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# University of Montana

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## MEDIA RELEASE

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### FIRE PREVENTION IS AIM OF UM PROFESSOR'S RESEARCH

By Virginia Vickers Braun  
Office of University of Relations  
University of Montana

MISSOULA--

Last year, according to statistics provided by the National Fire Protection Association, nearly 3 million fires caused death and destruction in the United States. An estimated 6,505 people died. Over \$6 billion was lost in property damage.

A University of Montana professor of chemistry thinks more can be done to prevent such drastic losses. Dr. Fred Shafizadeh, director of UM's Wood Chemistry Lab, has been studying the behavior of fires for 14 years. To continue his research, the National Bureau of Standards has awarded him a three-year grant to study the chemistry of smoldering combustion. A budget of \$71,960 has been approved for the first year beginning Oct. 1.

"In the past, a major approach was flame-proofing flammable materials," Shafizadeh said. "But," he said, "statistics at the Center for Fire Research showed that 70 percent of the fires start with smoldering." He said a dropped cigarette often will start smoldering in the batting of a bed or chair. "Then, in the middle of the night when everyone's asleep, the bed will burst into flames and burn the house down."

Shafizadeh said the strategy now is to prevent the fire before it develops and bursts into flames.

"The process of smoldering combustion is entirely different from flaming

(over)



FIRE PREVENTION--add one

combustion," Shafizadeh said. He said scientists know a great deal about flaming combustion but very little about smoldering fires.

"In flaming combustion, the material is first converted into combustible gases that, when mixed with air, could fuel rapidly spreading flames."

Smoldering combustion, on the other hand, is a much slower process. Instead of burning, the gases that are formed generally escape as smoke. The char that is left behind burns gradually until it gathers enough momentum and energy to burst into flames.

"We have been highly successful in finding out how smoldering takes place and how it could be controlled," Shafizadeh said.

Further research, he said, will provide information on what materials will smolder, what keeps them smoldering, and how to avoid smoldering fires. Assisting Shafizadeh in the fire research project are William DeGroot, a UM graduate, and Dr. Yuki Sekiguchi, a graduate of Nihon University, Tokyo, Japan.

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CUTLINE--

RUN SOPHISTICATED MACHINE--William DeGroot, left, and Dr. Uki Sekiguchi  
run tests at the University of Montana \$40,000 infrared spectrophotometer which  
was acquired to aid research into smoldering combustion. (UM photo by Virginia  
Vickers Braun)

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