

Versatile Research/Teaching Equipment Donated To Department

Thanks to the efforts of **Norman Pond** (BS '59), Intevac Inc. has donated to UMR's Physics Department a scanning electron microscope with image analysis and an ultrahigh vacuum chamber and pumping system. Norman is Chairman, President, and CEO of Intevac. During his Homecoming visit to the campus he mentioned that Intevac had some spare equipment which might be useful to us. Soon thereafter, physics Profs. **Ed Hale** and **Dan Waddill** visited Intevac in Santa Clara, CA. During their tour of these impressive facilities, the microscope and vacuum system were identified as items the company would like to donate to the Physics Department. The instruments have recently arrived at UMR.

The ultra high vacuum (UHV) system will be used by Waddill to assist in his investigations of nanoscale materials (see related Newsletter article). This research involves fundamental measurements of new magnetic materials that are critical to the burgeoning information storage industry. The donated equipment will be used in the construction of a unique device for the characterization of magnetic structure at the atomic level.

The scanning electron microscope gives the department direct access to one of the most powerful and useful instruments in the study and characterization of microstructure, size and composition of many types of materials. This information is crucial in this age of ever expanding uses of new and exotic materials in devices that grow smaller every day. The first use of the microscope will be in the department's Cloud and Aerosol Sciences Laboratory (CASL) to characterize particles emitted from rocket and aircraft exhaust (see related Newsletter article).

The scanning electron microscope works by irradiating a sample with a finely focused beam of electrons. This in turn produces secondary electrons, back scattered electrons, and characteristic x-rays from the sample. The signals from the electrons are used to form images of the sample on a microscopic scale. The donated microscope is equipped with an energy dispersive x-ray detector which collects the x-rays emitted from the sample following electron irradiation. Analysis of these x-rays reveals the structural and compositional makeup of the sample material.

The Physics Department has plans to use this unique resource for both teaching and for graduate and undergraduate research projects. In addition, the capabilities of this microscope will enliven the teaching of various aspects of solid state and materials physics, and will serve to enrich the learning experiences of our students for many years to come.

Thanks, Norman!

Wilemski Named Director of UMR's CASL

Dr. **Gerald Wilemski** has been named Director of the Cloud and Aerosol Sciences Laboratory at the



Gerry Wilemski

in the department.

Wilemski replaces **John Carstens**, who retired last September after being CASL's Director since 1984. The Laboratory has nine faculty members and nine research assistants. "Gerry's extensive and diverse research background will be a great asset to our campus," says UMR Chancellor **John T. Park**. "His breadth of research experience includes work in academia, industry and government laboratories. I am extremely pleased that UMR has Gerry as CASL's director."

"There is a critical nucleus of researchers here who work in fields closely related to my own areas of interest," observes Wilemski. "It is a major benefit to have opportunities to interact – both formally and informally – with colleagues. Colleagues serve as important sources of information and can help improve the quality of each other's research."

Wilemski's research interests

include thermodynamics and statistical mechanics of nucleation, aerosols, polymers, colloids and electrochemical systems. At UMR, he will concentrate on fundamental aerosol research – an interdisciplinary field that is rapidly expanding in universities throughout the United States. "Aerosol research is increasing around the world as scientists examine the effects of atmospheric particles on air pollution, ozone depletion and global warming," Wilemski says. "The recognition of the importance of aerosol phenomena is growing."

In March 1998, Wilemski will be a part of an international team of scientists working at the National Institute of Standards and Technology in Maryland to measure small angle neutron scattering from nanometer-sized aerosol particles. By interpreting the neutron scattering patterns, the team hopes to determine the structure and composition of these very small aerosol particles.

Wilemski received his Ph.D. in theoretical chemistry from Yale University in 1972, following his undergraduate years at Canisius College in Buffalo, NY. After leaving Yale, he was a visiting assistant professor and research associate for three years at Dartmouth College in Hanover, NH, and a principal research scientist at Physical Sciences Inc. in Andover, MA, for sixteen years. Before coming to UMR, Wilemski was a research scientist at Lawrence Livermore National Laboratory in California.

First Class Senior Physics Class

All physics majors who graduated this past May graduated cum laude or better. Three were summa cum laude and three were magna cum laude. We believe this is the finest record of a senior class in physics at MSM and UMR and most likely of any department's class of comparable size or greater at MSM and UMR.