

Roll-to-Roll manufacturing of biosensors

Update on current technology trends



JOANNEUM RESEARCH MATERIALS – the leading research center for advanced materials and manufacturing solutions is your research and development partner for innovative processes and products.

Location: Weiz (Austria)

Director: Paul Hartmann

Hybrid Electronics
and Patterning

Light and Optical
Technologies

Sensors and
Functional Printing

Laser and Plasma
Processing

Smart Connected
Lighting

2 What we do in the field of Biosensors:

„From Nano to Macro“

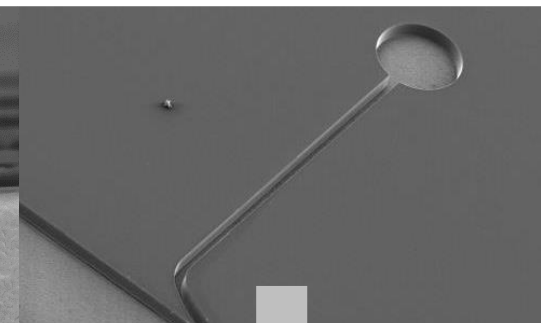
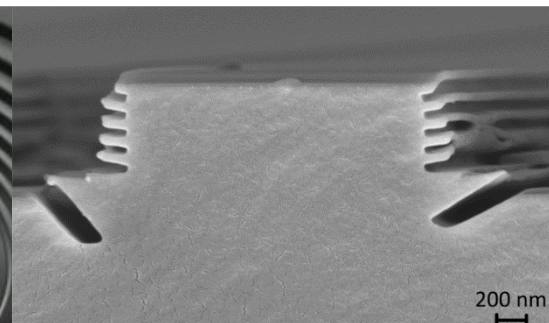
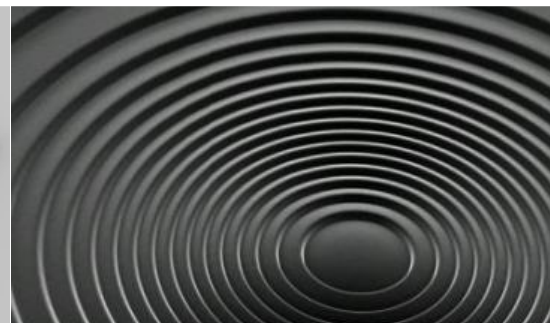
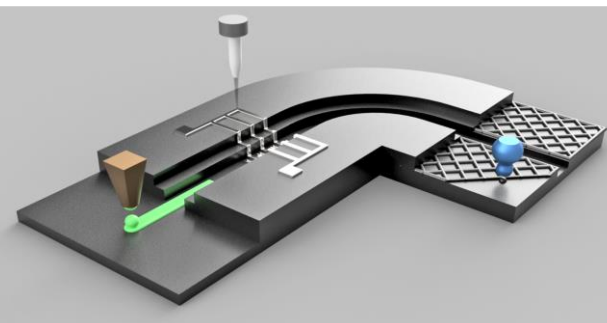
Sensor Chemistry

Functional Printing

Micro-optics

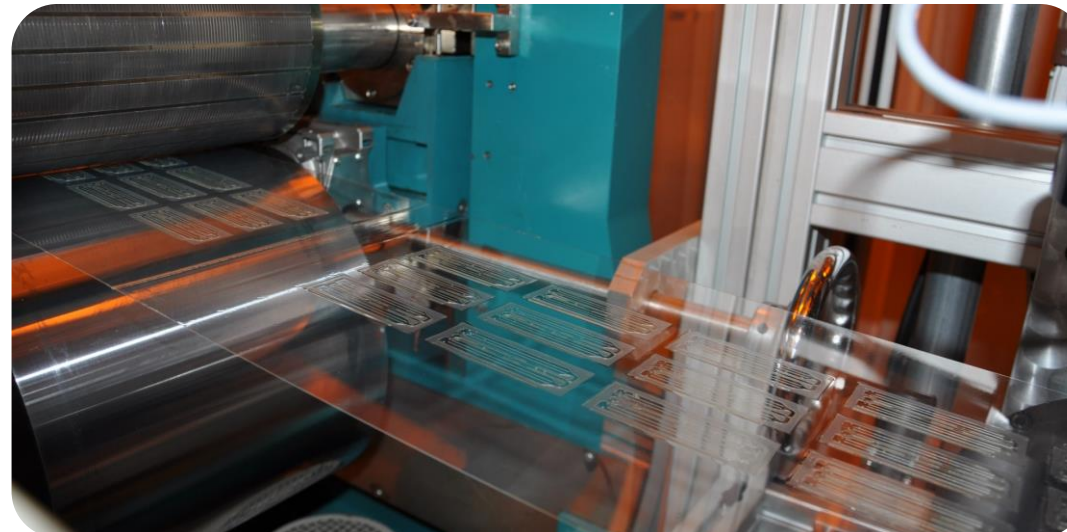
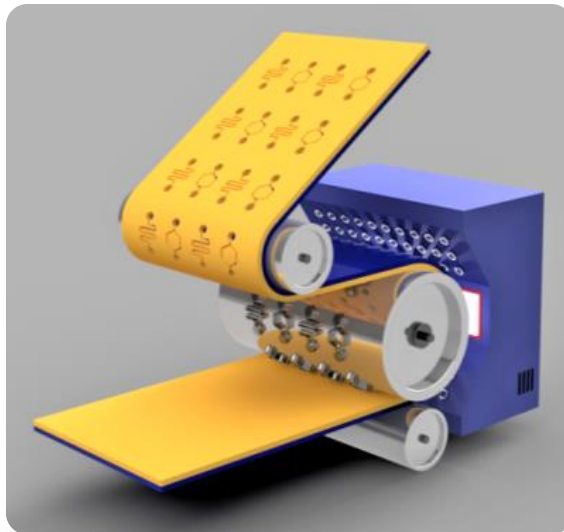
**Materials for
nano-replication**

**Large area
upscaling**



3 **What we offer:** Platform for Roll-to-Roll manufacturing of biosensors

Biosensor structuring on polymer foils in roll format



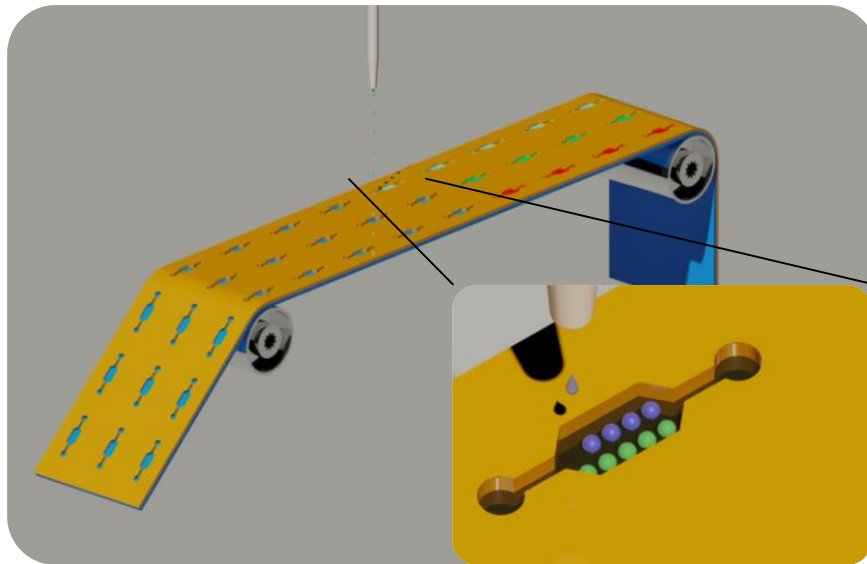
Roll-to-Roll (R2R) imprinting of biosensor components:

Hundreds of chips per minute on large area polymer foils

Parallel processing, **no need for individual chip handling processes**

4 What we offer: Platform for Roll-to-Roll manufacturing of biosensors

Biosensor functionalization on polymer foils in roll format

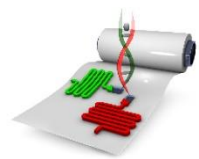


R2R Microarray Spotting:

**Multi-channel printing of
sensor molecules on foil
based microfluidics**

5 What we look for: Implementation of your biosensor application in our technology platform

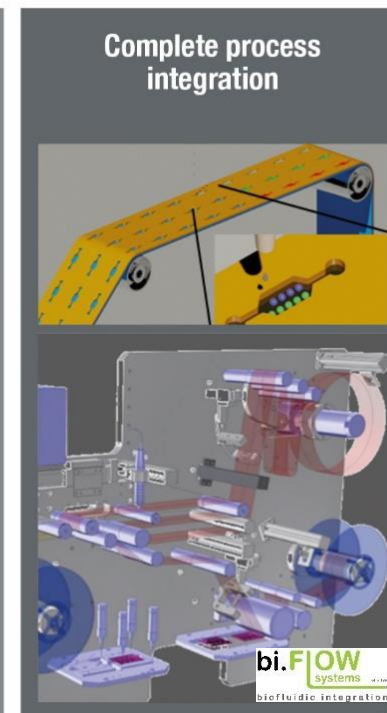
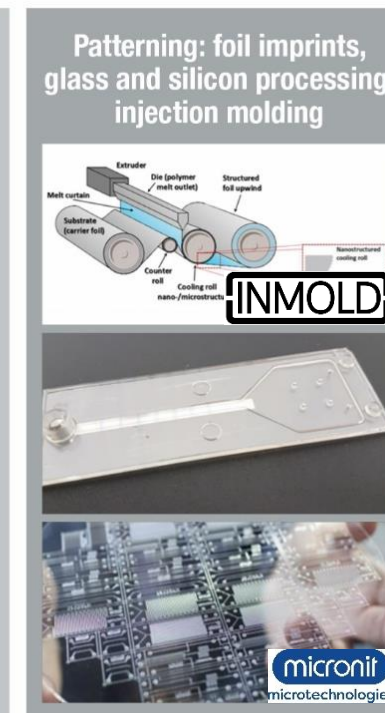
Current EU projects with funding for costumer requested demonstration



NextGenMicrofluidics

coordinated by JOANNEUM RESEARCH

**Open Innovation Test Bed for
upscaling of microfluidic devices**



6 **What we look for:** Implementation of your biosensor application in our technology platform

Current EU projects with funding for costumer requested demonstration

MedPhab

Photonic Medical Devices

coordinated by VTT



Pilot line for advanced photonic medical devices

- Fibre optics
- Surface functionalisation
- Instrumentation
- Opto-electronic integration
- Microfluidics
- Miniaturisation for micromodules and wearables

7 Outlook: High throughput biosensor manufacturing

R2R based high-throughput manufacturing of biosensors (≥ 1 million pieces per year)

Who needs such quantities?

Covid-19 biosensor

- for virus detection (RNA quick test)
- measurement of immune response (Antibody test)

Fast ramp-up with R2R technology

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MedPhab

Photonic Medical Devices



NextGenMicrofluidics



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Thank you for your attention

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