

# **μMaker for Paper Microfluidics**

## **Introduction**

The modular apparatus can generate user-defined microfluidic pattern on hydrophilic and porous substrate (filter or chromatographic papers). This apparatus acts as a fabrication assistant for conducting paper-based microfluidic assays for biomedical research, environmental monitoring, food quality control and related products. This microfluidic patterning method facilitates the production of multiple copies of paper based microfluidic analytical devices (μPAD) (e.g. a filter paper sheet of 8 inch x 12 inch can be sliced into 30-32 μPADs having a size of 34 mm x 34 mm with a completely filled hydrophobic ink reservoir).

## **Features**

- Paper Substrates: Filter paper or chromatographic paper with appropriate pore size
- Microfluidic pattern: Mass production of customized geometric pattern with hydrophobic-hydrophilic contrast regions
- Minimum channel width of μPAD: 900 to 1300 microns (based on lab experiments)
- Minimum sample volume: 20 microliters
- IPR status: Provisional Indian patent (IN202111032728)

## **Specifications**

- Polymer ink : polycaprolactone/polystyrene
- Filter paper : Whatman filter paper no. 1
- Stamping tool : Aluminium based; EDM manufactured
- Temperature Control : 70-80 °C
- Contact imprinting time : 120 seconds

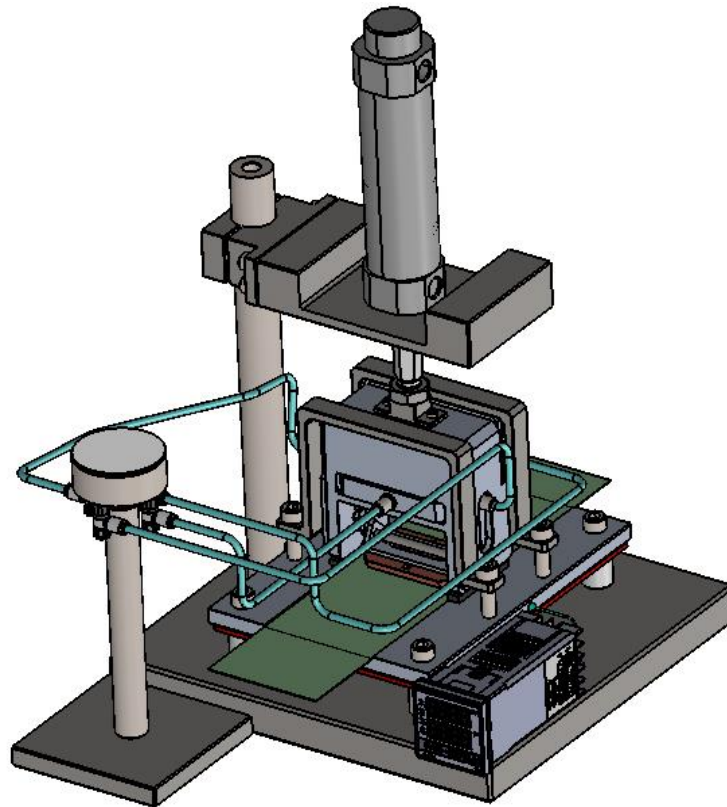
## **Benefits**

- Ease of operation
- Field compliance
- No additional pre or post-process μPAD treatments required
- Modular assembly
- Provision of changeable stamping tool, choice of hydrophobic ink and the type of paper substrate

## Applications

Fabrication assistant for conducting a variety of paper-based microfluidic assays for biomedical research, environmental monitoring, food quality control and related products.

### APPARATUS FOR FABRICATION OF MICROFLUIDIC CHANNELS



### AN EXEMPLARY $\mu$ PAD

