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This special issue of the Journal of Materials Research contains articles that were accepted in response to an invitation for manuscripts.

(NANO)MATERIALS FOR BIOMEDICAL APPLICATIONS

FOCUS ISSUE

Introduction

Guest Editors:

Mariana Amorim Fraga[1], Stephen E. Saddow[2], Bruno Vinícius Manzolli Rodrigues[3], Jorge Augusto de Moura Delezuk[4], Rodrigo Sávio Pessoa[5], Sachin Khapli[6]

[1]*Universidade Brasil, Brazil*
[2]*University of South Florida, USA*
[3]*Universidade Brasil, Brazil*
[4]*Parana Federal Institute of Education, Science and Technology, Brazil*
[5]*Technological Institute of Aeronautics, Brazil*
[6]*New York University and Abu Dhabi, United Arab Emirates*

Nanotechnology has been responsible for an unprecedented positive impact in healthcare advances, by merging fundamental and applied sciences as complementary tools to make possible an enhanced quality of life. Recent developments in both nanotechnology and biomedical engineering have enabled the emergence of new materials, devices, and systems, which due to their fundamental properties, such as high surface area to volume ratio and tunable physicochemical characteristics (electrical and thermal conductivity, wettability, catalytic activity, and optical emission, among others) can be used in novel medical diagnostic, therapeutic, and treatment procedures.

This Focus Issue explores the current research and potential biomedical applications of nanoparticles and nanostructured materials. The articles are organized into four thematic groups. The first of these groups, one review and two original studies, focuses on the use of nanoparticles in therapeutic and drug delivery systems. The next set comprises two original articles on the development and characterization of biomimetic nanomaterials. Next are two original articles devoted to the use of nanomaterials in implants. The last four articles address the specific properties of different biomaterials, such as hydrogel, hydroxyapatite, microfiber scaffolds and silk-based materials. The issue concludes with an excellent review article on the biomedical applications of carbon-based nanomaterials.

Overall, the collected articles in this Focus Issue on nanomaterials for biomedical applications provide an important reference material for a broad audience.

The guest editors would like to express their appreciation to the authors who submitted articles. We are also grateful to all the reviewers for their high-quality work, which certainly provided many valuable suggestions to all authors. Finally, we strongly hope that this Focus Issue becomes a stepping-stone toward further progresses in the field of nanomaterials for biomedical applications.

On the cover

Nanoparticles used in medicine.