

Special Issue

Sustainable Development in Functional Biomaterials: Coating Methods and Optimization

Message from the Guest Editors

This Special Issue focuses on the design and fabrication of functional biomaterials, as well as the optimization of their coating processes. Over the past two decades, there has been a growing demand for eco-friendly, non-toxic, biocompatible and biodegradable materials. Biopolymers have emerged due to their biodegradability and unique properties. The application of polymeric coatings to natural and synthetic biopolymer substrates can enhance properties such as antibacterial activity, gas barrier performance, mechanical strength, and thermal stability, while also mitigating material degradation. However, challenges such as coating defects, coating non-uniformity, nanoparticle agglomeration, weak interlayer adhesion, and delamination can lead to inconsistencies in material properties. Consequently, optimization strategies, including green manufacturing, are essential in the refinement of process parameters and the minimization of material waste. Additionally, the digitization of process parameters could ensure the precise delineation of optimal coating conditions, paving the way for material innovations, improved product quality, and technological breakthroughs.

Guest Editors

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Editor-in-Chief

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