

## Preface

This volume presents the Proceedings of the 3rd International Conference on Nanotechnologies and Biomedical Engineering (ICNBME) which was held on September 23–26, 2015 in Chisinau, Republic of Moldova. ICNBME-2015 continued the series of international conferences in the field of nanotechnologies and biomedical engineering with the main goal focused at bringing together scientists and engineers dealing with fundamental and applied research for reporting on the latest theoretical developments and applications in the fields involved.

The conference and related symposia covered a wide range of subjects of primary importance for research and development such as nanotechnologies and nanomaterials; bio-nanotechnologies and biomaterials; biosensors and biomedical instrumentation; biomedical signal and image processing; clinical engineering, health informatics and cellular and tissue engineering; biomedical engineering education; nuclear and radiation safety and security. Besides, the Proceedings include the papers presented at the special Symposium "Science and society: the use of light" organized in connection with the celebration of the International Year of Light and Light-based Technologies, following a global initiative adopted by the United Nations to raise awareness of how optical technologies promote sustainable development and provide solutions to worldwide challenges in areas such as energy, education, communications, health, and sustainability.

The papers included in the Proceedings reflect the results of multidisciplinary research undertaken by about one hundred of groups worldwide. Special attention is paid to the development of novel nanotechnologies and nanomaterials, in particular of bio-nanotechnologies and bio-nanomaterials. New bio-compatible materials are proposed for use in regenerative medicine, cellular and tissue engineering. Interesting data on novel chemical and bio-sensors are reported which are based on nanostructured metal oxides and hybrid nanocomposite materials. Considerable progress has been achieved at the intersection of nanotechnologies, information technologies and biomedicine as, for example, in health informatics, biomedical signal and image processing. New theoretical and experimental results are highlighted in such fields as superconductivity, novel magnetic materials, metamaterials, optoelectronic and photonic materials, photovoltaic structures, quantum dots, one- and two-dimensional nanomaterials, multifunctional hybrid materials like core-shell structures etc. The Proceedings reflects the state-of-the-art in controlling the properties of several classes of nanocomposite materials for important future applications in various fields. It is worth to note that the Proceedings include also a number of review papers reflecting the fascinating history and recent achievements in the development of novel solid-state structures, nanoelectronic and optoelectronic devices like quantum rings and room temperature polariton laser.

We hope that the papers included in the ICNBME-2015 Proceedings will be of interest for established researchers working in multidisciplinary fields of science and technology, young scientists, students and broad community wishing to get up-to-date information on progress in the fast-developing areas of nanotechnology and biomedical engineering.

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