



Electrospinning Collector for the Production of Three-Dimensional Electrospun Products

Unmet Need: Electrospun matrices of various biopolymers are typically flat in shape (2D), and have been shown to be useful for drug delivery and wound recovery. Three dimensional shapes would have further utility, as these shapes could mimic the extracellular matrices of organ tissue scaffolds. While some 3D shapes have been reported, these required significant post-production processing, and have not been fully or effectively reproducible particularly with respect to poor size and overall morphology. Thus, there is a need for a method of producing 3D electrospun constructs that does not require post-processing or alter existing architecture of the electrospun construct or scaffold.

Solution: The US Navy, through the Navy Medical Research Unit - San Antonio, has developed technologies for the production of 3D matrices. The present innovations include two methodologies that reliably reproduce 3D structures. The first involves utilizing a collector that promotes the distribution of the electrical grounded force, where the electrical ground rotates between probes embedded in a hollow 3-D non-conducting collector. The second utilizes an electrical ground that is evenly distributed across a gridded mesh covering a hollow non-conductive collector.

Stage of Development: The technologies are in the early stages of development.

IP or IP Status: This technology is embodied in US Patent Application 2023/0002935 ([US Patent Application 2023/0002935](#)).

- **Command:** NAMRU - San Antonio
- **Categories:** Research Tools
- **License Status:** Available collaborations and licensing
- **Date Published:** April 30, 2024
- **Date Updated:** N/A
- **Invention No.:** 113068US02
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