

Special Issue

Medical Metal Surface Functionalization Construction

Message from the Guest Editor

Medical metal surface functionalization aims to tailor surface characteristics, which are directly correlated with bioactivity, tissue integration, and cellular responses. Creating medical metal surfaces with these controlled properties presents several challenges. Similarly, precise porosity control requires advanced manufacturing techniques, which often involve complex and costly processes. Chemical composition customization, while advantageous, raises issues with long-term stability, as coatings can degrade or leach harmful ions. Another challenge lies in ensuring that functionalized surfaces maintain their mechanical integrity without compromising the durability of the device. Thus, this Special Issue aims to present the most recent experimental developments, as well as methods for modeling and simulating processes, aiming to improve a medical metal surface. In this context, advances in nanotechnology, surface modification methods, and metal 3D printers are paving the way for safer, more effective medical devices that meet the complex requirements of clinical applications.

Guest Editor

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Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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