech, Inc.

The most unusual use I've seen for an SEM was as a special-effects generator for the fifth Star Trek movie, "The Final Frontier". William Shatner directed the film as well as starring in it. He chose Bran Ferren of Associates and Ferren, now part of Disney Imagineering, to do the special effects. Ferren had the idea of using SEM imagery for the "eerie planet in the center of the galaxy", because the large in-focus depth of field gave an unearthly feel to the scene. Shatner was fascinated by the technology and the resulting images.

When you hear that a film cost \$50 million to make, here's how it happens. They bought a Zeiss 960 SEM and a PGT IMIX system just for that one sequence in the movie! A mainstay of movie effects is model animation, in which miniatures are dragged along suspended wires while one or more cameras (mounted on articulated robotic booms) also move to produce the complex and realistic action you see on the screen. The wires and background are typically painted flat blue, and post-production systems make composite final frames out of model shots, backgrounds, and live action by recognizing all the bluescreen pixels from the individual images and removing them from the composite. (Want details? Check out www.ultimatte.com.)

A programmer who worked on camera motion-control animation systems was brought in to write special software to "fly" the SEM stage through a sequence of images from chunks of crystalline material imaged at very low magnification. The images were stored on 60MB cartridge tapes for postprocessing, which meant cropping into the desired field of view, digitally adding the blue mists, and compositing with the model shots of the Enterprise for the final frames. Movies run at 24 frames per second, so at 800k bytes per frame, an overnight run filled one cartridge tape and resulted in just 3 seconds of animation. They eventually took maybe a hundred tapes' worth of images, using less than 10 seconds of it in the final film. You can find a frame from the planet scene on the Web at tos-www.tos.net/services/pics/st5

Some of the PGT engineers went to the movie the first week it opened. We got the very last credit line in the film, right behind the guys who bring the sandwiches for the actors' lunch. The people vacuuming popcorn off the theatre floor were giving funny looks to this bunch of strange folks standing in the aisles cheering at the credits 10 minutes after the movie was over and everybody else had left...

Readers, Please Note:



Image Analysis Specialist

There is a regular, full-time position available in Biological Imaging (a Shared Scientific Service) at The Jackson Laboratory in Bar Harbor, Maine. Duties include operation and training of end users on a PC-based image analysis system and the performance of customer-directed analysis of biological specimens. Routine maintenance and use of a confocal microscopy system will be a major requirement of this position. Also included is the regular maintenance and alignment of upright, inverted and stereo research-level microscopes, with the following optics: brightfield, darkfield, phase contrast, differential interference contrast and fluorescence. A successful candidate would have a MS in biological sciences or equivalent experience and a minimum of two years experience in confocal microscopy and/or microscopic imaging, experience in both being most desired. Experience in rudimentary computer programming is also preferred. Experience in electron microscopy and/or histology would be an asset. The applicant must be able to work independently in a multi-user facility and to deal with people on a one-on-one basis. Individual will be expected to attend seminars and participate in interest groups disseminating information about current microscopic imaging techniques. Interested appli-cants may forward a resume to:

Joanne Bradt Human Resources The Jackson Laboratory 600 Main Street Bar Harbor, ME 04609 The Jackson Laboratory is an Equal Opportunity/Affirmative Action Employer

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