

Special Issue on  
**Advanced Dental Biomaterials and Therapeutic Substances**

## CALL FOR PAPERS

While classic dentistry is used to be predominantly restorative, modern approaches emphasize the role of biomaterials in a more regenerative fashion. The continuous development of additive technologies enables biomaterials to be used for tissue engineering, with an improved ability to interact with different substrates. Thus, traditional characterization of a dental material by its mechanical and chemical properties blends with biological aspects such as bioactivity or regeneration by using stem cells. On the other hand, classic dental materials, such as cements, polymers, and ceramics, evolve constantly into updated formulations with augmented uses in various clinical applications. Such examples would be composite resins, with novelties regarding matrix, filling type, nanoparticles, or fiber-reinforcement being quite common or hybrid-ceramics. At the same time, modern software-based manufacturing technologies, such as 3D printing and CAD/CAM methods, are becoming mainstream in many settings. Various characterization techniques are nowadays routinely used in dental biomaterials, such as spectroscopy and different imaging (micro-CT; SEM) and analytical (HPLC; Gas Chromatography) techniques. Special coatings such as calcium phosphates, originally pioneered in implantology, are more widely used with recent applications in orthodontics and restorative dentistry.

When coming to implants, design, surface morphology, porosity, and mechanical properties as well as biological performance have to be evaluated in order to constantly optimize their integration characteristics. Therapeutic molecules and carriers take part in the healing processes related to endodontium and periodontium. In endodontics modern materials such as mineral trioxide aggregates and modern devices are the key to a successful treatment. Drug/device combinations play an important role in both soft and hard tissue regeneration. New regenerative materials, formed by nanostructured and engineered scaffolds, provide the human organism with the necessary elements and the microenvironment for bone regeneration, successfully used in the treatment of periodontitis. Bone augmentation biomaterials for surgical protocols and regenerative procedures have been continuously evolving; new and improved grafts and molecules with biomimetic and biological properties play an important role in the functional rehabilitation of bone defects. The use of biomimetic coatings and the most recently emerged nanotechnologies may also significantly improve the future performance of dental materials.

The aim of this special issue is to share the work of worldwide researchers in the interdisciplinary field of dental biomaterials and therapeutic substances and to suggest possible future research directions. Research articles and review papers are invited, covering all aspects of dental materials, from investigations into material characterization to in vitro and in vivo testing for the assessment of biological performance of advanced biomaterials and implants, with particular interest in work describing current research trends and future perspectives on the matter.

Potential topics include but are not limited to the following:

- ▶ Resin-based dental materials
- ▶ Dental ceramics
- ▶ Dental adhesion
- ▶ Biocompatibility and toxicity of dental materials
- ▶ Endodontic materials
- ▶ Luting cements
- ▶ Impression materials
- ▶ Dental implants and coatings
- ▶ Biomimetic materials
- ▶ Nanotechnology and related materials
- ▶ Tissue engineering devices and scaffolds
- ▶ Processing techniques

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/amse/adbt/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

**Lead Guest Editor**

Lavinia C. Ardelean, “Victor Babes”  
University of Medicine and Pharmacy,  
Timisoara, Romania  
[lavinia\\_ardelean@umft.ro](mailto:lavinia_ardelean@umft.ro)

**Guest Editors**

Tamer Tüzüner, Karadeniz Technical  
University, Trabzon, Turkey  
[tamertuzuner@ktu.edu.tr](mailto:tamertuzuner@ktu.edu.tr)

Jung-Hwan Lee, Dankook University,  
Yongin, Republic of Korea  
[ducious@dankook.ac.kr](mailto:ducious@dankook.ac.kr)

Elif B. Tuna-Ince, Istanbul University,  
Istanbul, Turkey  
[ebtuna@istanbul.edu.tr](mailto:ebtuna@istanbul.edu.tr)

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