

RPI professor selected to present annual spring Samuel R. Scholes Memorial Lecture

4/13/15



Alfred University's (AU) annual Samuel R. Scholes Memorial Lecture will be given by Dr. Minoru Tomozawa Thursday, April 30 at 11:20 a.m. on campus in Holmes Auditorium, Harder Hall. All are welcome to attend.

Tomozawa, professor of materials science and engineering at Rensselaer Polytechnic Institute (RPI), Troy, will talk about "Glass and Water: A New Glass Strengthening Method." He will cover newly discovered beneficial effects of structurally integrated water on glass.

"A small quantity of water exists in most oxide glasses and has great influence on various glass properties," said Tomozawa. "Also, water vapor in atmosphere can interact with the glass surface. Water can adsorb on the glass surface and diffuse into the glass. Many glass properties such as optical transmittance, chemical durability and mechanical strength are highly sensitive to water impurity in glass.

"Effects of water on glass properties are usually negative: optical transmission decreases, chemical durability deteriorates, and mechanical strength decreases," he continued. "We found that water can have some beneficial effects on glass properties. Glasses containing water is known to be radiation coloration-resistant. Recently, we found that a small quantity of water in the glass surface can make the glass mechanically stronger through the surface stress relaxation."

Tomozawa has been teaching materials science and conducting research on glasses for 45 years. He has published 287 papers and holds three patents on glasses. A former co-editor of four volumes of collections of review articles on glass science, director of Glass Science and Technology at RPI, and chairman of the Glass and Optical Materials Division of the American Ceramics Society, Tomozawa holds extensive leadership experience in the materials science field.

His research interests include the origin of memory effect of glasses; measurement of fictive temperature of glasses; effect of fictive temperature on mechanical strength of glasses; glasses with fictive-temperature-independent properties; indentation size effect of glasses; mechanism of water diffusion; rare-earth doped glasses; measurement of defects in glasses; structural relaxation of glasses; and ion-exchange of glasses.

Tomozawa has received numerous awards and honors, including an Outstanding Professor Award from the School of Engineering of Rensselaer, the 1997 Outstanding Educator Award from the Ceramic Educational Council, and the 2010 George W. Morey Award from the Glass and Optical Materials Division, both of the American Ceramic Society.

In addition, he received the 1983 Science Award and 1991 International Contribution Award, both from the Ceramic Society of Japan.

Tomozawa earned a bachelor of science degree in electrochemistry from Yokohama National University, Kanagawa Prefecture, Yokohama, and a Ph.D. in metallurgy and materials science from the University of Pennsylvania, Philadelphia. Between his studies, he worked as a materials engineer at Nippon Electric Co. in Japan.

Each year, the Inamori School of Engineering at AU selects an expert in the field of glass science to deliver the Scholes Lecture, which honors the memory of Samuel R. Scholes Sr., who founded the glass science program at the University over 80 years ago. Scholes was educated at Ripon College and Yale University and served as the University's dean, associate dean, head of the Department of Glass Technology, and professor of glass science.