

# PREFACE

The 3<sup>rd</sup> International Conference on “Smart Materials, Structures and Systems” was held in Acireale, Sicily, Italy on June 8-13, 2008 following the previous Symposia on the same topic which were held in Florence in 1994 and 1998 in the framework of the Forum on New Materials organised within the large CIMTEC conferences held every four years.

Taking into account the increasing relevance of the field, it was decided to organise this 3<sup>rd</sup> edition in the form of a separate “Junior” CIMTEC conference structured in several Symposia and Focused Sessions.

Indeed, the intensive research carried out world wide for creating higher forms of materials, structures and systems by providing them with “life” functions, resulted already in a high level of technology readiness with several applications now emerging, which demonstrate smart materials technologies to have matured well beyond the conceptual stage. Widespread use of nanotechnology concepts and tools and the availability of multiscale computational models coupled with the exponential growth of computer capability are fuelling the rate of advancement of the field. This also is increasingly taking advantage from the merging of materials science and engineering from information deriving from a deeper understanding of biological processes and from the highly effective evolutionary solutions created by nature along million years.

About 600 papers have been presented at the five Symposia and three Focused Sessions included in the conference by authors from over 50 countries with substantial participation from overseas countries. Particularly numerous were the delegates from the Americas and Australasia.

The 8 volumes of the Conference Proceedings collect a wide selection of the papers presented.

Five of them (Volumes 1 to 5) include papers presented at the five main Symposia planned within the Conference, i.e.:

Volume 1 - Smart Materials and Micro/Nanosystems (Co-edited by Giuseppe D’Arrigo)

Volume 2 - Smart Optics (Co-edited by Giancarlo Righini)

Volume 3 - Emboding Intelligence in Structures and Integrated Systems (Co-edited by Fabio Casciati)

Volume 4 - Biomedical Applications of Smart Materials, Nanotechnology and Micro/Nano Engineering (Co-edited by Danilo De Rossi)

Volume 5 - Mining Smartness from Nature (Co-edited by Salvatore Graziani)

Papers presented at the three Focused Sessions have been collected into 3 separate volumes, i.e.:

Volume 6 - State-of-the-art Research and Application of SMAs Technologies (Co-edited by Stefano Besseghini)

Volume 7 - Smart Textiles (Co-edited by Rita Paradiso)

Volume 8 - Artificial Muscle Actuators using Electroactive Polymers (Co-edited by Yoseph Bar-Cohen and Federico Carpi)

The Editor, General Chair of CIMTEC Conferences, would like to express his great appreciation to all the institutions and professional organisations involved in the Conference, to the members of the Steering Committee, the National Programme Committee, the International Advisory Boards and the Symposia and Focused Sessions Co-Chairs and Coordinators.

PIETRO VINCENZINI

Conference Chair

Proceedings Editor