Mikos to Receive Outstanding Young Investigator Award for Innovative Biomaterials

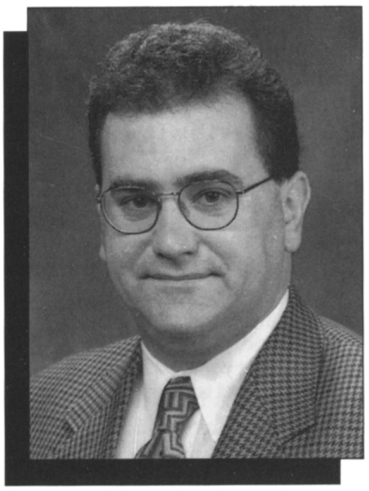
Antonios G. Mikos is the 1996 recipient of the Materials Research Society's Outstanding Young Investigator Award. The Rice University professor is cited "for the synthesis and processing of new biomaterials for tissue engineering, supports for cells, tissue-growth conduits, targeted cell-adhesion substrates, and cellular-response stimulants."

The Outstanding Young Investigator Award recognizes exceptional, interdisciplinary scientific work in materials research by a young scientist or engineer who also displays leadership in the materials area.

Mikos has shown creativity in his endeavors; innovation in his work; and interdisciplinary leadership connecting engineering, materials science, and biology. He has the knowledge and expertise to take a project from polymers in a test tube to testing of polymer-cell composites in living tissue. He has been called by one of his nominators "one of the leading researchers in materials science worldwide and perhaps the most innovative and influential biomedical materials researcher of his generation."

His work has focused on applications of materials science in medicine, with a concentration on degradable polymers. Mikos is well-known for his work on biodegradable polymer materials that serve as matrix systems for hybrid (cell containing) artificial organs. His research emphasizes the use of synthetic biodegradable polymers as analogs of the extracellular matrices of the body to create biological substitutes and engineer human tissues. He is a pioneer in developing systems for bone augmentation, artificial skin, and retinal epithelium repair.

Mikos has developed novel processing techniques to fabricate three-dimensional scaffolds of biodegradable polymers with high porosity and large surface-to-volume ratio. These structures can provide temporary scaffolding to transplanted cells to form a completely natural tissue replacement. This differs from the more classical approach of seeking materials that are essentially inert in the body and behave invisibly. The approach of tissue engineering makes use of the natural responses of the biological system to the implanted materials to dynamically create desirable implant characteristics.



Antonios G. Mikos

His work has addressed molecular behavior of polymers, diffusion and flow, mechanical behavior, and surface analysis of polymers. He has developed and studied novel bioadhesive polymers and has provided important insight into the chain interpenetration phenomenon that is responsible for the adhesion of polymers to biological surfaces. This has led to understanding processes such as targeting of controlled release systems to cancerous sites.

In professional societies, he has promoted the role of biomaterials in tissue engineering and has organized or co-organized many sessions and workshops including Biomaterials for Drug and Cell Delivery (1993 MRS Fall Meeting) and Polymers in Medicine and Pharmacy (1995 MRS Spring Meeting). He leads the biomaterials group of the materials area of AIChE, with responsibility for selection and organization of technical sessions in materials in medicine.

After graduating from Aristotle University of Thessaloniki in Greece in chemical engineering in 1983, Mikos went to Purdue University and received his MS and PhD degrees in chemical engineering in 1985 and 1988, respectively, working for Nicholas Peppas. While a postdoctoral fellow at the Massachusetts Institute of Technology and Harvard Medical School, working for Robert Langer and Joseph Vacanti, Mikos headed a project involving the design, development, and study of new polymer systems for mammalian cell transplantation. This approach, which involves the seeding of selected cell types from appropriate donors onto specially designed biodegradable polymers, offers a method for solving the devastating problem of organ loss.

Mikos joined Rice University as the T.N. Law Assistant Professor of Chemical Engineering and Bioengineering in the Department of Chemical Engineering and The Institute of Biosciences and Bioengineering at Rice in January 1992. At Rice University, he has been a crucial part of the development of a new graduate degree program in bioengineering/biomaterials.

He has edited four books and published nearly 40 technical papers with another dozen submitted or in press in journals such as the *Journal of Chemical Physics, Polymers*, and *Journal of Colloid and Interface Science*. He is editor of *Tissue Engineering* and is involved with several other publications and professional societies.

Among previous awards to his name are the Victor K. LaMer Award for outstanding PhD thesis from the American Chemical Society and the Whitaker Young Investigator Award from the Biomedical Engineering Society. He has given invited lectures around the world, including The Netherlands, Germany, Switzerland, Israel, and Spain, and has given many presentations in the United States.

The Outstanding Young Investigator Award will be presented to Mikos Monday evening, April 8, at the 1996 MRS Spring Meeting in San Francisco. He also will give a presentation, "Biomaterials for Tissue Engineering," at 5:00 p.m. Tuesday, April 9 in Symposium Y. His lecture will focus on the synthesis and fabrication of tissue-engineered polymers and constructs for bone regeneration and repair and for the targeted delivery of genes to injured arteries. MRS

SPECIAL SESSION ADDED TO 1996 MRS SPRING MEETING

Symposium DD: Applications of Synchrotron Radiation to Materials Science III has added a Special Session, D 10, on Thursday morning, April 11, 8:30 a.m.–noon. Look for details in the Meeting Guide available at the meeting.

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