

Chemistry with Robots: A new paradigm for research.

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The use of robotic and automated systems in the laboratory brings a new dimension to research programs. With many polymer-based materials (thermoplastics, coatings, adhesives, and so on), the performance properties of the material depend on a large number of variables that can interact in a rather complicated way. In many cases it is impossible to predict the properties of the material from first principal considerations. Thus, experiments are carried out one after another to zero in on desired properties. This is a slow and laborious process and not much is learned. Using highly automated robotic systems to carry out routine tasks, it is possible to significantly accelerate the process of material synthesis and characterization. Thus, in these complex systems, experimental variables can be explored systematically in order to determine their effect on material performance, resulting in important new insights and discoveries.

Speaker Biography

Dean Webster is a Professor in the Department of Coatings and Polymeric Materials at North Dakota State University. He received a B.S. in Chemistry and a Ph.D. in Materials Engineering Science both from Virginia Tech. Prior to joining NDSU in 2001 he worked for Sherwin-Williams at their Central Research Laboratories in Chicago and at Eastman Chemical Company in Kingsport, Tennessee. His current research interests include the design of high performance polymer and coating systems, use of high throughput methods in the development of new materials, low surface energy coatings, radiation curable polymer systems for microelectronics, and the use of natural products in materials.