A Novel 3D-Bioprinting Technology Of Orderly Extruded Multi-Materials Via Photopolymerization

Tech ID: 34227 / UC Case 2023-772-0

BRIEF DESCRIPTION

POEM is a groundbreaking 3D bioprinting technology enabling high-resolution, multi-material, and cell-laden structure fabrication with enhanced cell viability.

FULL DESCRIPTION

The POEM technology is a novel digital light processing (DLP)-based 3D-bioprinting technique that overcomes existing limitations by enabling the rapid and precise fabrication of multi-layer, multi-material structures. It uses photo-cross-linkable hydrogels extruded in a layer-by-layer manner, followed by high-resolution patterning, to create complex, cell-laden tissues and organs with high cell viability and metabolic activity.

SUGGESTED USES

- Fabrication of physiologically relevant cell-laden structures for medical research and therapeutic applications.
- Construction of complex heterogeneous tissues/organs for transplantation and regenerative medicine.
- Development of in vitro models for pharmaceutical testing and disease modeling.

ADVANTAGES

- Enables the fabrication of complex heterogeneous tissues/organs.
- High cell viability (≈80%) and metabolic activity for extended periods.
- Eliminates cross-contamination and cleaning processes required by other techniques.
- Supports multi-material and multi-layer printing, mimicking in vivo tissue architectures.
- Uses a support bath to prevent collision and structural deformations during printing.

PATENT STATUS

Patent Pending

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OTHER INFORMATION

CATEGORIZED AS

- **Biotechnology**
  - Health
  - Other
- **Materials & Chemicals**
  - Biological
- **Medical**
  - Research Tools
  - Therapeutics
- **Research Tools**
  - Other
- **Engineering**
  - Other

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