

McMahon Lecture to be delivered by Oak Ridge Lab researcher

11/05/12

Alfred University's (AU) 2012 John F. McMahon Lecture will be presented by Dr. Andrew Wereszczak, AU alumnus and distinguished research and development staff member at the Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, on Thursday, Nov. 8, at 11:20 a.m. in Holmes Auditorium, Harder Hall.

Sponsored by the Kazuo Inamori School of Engineering, the annual invited lecture recognizes a renowned expert in materials science. It was created to honor the memory of John F. McMahon, an Alfred University alumnus, faculty member, and dean of the College of Ceramics.

Wereszczak's abstract is titled: Uniqueness of Mechanical Failure of Ceramics, Glasses, and Other Brittle Materials. He will explain that unlike metals and polymers, polycrystalline ceramics and glasses have inherently low fracture toughness and this causes them to be brittle. Consequently they are susceptible to fracture from flaws in (and on) them, are weaker in tension than in compression (i.e., strength anisotropy or asymmetry), and exhibit probabilistic strength-size-scaling (i.e., weakest link in a chain analogy).

Most of Wereszczak's professional career has been devoted to the characterization and modeling of the relationship between mechanical response of brittle materials and their microstructure. He has become an internationally recognized researcher in that arena during the last 20 years.

His work has contributed to the development of diverse sets of ceramics and other brittle materials considered for use in components for advanced gas turbine engines, internal combustion engines, glass manufacturing furnaces, armor, hybrid bearings, gun barrel liners, thermoelectric devices, power electronic devices, and photovoltaic cells.

Wereszczak has authored or co-authored over 125 publications including three book chapters, several patents and pending invention disclosures, has a copyrighted software program developed for microstructural-level thermomechanical modeling to his credit, and has given over 100 presentations. He is a member of the American Ceramic Society (ACerS), is a former Chair of ACerS's Engineering Ceramics Division, twice served as the editor of the Ceramic Engineering and Science Proceedings, served as the Technical Program Chair to the 2008 International Conference on Advanced Ceramics and Composites, was a recipient of ACerS's Richard M. Fulrath Award, and is a Fellow of the American Ceramic Society.

Wereszczak has worked at ORNL in two stints; from 2002 to the present and from 1991 to 2000. He worked at the U.S. Army Research Laboratory from 2000-02.

He earned his undergraduate degree in ceramic engineering from AU and a master's degree in materials science and engineering from the University of Delaware.

The John F. McMahon Lecture was created in 1980 by Alfred University alumni to honor Dr. McMahon for his contributions to ceramic science and engineering. Each year, a distinguished ceramic scientist or engineer delivers the lecture and receives the John F. McMahon Award.

McMahon promoted relationships between industry and academe and advanced the education of ceramic engineers and artists during his tenure as dean of College of Ceramics at Alfred University from 1949-65.

He led the College to consider the vital needs of industry while maintaining a strong academic tradition of basic fundamental research and education. Long before others seriously considered ceramic materials for automobiles, McMahon explored the idea with General Motors and saw promise of the use of ceramic materials in automobiles.