



In-House Rapid PCB Prototyping

Tooltronics

LPKF
Laser & Electronics

E&A
ELECTRONICS' APPLICATIONS 23



26 T/M 28
SEPTEMBER '23
JAARBEURS UTRECHT

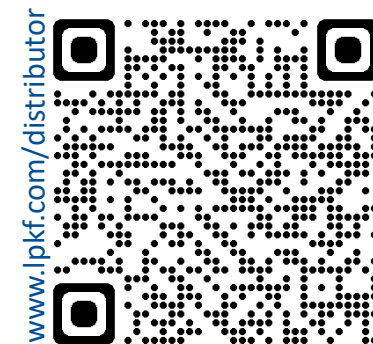
Agenda

- Who is LPKF
- Advantages of In-House Prototyping
- Advantages of Prototyping by Laser
- How does the Laser Process work
- Application Examples

Who is LPKF?

Mechanical engineering company with headquarters in Garbsen near Hanover, Germany

- Founded in 1976
- More than 700 employees worldwide
- More than 50 offices and distributors
- 10% of revenue invested in R&D
- Certified according to ISO 9001:2015



Advantages of In-House Prototyping

- **Flexibility**

It's your decision when you need a Prototype PCB, no internal purchasing process!

- **Independence**

Never again waiting time for the Board House!

- **Creativity**

Be the master of your own ideas!

- **Confidentiality**

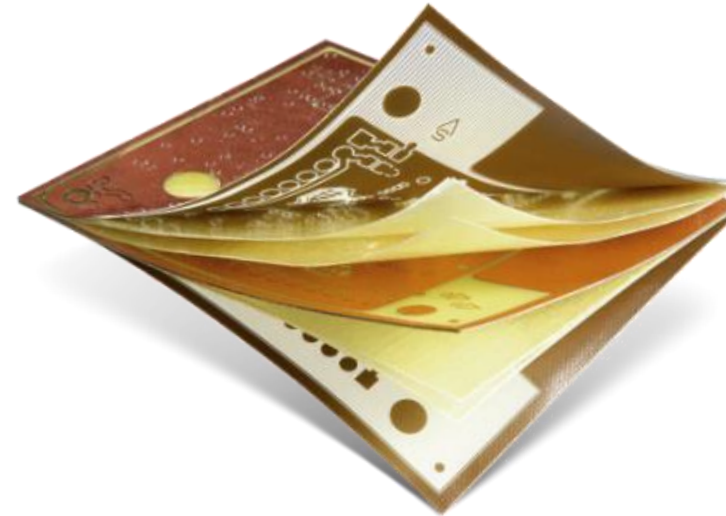
No need to share confidential data!

- **Mass production quality**

Same substrate materials and metallic layers!

- **Environmentally friendly**

Chemical free process!



Advantages of Prototyping by Laser

- **Broad capabilities of material processing**

Ceramics, LTCC, Rogers, flex, glass, solder mask removal,...

- **High quality & sharpness of structures**

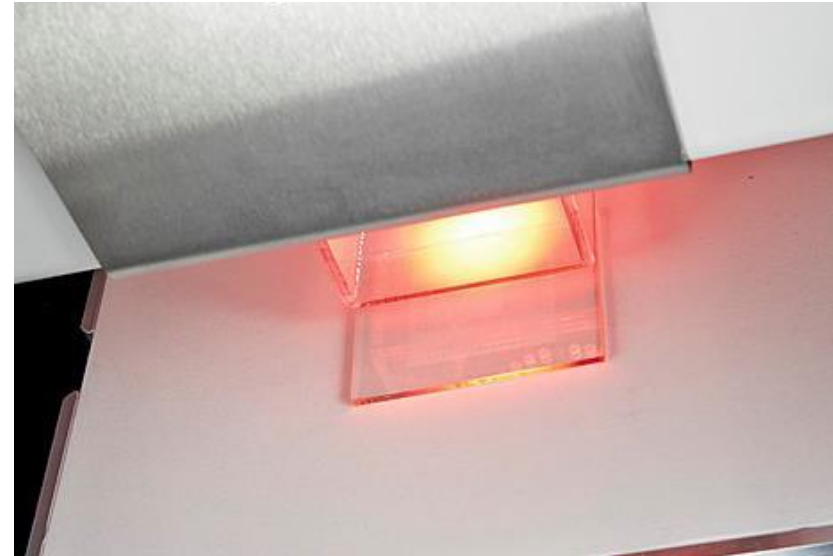
Especially for RF applications

- **Smaller Line and Space**

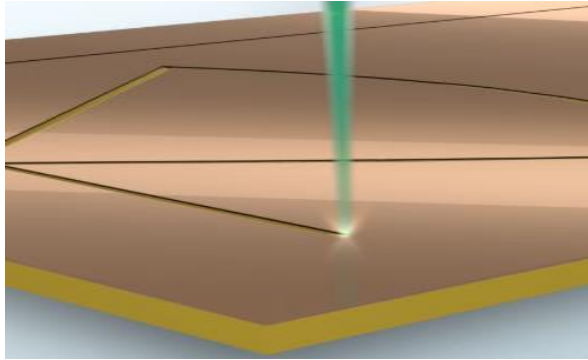
Below 100 μm track width and 100 μm gap width

- **Flexibility, Quick, Same as Mass Pro**

Do it whenever you want with immediate results

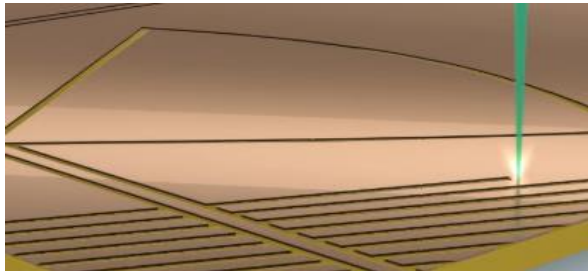


How does the laser process work



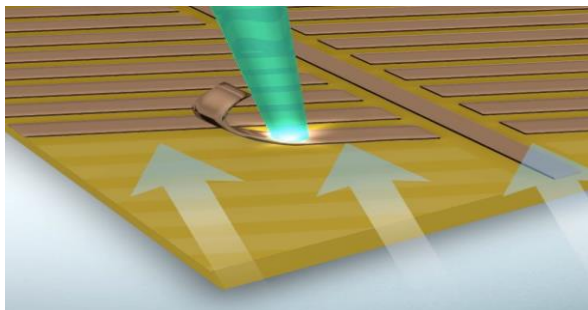
First process step: **Contour**

- The copper surface is cut by the laser beam following the conductive tracks in the layout



Second process step: **Hatch**

- In the areas where the copper must be removed the laser beam cuts the surface in 160µm thick copper stripes



Third process step: **Heat**

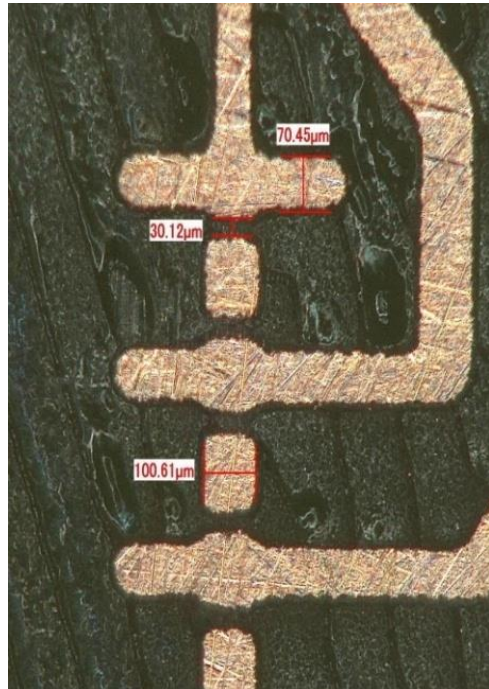
- The copper strips are heated up by the defocused laser beam. The adhesion between substrate and copper decreases and the air knife removes the loosen copper stripes. The vacuum cleaner absorbs them from the substrate

How does the laser process work

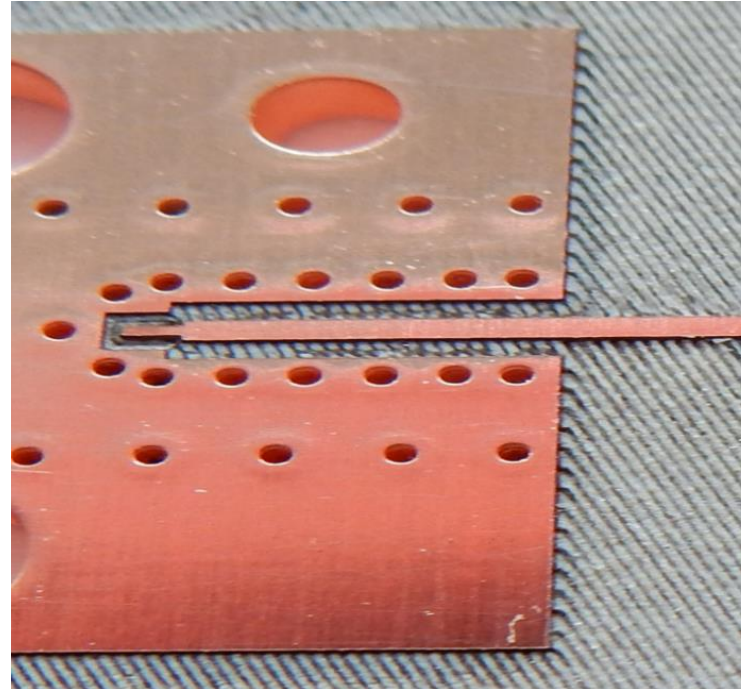


Application Examples

Structuring FR4 with
CU surface 5 - 35 μm

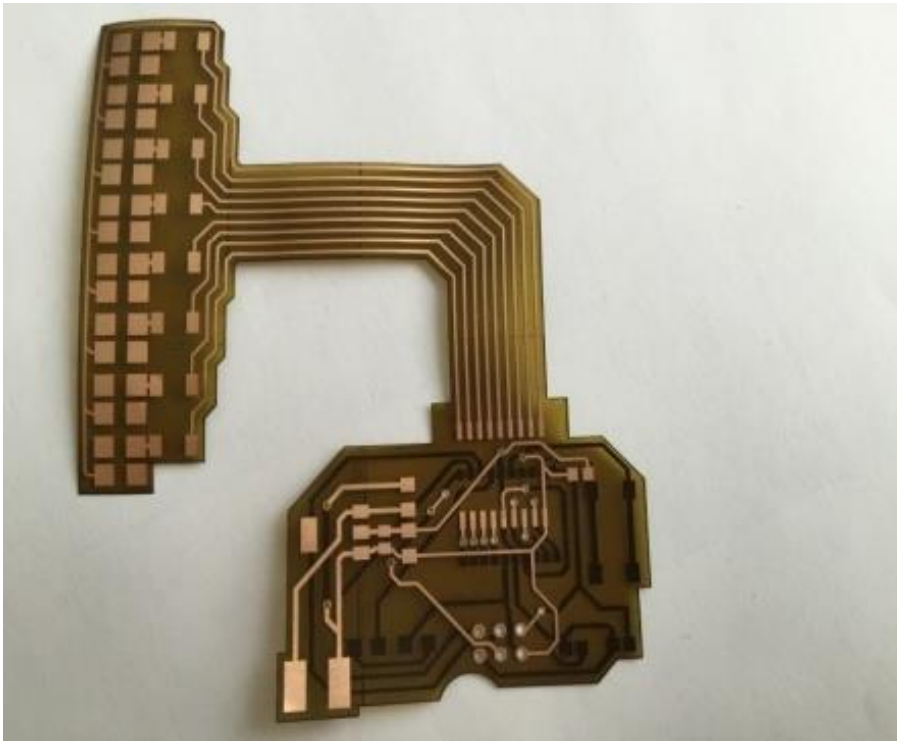


Structuring RO3003 with
electroplated CU 20 μm

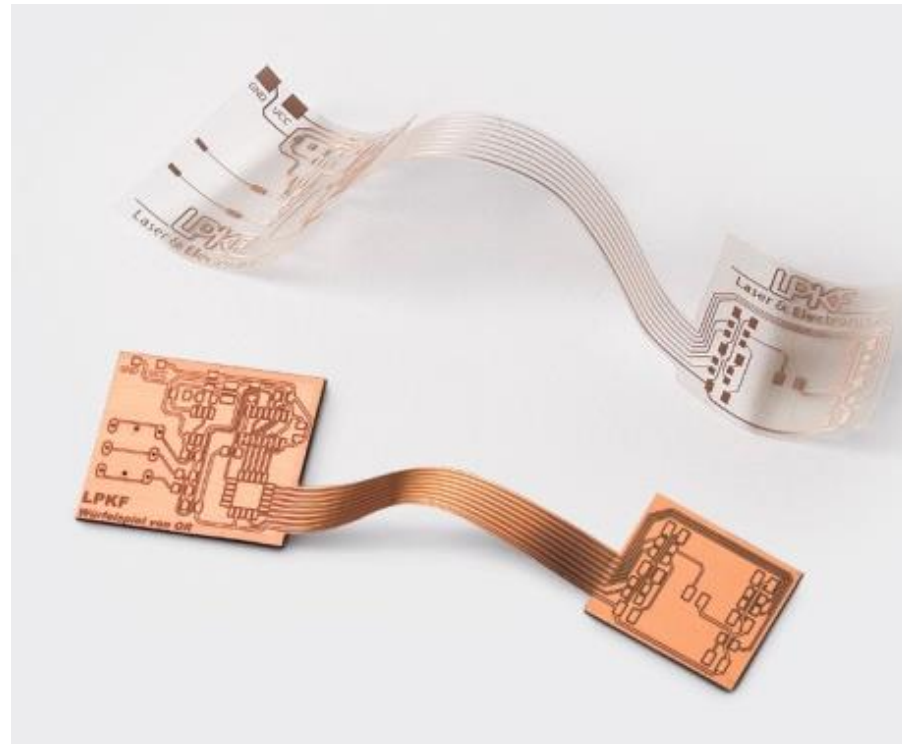


Application Examples

Structuring and cutting double sided
Pyralum[®] TK with CU surface 18 μ m



Structuring and cutting single sided FR4
with CU surface 18 μ m
e.g. for multilayer production

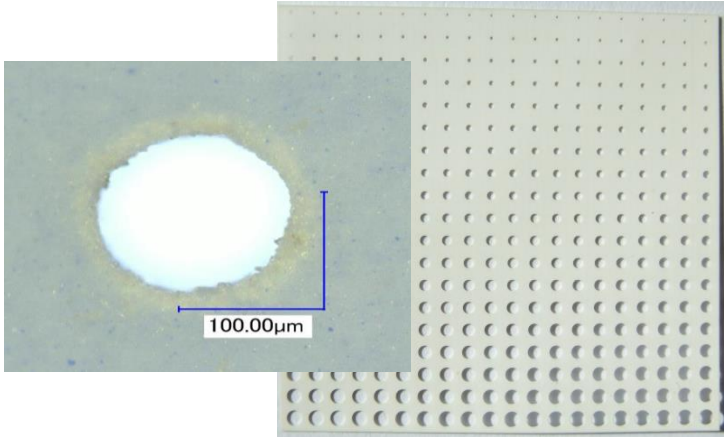
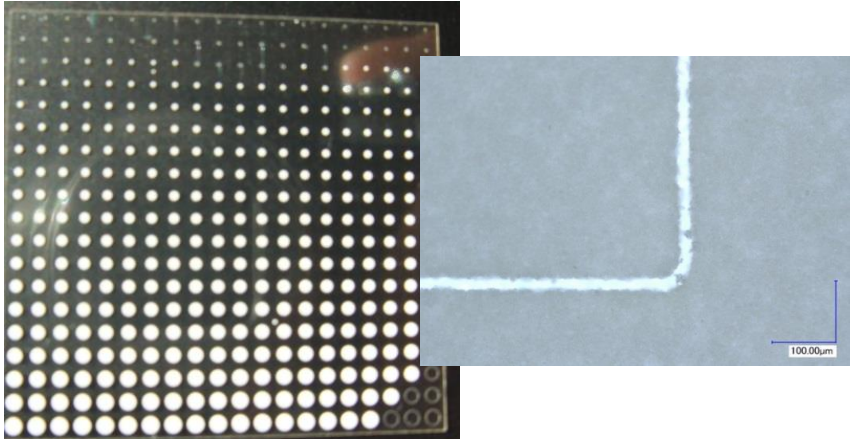


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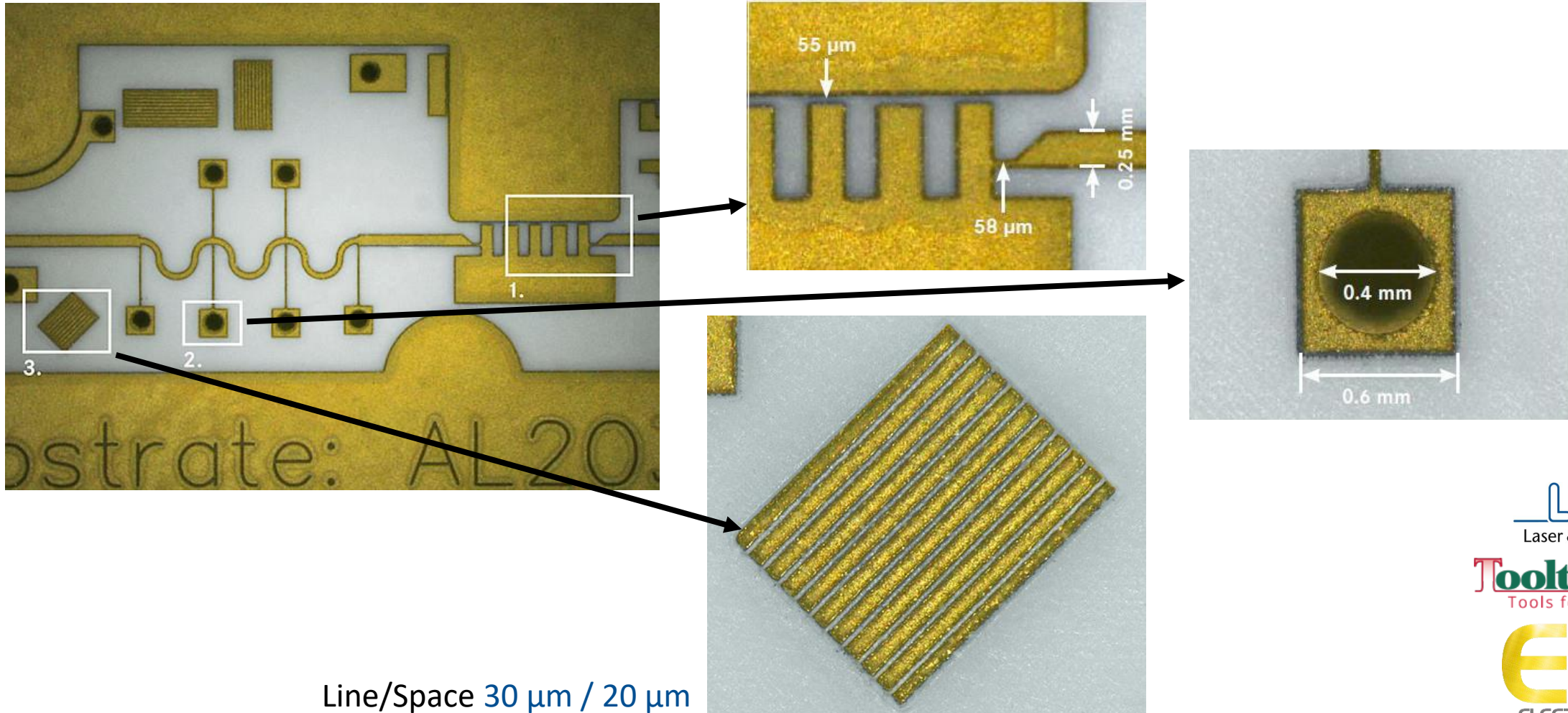
Application Examples

Structuring, drilling and cutting of LTCC



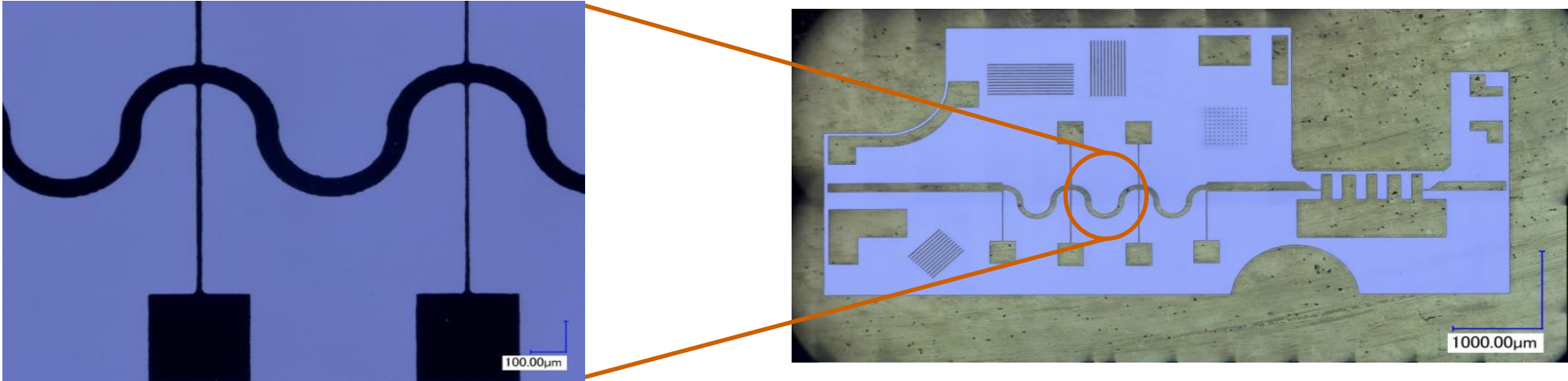
Application Examples

Structuring and cutting of fired ceramics e.g. Al₂O₃ with different metal surfaces



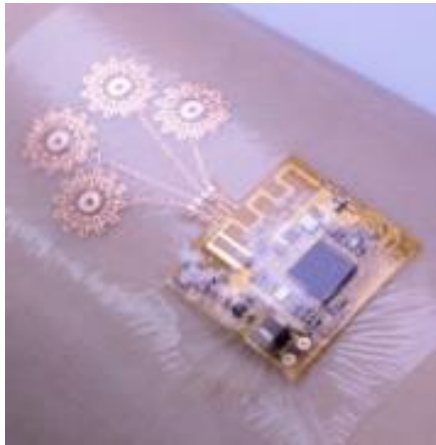
Application Examples

Structuring of chrome mask on glass

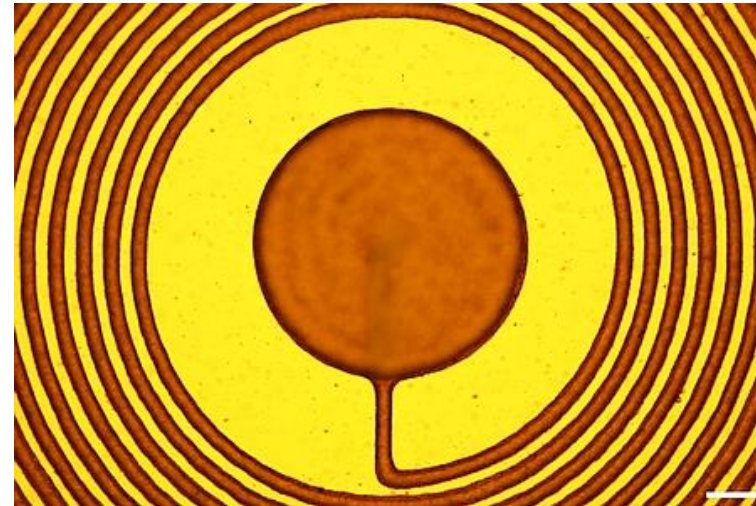


Application Examples

Structuring stretchable foils, such as wearables / medical sensors



Kapton for microfluidics, stencils and cover-layers



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Thank you for your attention

Visit us at Productieplein [Booth 7F050](#)

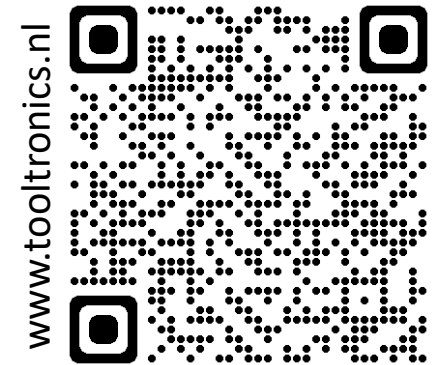
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