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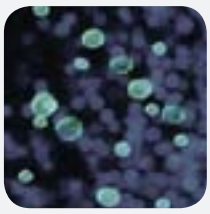
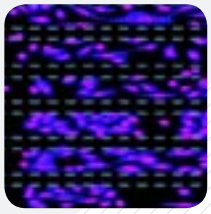
LifeSciences

InnoStamp® 40

"Design your molecular patterns"





Microcontact printing technology dedicated to biology

Empowering Applications

Cell Biology

With microcontact printing, all patterns are feasible up to 100nm. Through deposition of growth factors in nano-patterns, it is possible to control cellular adhesion in order to study cell development, migration, differentiation and even cell polarization in neurons or bacteria....

Biopatterning

The InnoStamp40 can be used to manufacture DNA or protein microarrays. It can deposit between 64 to 250 different biomolecules in one step. The InnoStamp40 is the perfect tool for the manufacturing of biosensors, point-of-care devices and cell based arrays.

Chemistry

Microcontact printing can be used to pattern chemical molecules or can be integrated into a synthesis process. In this case, the InnoStamp40 allows the user to generate catalysis, bifunctional Janus beads, “click” chemistry, pollutants sensors and gaz sensors.

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Nano/Micro Patterning

A fully automated microcontact printing solution

- Maximum resolution of 140 nm
- Customizable patterns in size and shape
- Multiple molecules deposition, molecular networks
- High Precision Printing

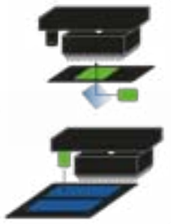
1 Loading zone

- Option 1: Up to 4 rectangular stamps (1” x 3”)
- Option 2: 1 rounded stamp (max. diameter 4”)
- Attachment by magnetic force

2 Inking zone

- Compatible with 96-, 384-well microplates
- Temperature-controlled (from 0° to 50°C)
- Limited evaporation by regulation around dew point
- Time and magnetic field controlled step

3 Alignment zone



- Automatic Alignment by 2 cameras
- Multidirectional: X-Y-Rotation
- Precision: +/- 20 μm

High Resolution Module

- Precision +/- 5 μm

4 Drying zone

- Options: Blower / Nitrogen gas / External source
- Antipollution system

Filtration Module

- Oil and particle filters

5 Printing zone

- 4 microscope slides or a 4”- wafer
(max. surface size: 4” x 4”)
- Homogeneous printing
- Pressure-controlled from 0 to 120 kPa:
related to iron concentration in stamp

Module for Molding

- Substrate heating: up to 120°C
- Liquid pipetting: from 30μL to 1mL

6 Cleaning zone

- Washing step with or without flux
- Acido-basic buffer or ethanol as a solvent

7 Unloading zone

- Same as loading parameters

Easy Automation

Make molecular stamping easy

- Reproducible and uniform process
- From preliminary testing to small industrial series
- Shorter development time due to user-friendly system
- High-precision printing by magnetic force

Versatility

Print any molecule on any surface

- Compatible with a wide range of inks and supports:
Inks: proteins, DNA, antibodies, nanoparticules, silane, thiols...
Surface materials: glass slide, coverslips, polymer membranes, plastic, silicon wafer...
- Biocompatible deposition
- Flexible programming

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Service activities

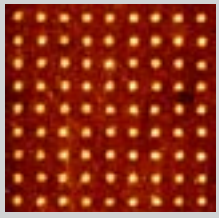
- Custom printing & Stamp manufacturing
- Micropatterned substrate supply
- Process development / R&D
- Licensing

BIOSOFT

Our joint-lab

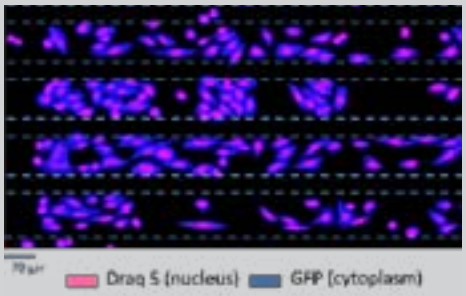
Free trial of the InnoStamp®40 in Laas-CNRS laboratory, Toulouse, France

Challenge us with your application!

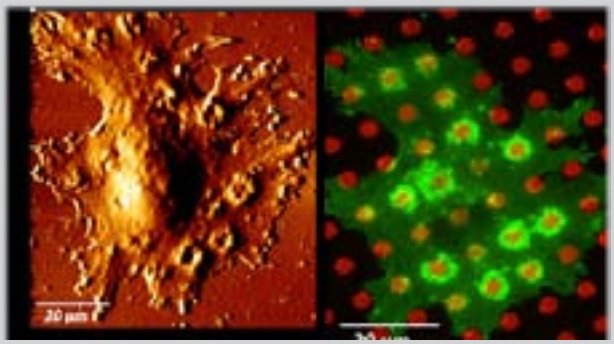


Printing of streptavidin dots of 1 µm diameter and 3 µm pitch.

Printing of laminin rhodamine lines.

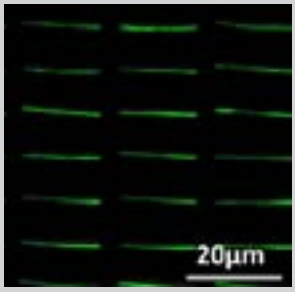


Printing of collagen adhesive lines separated with PLL-g-PEG passivation agent. After incubation, cells stick to the adhesive patterns.



Control of the adhesive sites (green) of a human living macrophage by the patterning of ECM proteins (red) on a glass surface.

Applications



Printing of single actin filaments.

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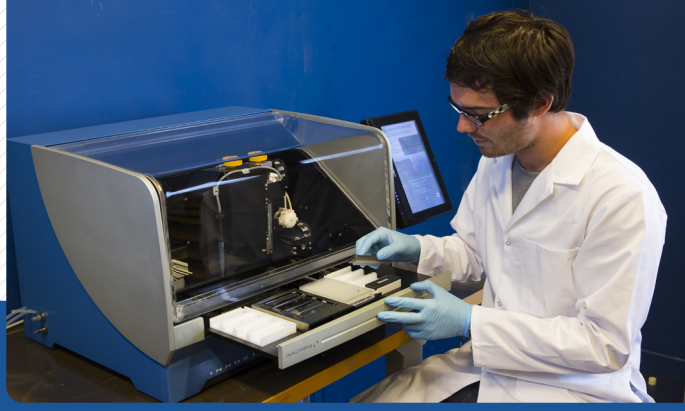

About the stamp

- A Polydimethylsiloxane (PDMS) stamp with upper layer of iron powder
- Low-cost, easy-to-use material
- Highly adjustable stamp for different patterns and sizes
- Pattern resolution up to nanoscale
- Stamps potentially reusable
- Macrostamps for multiplexing

About the InnoStamp® 40

Technical specifications

DRAWER CONFIGURATION	Automated drawer which permits easy exchange of materials A user-selected support configuration: - Support for 4 microscope slides - Support for 4'' inch wafer
COMPATIBLE STAMP	User-selected support configuration: - Rectangular/square (min: 10 x10 mm²; max: 25 x 75 mm²); Capacity: up to 4 of max size - Circular Stamps (max diameter of 4"); Capacity: up to 1 of max size
INKING SUPPORT	Relative to stamps MacroStamp®: Compatible with 384 well plates
TEMPERATURE CONTROLLED INKS	Adjustable from 5°C to 50°C (maximum ambiant temperature of 20°C) Precision of temperature sensor: +/- 0.1°C; Stability +/-1°C for 8h Option to set temperature to dew point
COMPATIBLE INKS*	Nano-objects, chemical substances, thiols, silanes, biomolecules (proteins, DNA and others)
DRYING	Options: Blower / Nitrogen gas / external source
PRINTING SUPPORT*	Depends on the support configuration chosen by the client: for 4 microscope slides / for 4 wafer chips Glass, plastic, silicon wafer and others
PRINTING PARAMETERS	Format, number of substrates and stamping coordinates defined via user interface
ALIGNMENT	Cameras Resolution: 1.6 µm; X-Y-Rotation; (+/- 20 µm); Precision: +/- 20µm Optional: High Resolution alignement up to +/- 5µm
PATTERN SIZE	Depends on design of the stamp and the nature of the molecules being deposited. Classic micro-contact printing: from 230nm to the size of the stamp Molding: from 140nm to the size of the stamp
AMPLITUDE OF CONTACT FORCE	From 0 to 120 kPa depending on the selected magnetic module Force dependent on position of magnets and the iron powder concentration of the stamp
PRINTING DURATION	Adjustable from 1 to 3600s; steps of 1s
PRINTING PRECISION	X: +/- 3µm, Y: +/-3µm, angular: +/-0.5°
OPTIONAL MOLDING	Pipetting tool: From 30µL to 1mL (steps of 30µL and precision of +/-5µL) Support heating: Ambient temperature to 120°C

* Non exhaustive list, please contact us for more information

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