

# Functional Printing at JOANNEUM RESEARCH

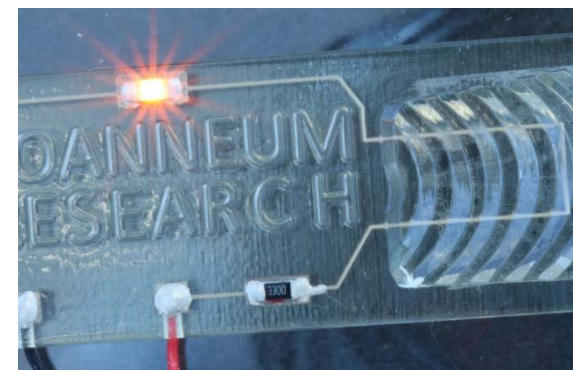
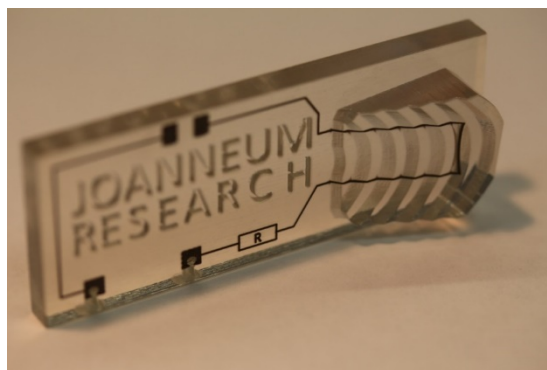
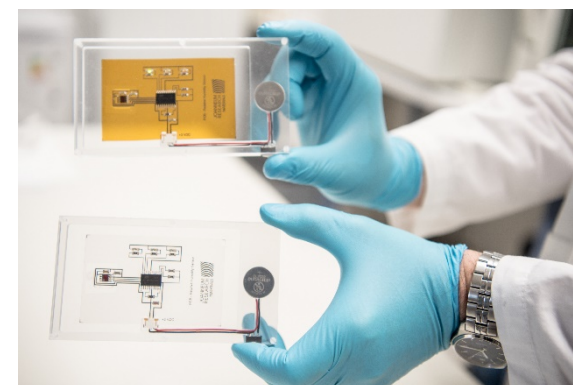
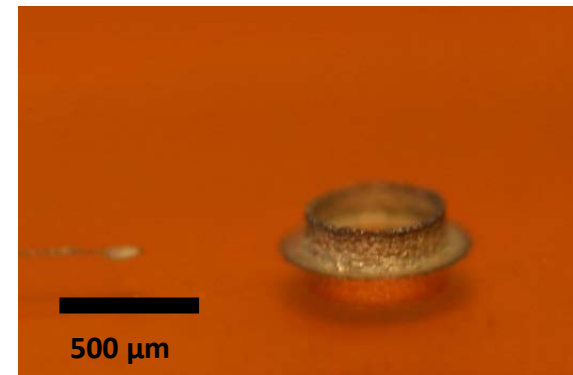


## Service Portfolio

# Functional Printing at JR

## Development fields

- Novel Ink Formulations
- Process Development
- Mix+Match Approaches
- Integration of Novel Technologies
- Prototyping



## Applications

### Hybrid Electronics

Printed Circuitry with SMD components on flexible substrates

### Printed Sensors

Passive T+p  
Active T + RH

### Functional 3D

### Structures

3D Integrated Currcuitry  
Integrated Sensors

# We cover the entire process chain

3

- Definition and Specification
- Ink development
- Substrate Pretreatment
- Print strategy (Aerosoljet, Inkjet, Screen, ...)
- Post-Processing
- Characterisation
- Prototype Fabrication & Small Batch Production



# Our Services along the Process Chain

- Ink (e.g. photoresists, metal inks, insulators, adhesives, etc.)
  - Adaptation of available inks
  - Development and Formulation of Novel Inks
  - Ink Characterisation (Viscosity, Surface Tension,....)
  - Printability Tests
  
- Substrate (e.g. silicon wafer, polymers, glass, ceramics, etc.)
  - Substrate Characterisation (LM, AFM, SEM, Surface Energy,...)
  - Substrate Functionalisation (plasma, ozone, HMDS treatment,...)
  - UV-Nano-Imprint Lithography (also in a roll-2-roll version for flexible substrates)

# Our Services along the Process Chain

5

- Development of Single or Mix&Match Approach Printing Processes (e.g. for photoresist coatings, circuitry, antenna structures, electrodes, sensors, etc.)
  - **Inkjet**
  - Aerosoljet
  - Screen printing
  - Solenoid Valve
  - ESJET (Electrostatic Jet Printing)
  - Flexography
  - Customised Hardware Integration/Adaptation for PIXDRO LP50 system (e.g. Solenoid Valve, ESJET, MicroFab Single Nozzle, etc....)

# Our Services along the Process Chain

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6

- Printing Process Development targeted to the customer's applications:
  - Printability Studies
  - Printhead Evaluation
  - Ink Evaluation
  - Waveform Optimisation
  - Dropwatcher Experiments
  - Printing Strategy – Development and Optimisation

# Our Services along the Process Chain

## ■ Post Processing

- Thermal Treatment (Oven, Vacuum oven, hot plate)
- Photonic Curing (UV, IR laser)
- Optimisation of Curing Parameters
- Evaluation of Substrate Compatibility

## ■ Characterisation

- Fluorescence microscopy
- AFM
- SEM
- Conductivity Tests
- Stability Tests
- Etc.

# Contact

8

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