Special Issue

Bioengineered Contact Lenses: Therapeutics, Biosensing, and Smart Interfaces

Message from the Guest Editor

Contact lenses continue to play a vital role in vision correction, with ongoing advancements in design, materials, and manufacturing enhancing their performance and accessibility. The convergence of bioengineering, smart materials, and microsystems is revolutionizing contact lenses, advancing them from passive optical devices to multifunctional biomedical platforms. This Special Issue highlights cutting-edge research at the intersection of ocular bioengineering and clinical translation, with a focus on the following:

- Biomaterial Innovation: Stimuli-responsive polymers, nanostructured coatings, and 3D-printed hydrogels with enhanced oxygen permeability, hydration dynamics, and antimicrobial properties;
- Biointegrated Systems: Microfabricated sensors for the real-time monitoring of biomarkers and wireless ocular health diagnostics;
- Therapeutic Delivery: Engineered drug-eluting lenses for the targeted treatment of anterior segment diseases, leveraging controlled-release mechanisms and biocompatibility paradigms;
- Biointerface Engineering: Corneal lens biomechanics, tear film interactions, and computational models (AI/ML) to optimize ocular surface compatibility and safety.

Guest Editor

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Message from the Editor-in-Chief

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Editor-in-Chief

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