



Leo Christodoulou: Department of Energy

Dr. Leo Christodoulou has an extensive record in materials processing and its influence on the microstructure and properties of materials. His expertise encompasses the synthesis, processing, and performance of metallic, intermetallic, and composite materials. His specific interests focus on understanding microstructural evolution through processing and prediction of properties (in particular fracture, e.g., creep, fatigue, brittle fracture, hydrogen embrittlement, and stress corrosion cracking). He is also the co-inventor and primary developer of a class of materials known as XD Alloys.

As a program manager and Director of DARPA's Defense Sciences Office, Dr. Christodoulou applied his research expertise to developing revolutionary, new materials capabilities for the U.S. military. He pioneered the accelerated development of multifunctional materials to realize a revolutionary class of unmanned micro air vehicles culminating in the "Wasp," which is being used by U.S. forces today. His Prognosis program, which is transitioning to the U.S. Air Force and U.S. Navy, exploits the basic scientific understanding of damage accumulation in materials to define the true state of individual weapon platforms based on actual missions and usage, and will dramatically extend the useful fleet life of those platforms. His Structural Amorphous Materials program has developed an entirely new class of materials – amorphous metals – that have demonstrated exceptional damage tolerance and corrosion resistance for a wide variety of applications. And his Hardwire armor program, currently being used to protect U.S. troops in Iraq, rapidly identified and exploited commercially available materials – arranged in new and unique architectures – to provide outstanding vehicle armor capabilities.

Dr. Christodoulou obtained his bachelor's degree and doctorate in metallurgy from Imperial College of Science, Technology, and Medicine, London, England. His research in environment-sensitive fracture of engineering materials continued at Carnegie Mellon University as a Postdoctoral Research Fellow. Dr. Christodoulou joined Martin Marietta Laboratories in 1981 as a scientist, eventually reaching the post of Project Director, Composites. He subsequently rejoined the Department of Materials at Imperial College of Science, Technology and Medicine as a member of the academic staff in 1995 and was conferred the title of Reader, Materials Processing and Performance, in 1997. In 1998 he was appointed visiting professor at Virginia Polytechnic Institute and State University, and in 1999 he joined DARPA Defense Sciences Office as a program manager in the Structural Materials R&D area. He recently left DARPA and now resides at the Department of Energy as the Industrial Technologies Program (ITP) Program Manager.

Dr. Christodoulou has authored or co-authored more than 60 technical papers and is a named co-inventor on more than 20 U.S. Patents and their foreign equivalents. For his work in the field of metallurgy and materials science, he has been named a Fellow of the American Society of Metals, and is the recipient of the Federation of Materials Societies 2006 National Materials Advancement Award. He has received a number of awards, including the Grunfeld Metal and Prize, Institute of Materials, 1996; Jefferson Cup, Martin Marietta Corporation, 1987; Inventor of the Year, Martin Marietta Corporation, 1987; and several Outstanding Achievement and Excellence Awards.