



**Theoretical and Physical Chemistry Institute
National Hellenic Research Foundation
Vass. Constantinou 48, Athens**

ONLINE LECTURE

**“Functional biomaterials based on micro and
nanotechnology for tissue engineering and regenerative
medicine”**

Dr. Maria Kitsara

**Lead Research Manager on Biomedical Applications
BioG3D – New 3D printing technologies
Lavrio, Greece**

Thursday, July 1, 2021, 12:00

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Functional biomaterials based on micro and nanotechnology for tissue engineering and regenerative medicine

Maria Kitsara
Lead Research Manager – Biomedical applications

*BioG3D – New 3D printing technologies,
Lavrion Technological and Cultural Park, Lavrio, Greece*

Synergy between micro-nanotechnology and tissue engineering can lead to new tools for health improvement. Engineered scaffolds have been widely used as structural and functional supports on which cells are seeded for the generation of cell therapy products and for disease modelling. An important aspect of a successful scaffold is to mimic the fibrillar structure of extracellular matrix (ECM), which provides essential guidance for cell organization, survival and function. Recent advances in nanotechnology have greatly improved our capacities to mimic the ECM. Among them, electrospinning is a widely used technique for the development of nanofibrous scaffolds, it is easy to process and cost-effective. For example, the combination of electrospinning with electroactive polymeric materials, can further enhance scaffolds electro-mechanical properties and provide reinforced physical stimuli. In this talk, both natural and synthetic polymeric materials will be presented as promising candidates for tissue engineering, as well as surface modification approaches for improving cell attachment. Emphasis will be devoted to cardiac disease modelling and regenerative medicine. Moreover, an overview of fabrication methods for the creation of 3D bio-scaffolds will be presented.