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LaserPack: A burstable liquid storage package for biological material storage and valve substitution

Tech ID: 33239 / UC Case 2021-767-0

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
- » Devices
- » Diagnostics
- » Other

RELATED CASES

2021-767-0

BRIEF DESCRIPTION

The LaserPack is an easily manufacturable solution for liquid storage in point-of-care devices that is low-cost, has dimensional variability, and is reproducible, while also serving as a valve for liquid access in microfluidic devices. Current liquid storage techniques rely on lyophilization, or freeze-drying, to minimize occupied space, but lyophilization is not applicable to all liquid reagents nor is it optimal for some biological components of point-of-care devices.

SUGGESTED USES

- Aqueous solution storage within centrifugal disc-based point-of-care devices

FEATURES/BENEFITS

- Key advantages in dimensional variability, cost, reproducibility, and compatibility with automation
- Would not require lyophilization
- Uses less material by combining storage and valving

TECHNOLOGY DESCRIPTION

Point-of-care testing (POCT) provides rapid, reliable results that aid in the identification and monitoring of acute infections or chronic disease. Rapid antigen tests for COVID-19 are a recent and relevant example of these tests. POCT devices must be compact for effective distribution and use, thus posing limitations on space. In an effort to save space, many POCT device developers have turned to lyophilization, or freeze-drying, of liquids required for the test. Unfortunately, this requires the addition of solvents prior to POCT use, and not all liquids can be lyophilized.

Researchers at UC Irvine have created a compact and flexible liquid storage device called LaserPack. It is impermeable to liquids and solids, and it is resistant to force-induced tearing, but the liquid can be accessed using a laser. Additionally, it doubles up as a valve for the POCT device that it would be implemented in, allowing for further space-saving utility. Furthermore, LaserPack is made using low-cost and widely available black mylar material.

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2022/221772	10/20/2022	2021-767

Additional Patent Pending

STATE OF DEVELOPMENT

Patent published, prototype in development

Patent No.: US2022/0331802A1 (Oct. 20, 2022)

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Fabricating Crystallinity Unique Carbon Nanowires (~5nm) with Ultrahigh Electrical Conductivity
- ▶ FlexThrough: a recirculation mechanism for point of care, centrifugal disc-based microfluidic devices
- ▶ Polymer Based High Surface Area Multi-Layered Three-Dimensional Structures
- ▶ Low-Voltage Near-Field Electrospinning Enables Controlled Continuous Patterning of Nanofibers on 2D and 3D Substrates
- ▶ Flexthrough: A Recirculation Mechanism In Point Of Care CD Microfluidic Using Elastic Membrane

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