Nano-Structure and Dynamics of Composites

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Abstract
Chemistry is inherently a nano-science. In this talk, two examples highlight projects of the structure and dynamics on the nano-scale and how they result in macroscopic properties. We explore molecular motion in polymers adsorbed at interfaces with nuclear magnetic resonance spectroscopy. An understanding of these dynamics led us to do experiments that highlighted the behavior of interfacial dynamics in adhesion tests. We also show how to produce nanocomposites with conducting polymer nanowires with metal nanoparticles. These are useful for making gas sensors. Much of this work is interdisciplinary with many UMR/Missouri S&T coworkers contributing.

Dr. Frank Blum grew up in Chicago where he quickly learned when to fight and when to run. In high school he was outstanding (when the others were in class). In spite of his predilection for writing on controversial social topics in the high school newspaper, he eventually wised up in the days of "Watergate" to "follow the money" and so became a chemist, receiving a B.S. and M.S. in chemistry from Eastern Illinois University in 1976 and 1977, respectively. Knowing that the cold weather would help keep him in the lab, he moved to Minnesota, where he received his Ph.D. in 1981 in physical chemistry. Then it was on to the "City of Brotherly Love" where he taught at Drexel University from 1981-86. In 1986, he succumbed to the "call of materials" in the Ozarks, joined Missouri S&T and moved up the ranks. He became Curators' Professor in 1994. He has served in many capacities with the American Chemical Society and is currently the President of the Faculty Senate at Missouri S&T . With Burl Ives, Joan Embry, John Malkovich and Mike Shanahan he shares the honor of "Distinguished Alumnus Award" from Eastern Illinois University (2001). He has published a few papers over the years, some of them are even worth reading. He is an avid Miner basketball fan and lucky to have family members and departmental colleagues who tolerate him.

This seminar is co-sponsored by the Academy of Mechanical and Aerospace Engineers

(Refreshments Servéd at 3:15 p.m.)