Preface

As Honorary Chairman of the Executive Committee it is my great pleasure to present the selected refereed papers of the 9th Japanese-Mediterranean Workshop on Applied Electromagnetic Engineering for Magnetic, Superconducting, Multifunctional and Nano Materials, organized in 5-8 July 2015, in Sofia, Bulgaria, constituting a landmark in development of materials, manufacturing and electrical engineering.

This Conference, held every two years, is jointly organized this year by the Project Center for Nanotechnology and Advanced Engineering, a joint initiative of the Greek National Venter for Scientific Research "Demokritos" and the Russian Research Center "Kurchatov Institute", the Japan Society of Applied Electromagnetics and Mechanics, the International Institute for Multifunctional Materials for Energy Conversion, a joint initiative of three leading American Universities, namely Texas A&M, Houston and Penn State, the Laboratory of Electrical Machines of the National Technical University of Athens, the Technical University of Sofia and the Bulgarian Union of Electronics, Electrical Engineering and Telecommunications.

The JAPMED has been originated from the very successful previous 1st and 2nd Japanese - Greek Joint Workshops, held in Athens, Greece in May 1999 and Oita, Japan in May 2001, respectively, and, subsequently, extended to further Mediterranean and International participation and cooperation, the 3rd event hosted in Athens, Greece in May 2003, the 4th in Cairo, Egypt in September 2005, the 5th in Larnaca, Cyprus in September 2007, the 6th in Bucharest, Romania in July 2009, the 7th in Budapest, Hungary in July 2011 and the 8th in Athens, Greece in June 2013. This time, the 9th JAPMED is hosted in Sofia, Bulgaria. It provides a forum for specialists from universities, research centers and industry of various countries worldwide to establish cooperation, to share knowledge and experience and the cross-fertilization of new ideas and developments in the design, analysis, new materials utilization and optimization techniques in the areas of electromagnetics and manufacturing of advanced materials and their industrial applications in modern technologies in nanotechnology/ultraprecision engineering, electricity/electronics, transportation, bioengineering, energy and environment.

The high-temperature superconductivity constitutes the first preferential subject of the Conference, focusing on the recent progress in physics, mechanics, materials and applications of high- and low- temperature superconductors, with a projection to the emerging and future areas in science and technology.

Magnetic materials, such as magneto-resistance and ferroelectric materials, as well as conventional ferromagnetic materials and electromagnetics, constitute the second preferential subject, with results that appear to exhibit a breakthrough either conceptually or in the applications they generate.

The scope of the Conference has been further expanded to include the modern exciting areas, like nanotechnology, ultraprecision engineering, bioengineering and transport, whilst, two years ago, two additional topics have been included, namely: the multifunctional materials, in relation also to computational mechanics, i.e. the interests of IIMEC, and the shock loading of materials and structures as a part of the newly established Shockwaves Cluster, involving cooperation between Greece, Russia, USA, Germany, Japan, China, Hungary and Ukraine. The purpose of this international cooperation is the strong belief that we have to enhance our efforts and cooperation towards these advanced technologies, which may greatly affect our lives in the future.

Academician Prof. Dr-ing, Dr.h.c. Prof.h.c. A.G. Mamalis
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