Marino Xanthos was Professor of Chemical, Biological and Pharmaceutical Engineering, Associate Provost for Graduate Studies, and Senior Technical Adviser to the Polymer Processing Institute (PPI) at NJIT until his passing in the summer of 2013. Dr. Xanthos earned a bachelor's degree in chemistry from the Aristotelian University of Thessaloniki and master's and Ph.D. degrees in chemical engineering from the University of Toronto, where he studied under Professor R. T. Woodhams.

After receiving his doctorate in 1974, he joined the research division of Martin Marietta Resources International, where he eventually rose to the position of Research, Development and Technical Services Manager. From 1980 to 1986, he served as professor and later as director of Stevens Institute of Technology overseas International Programs Office Department of Polymer Science, Engineering and Technology, jointly operated with the Algerian Petroleum Institute. During the period of 1987 to 1995, he was the research director of the PPI and Stevens Research Professor. He was appointed professor of chemical engineering at NJIT in 1995, where he served until his passing as Director of the Polymer Engineering Center, Director of the Center of Processing of Plastics Packaging, Chairperson of the Executive Committee of the Materials Research Council, Senior Technical Adviser to the PPI at NJIT, and finally Associate Provost for Graduate Studies.

Dr. Xanthos was internationally recognized for his polymer blends, polymer composites and polymer foams expertise, and his studies on polymer modification through the use of functional particulate additives and reactive extrusion processes, which he also applied to the processing of pharmaceutical oral dosage forms. His research work and publications involved Ph.D. and master's students at NJIT and Stevens. He was also involved with PPI technical staff and industrial colleagues nationally and internationally in the solution of numerous important industrial problems.

Dr. Xanthos became a Fellow of the Society of Plastics Engineers (SPE) in 2003 and received the NJIT Board of Overseers Harlan J. Perlis Award that same year in recognition of his exemplary scholarship and outstanding research in the field of polymers. He served as the U.S. representative to the Board of the Polymer Processing Society since 2005. In 2010, he received the Heinz List Award in recognition of his outstanding achievements in reactive processing and devolatilization.

Dr. Xanthos deeply cared for and was a renowned mentor and adviser to his graduate and undergraduate students. For many years, he was the adviser and life force of the NJIT student chapter of the Society of Plastics Engineers.

This lecture series was established by his family, friends and colleagues to memorialize his accomplishments and love of his chosen field.

Previous Lecturers:

2018: Karen L. Wooley, Departments of Chemistry, Chemical Engineering, and Materials Science & Engineering, Texas A&M University

2017: David L. Kaplan, Department of Biomedical Engineering, Tufts University

2016: Thomas P. Russell, University of Massachusetts and Materials Sciences Division, Lawrence Berkeley National Laboratory

2015: Morton M. Denn, Benjamin Levich Institute, City College of New York

One of only 32 polytechnic universities in the United States, New Jersey Institute of Technology (NJIT) prepares undergraduate and graduate students and professionals to become leaders in the technology-dependent economy of the 21st century. NJIT's multidisciplinary curriculum and computing-intensive approach to education provide technological proficiency, business acumen and leadership skills. NJIT has a $1.74 billion annual economic impact on the State of New Jersey, conducts approximately $140 million in research activity each year, and is a global leader in such fields as solar research, nanotechnology, resilient design, tissue engineering, and cybersecurity, in addition to others. NJIT is ranked #1 nationally by Forbes for the upward economic mobility of its lowest-income students and is among the top 2 percent of public colleges and universities in return on educational investment, according to PayScale.com.

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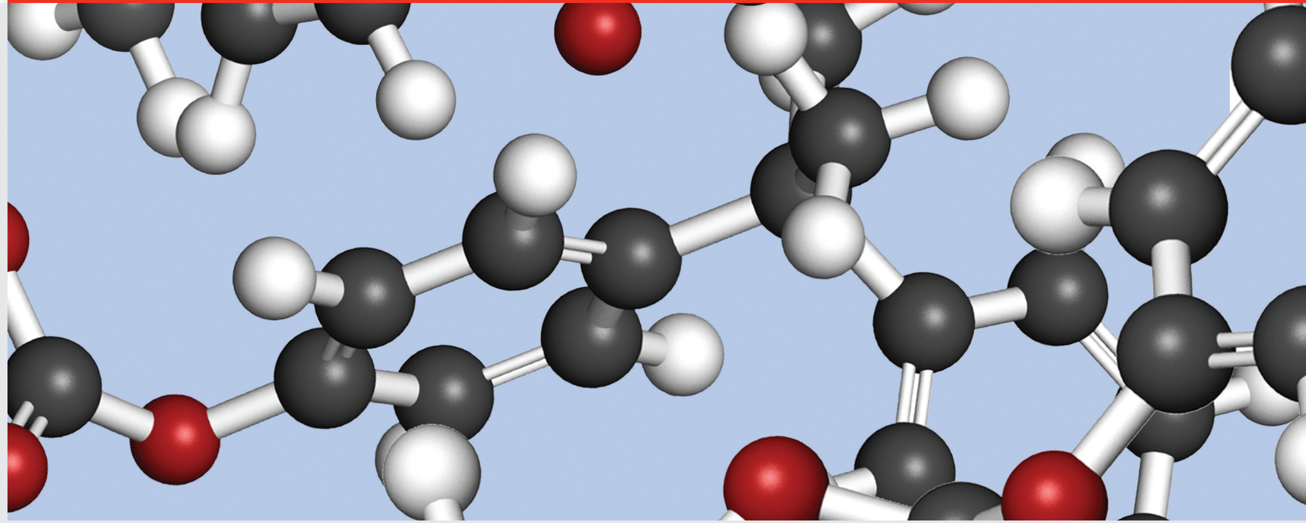

Marino Xanthos Memorial Lecture 2019

Juan de Pablo
Pritzker School of Molecular Engineering
The University of Chicago

NJIT
New Jersey Institute of Technology

Wednesday, October 30, 2019

Moshe Kam
Dean
Newark College of Engineering
New Jersey Institute of Technology

on behalf of the
Marino Xanthos Memorial Lecture Committee

requests the honor of your presence
at the

MARINO XANTHOS MEMORIAL LECTURE 2019

Liquid Crystals-From Simple Self-Assembled Constructs, to Autonomous Materials

Juan de Pablo
Pritzker School of Molecular Engineering
The University of Chicago

Wednesday, October 30, 2019
2:30 p.m.

Central King Building
Room L-70

RSVP to Sheryl Baker by Monday, October 21, 2019; sheryl.baker@njit.edu or 973-596-2314.
For driving directions to NJIT, visit njit.edu/visit

Abstract

Polymeric materials comprising mechano-chemically active components are able to undergo spontaneous structural rearrangements that generate internal stresses and motion. These stresses can be particularly large in the case of liquid crystalline polymers, where elasticity plays an important role on the structure of the underlying materials. Understanding how internal activity leads to specific behaviors is important for design of autonomous materials systems capable of delivering desired functionalities. This lecture will focus on the relationship between structure, activity, and motion in lyotropic liquid crystalline polymeric systems. More specifically, results will be presented for actin and tubulin suspensions, where activity is generated by protein motors. A distinctive feature of these biopolymers is that characteristic contour lengths can range from hundreds of nanometers to tens of microns, thereby making them amenable for study by optical microscopy. By relying on molecular and meso-scale models, it is possible to arrive at a comprehensive description of these suspensions that helps explain the connections between molecular structure, the formation and shape of distinct topological defects, activity, and defect dynamics. One of the outcomes of such a description is the realization that hydrodynamic interactions can in some cases exacerbate or mitigate the elasticity of the underlying materials, leading to non-intuitive phenomena that do not arise at equilibrium. By balancing such effects, these findings raise the possibility of designing functional materials where specific, macroscopic dynamical responses are engineered into a system to create function.

Juan de Pablo

Juan de Pablo is the Liew Family Professor in Molecular Engineering at The University of Chicago, Vice President for National Laboratories and Senior Scientist at Argonne National Laboratory. A prominent materials scientist, de Pablo's research focuses on polymers, biological macromolecules, and liquid crystals by developing molecular models and computer simulations of complex processes over wide ranges of length and time scales. In addition to his approximately 500 publications and a textbook on Molecular Engineering Thermodynamics, he holds more than 20 patents. Among his awards, de Pablo received the Polymer Physics Prize from the American Physical Society in 2018, the DuPont Medal for Excellence in Nutrition and Health Sciences in 2016, the Intel Patterning Science Award in 2015, and the Charles Stine Award from the American Institute of Chemical Engineers in 2011. He served as chair of the Mathematical and Physical Sciences Advisory Committee for the National Science Foundation, and the Committee on Condensed Matter and Materials Research at the National Research Council. He is the founding editor of *Molecular Systems Design and Engineering* journal, and co-director of the new Center for Hierarchical Materials Design. de Pablo was inducted into the National Academy of Engineering in 2016 for "design of macromolecular products and processes via scientific computation." He is a fellow of the American Academy of Arts and Sciences, the American Physical Society, and is a foreign correspondent member of the Mexican Academy of Sciences.