ARISTOTLE UNIVERSITY OF THESSALONIKI

RESEARCH COMMITTEE

(NANO) BIOPOLYMERS AND HYDROGELS ENRICHED WITH METAL-ORGANIC HYBRID MATERIALS FOR PRODUCTION OF 3D TISSUE SCAFFOLDS

This work pertains to the development of composite (nano)biopolymers (PLA,PCL) and hydrogels, enriched with water-soluble-bioavailable metal-organic hybrids (Co,Ni,Zn,Cu,Ti) at specific concentrations, and/or cell-tissue growth factors, to promote construction of 3D-scaffolds for well-configured 3D-cultures. Hybrid filaments with specific physicochemical-mechanical-biological properties are fabricated for use in FDM 3D-Printers, to produce antibacterial-bacteriostatic action products in aqueous media. Enrichment with select metal-organics promotes tissue growth-development in bio-applications. Successful implementation in Biomedicine rides on development-fabrication-adaptation of special printing heads and 3D-printers for each specified tissue-scaffold.

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Members of the Lab/Research Team

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LABORATORY OF INORGANIC CHEMISTRY AND ADVANCED MATERIALS

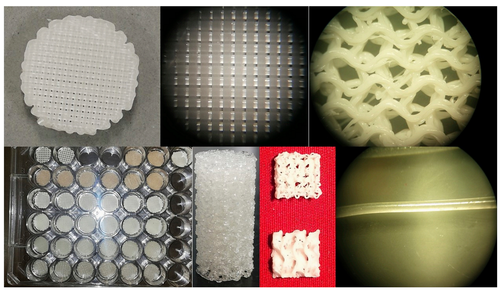


Figure 1: A different structure of polymeric Scaffolds fabricated in our laboratory

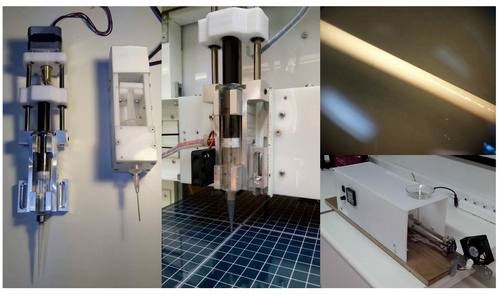
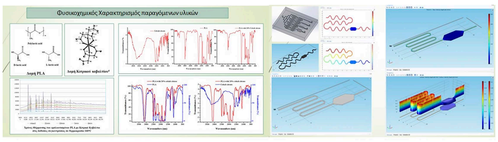


Figure 4: Different types of bio-heads – Horizontal filament extruder

Figure 2: Filaments, gel scaffolds and cell culture experiment



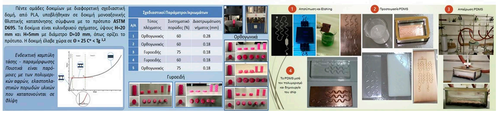


Figure 5: Materials characterization – Microfluidics construction

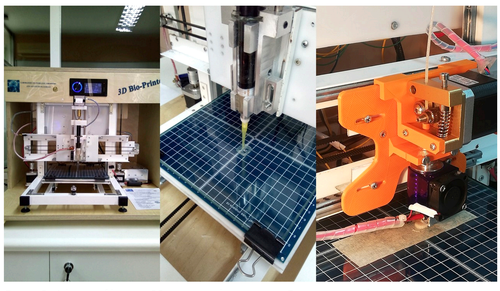


Figure 3: Adapting filament 3D printer to bio-printer – Easy mounting heads

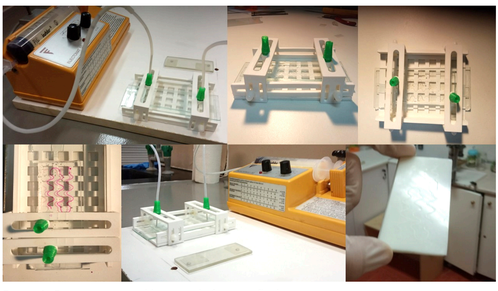


Figure 6: Equipment assembly example for microfluidics experients

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