

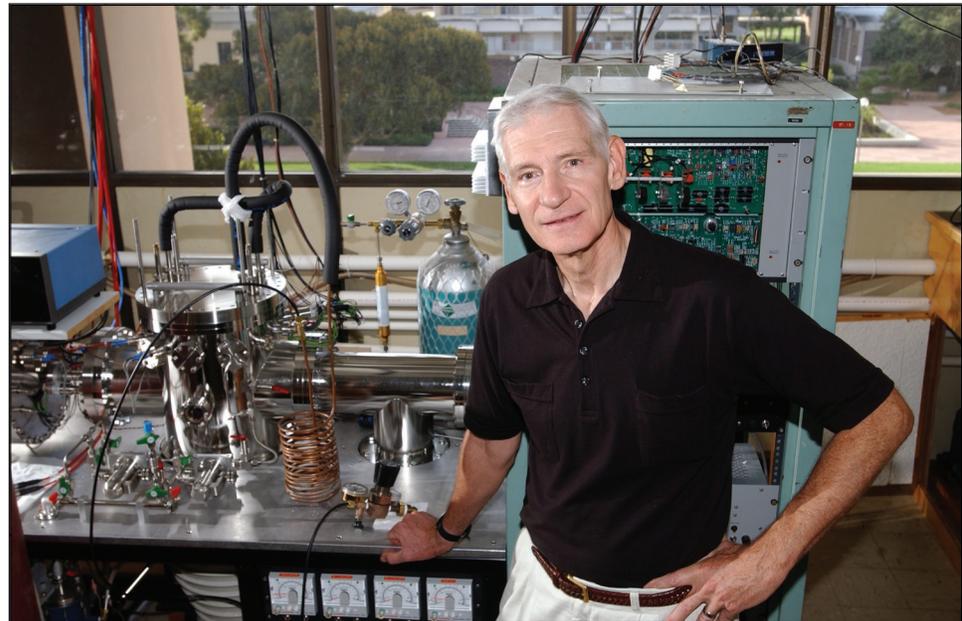


Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

ACADEMIC PARTNERSHIPS ADVANCE POSS TECHNOLOGY PAYOFF



The National Academies administer postdoctoral and senior research awards through its associate ship programs. Each year there are an average of 800 scientists and engineers in the national program with 200 of the overall awards made to senior doctoral level scientists. Federal laboratories and the National Aeronautical and Space Administration's Research Centers sponsor research associate ship programs at over one hundred locations in the United States and overseas.



Air Force Research Laboratory
Wright-Patterson AFB OH

Accomplishment

The National Academies selected Professor Stanley Edward Anderson, a member of Westmont College's Department of Chemistry, for a National Research Council Senior Research Associate ship award. The Air Force Office of Scientific Research and the Propulsion Directorate at Edwards Air Force Base, California, is sponsoring Professor Anderson for this internationally competitive National Research Council Senior Research Associate ship award.

The award will help him conduct studies of Polyhedral Oligomeric Silsesquioxane (POSS) monomers during his sabbatical at the University of California Santa Barbara Chemistry Department.

Dr. Anderson's study of the nano-scale structure of POSS will help explain the unusual reinforcement or strength these molecules demonstrate. He has matched experimental cross-sections of many POSS monomers with theoretical structures using molecular modeling/molecular dynamics calculations.

Analyzing molecular structures of these special high performance polymers using ion chromatography/mass spectrometry techniques should show for the first time, the complex shapes of this family of polymers on a molecular level. It will provide greater understanding of their material attributes and the evidence that POSS is a complex nanostructure rather than a simple sphere.

Background

POSS technology is an exciting new area of material science. POSS is a silicon-based super-plastic or polymer that has ceramic-like material characteristics that provide thermal stability, flame retardation, abrasion resistance, and greater strength to a large family of plastics.

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-PR-25)

Propulsion
Awards and Recognition