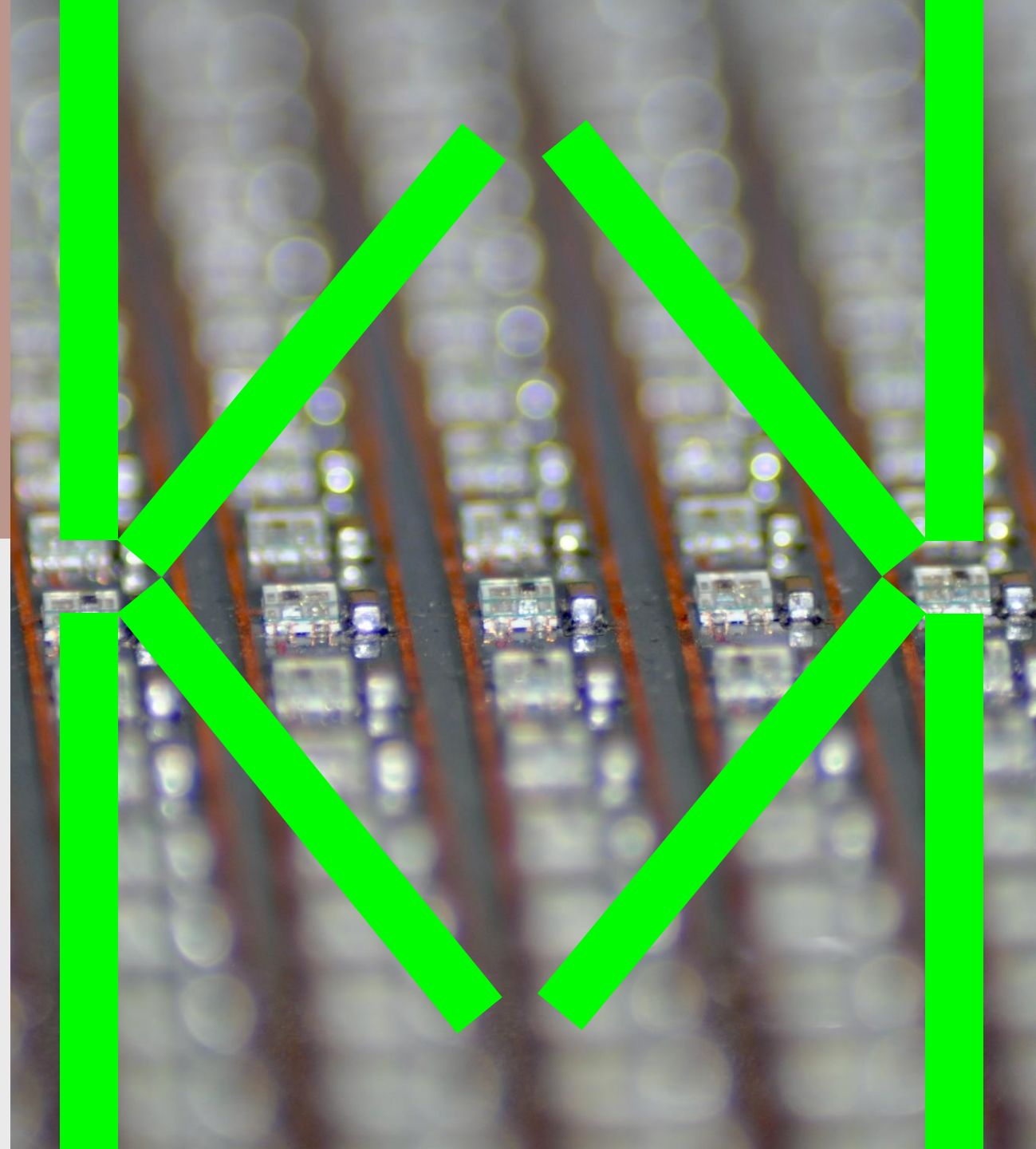


# AKONEER

EPIC technology meeting 2022 11 14

High resolution  
electronics  
printing on glass,  
ceramics and  
polymers




- AKONEER intro
- Current Technologies
- SSAIL\* technology
- New Applications

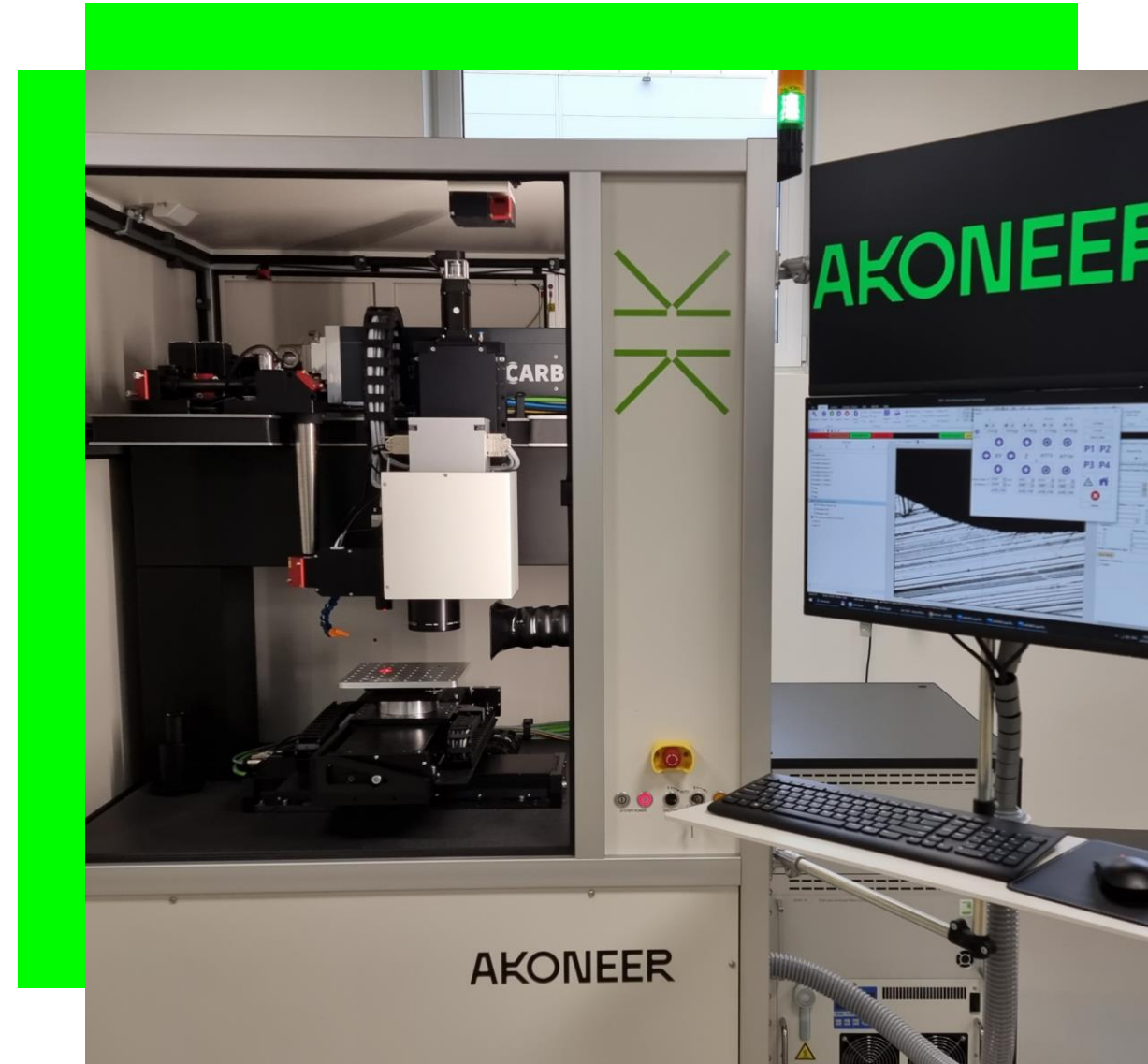
\*Selective Surface Activation  
Induced by Laser



## Laser micromachining systems

- Flexible and easy to use laser tools
- Application development in-house and in cooperation with local partners
- Focusing on ps/fs applications
- Each tool is customized for an application
- 12 years of experience in laser machines

— Formerly known as  **elas**  
LASER SOLUTIONS FOR SCIENCE & INDUSTRY





# AKONEER INTRO

# AKONEER

Startup with 12 years of experience

- New investors
- Rebranding
- More people, more space

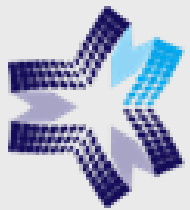
- Laser micromachining systems
- SSAIL
- Si, SiC, PCD, 3D Texturing



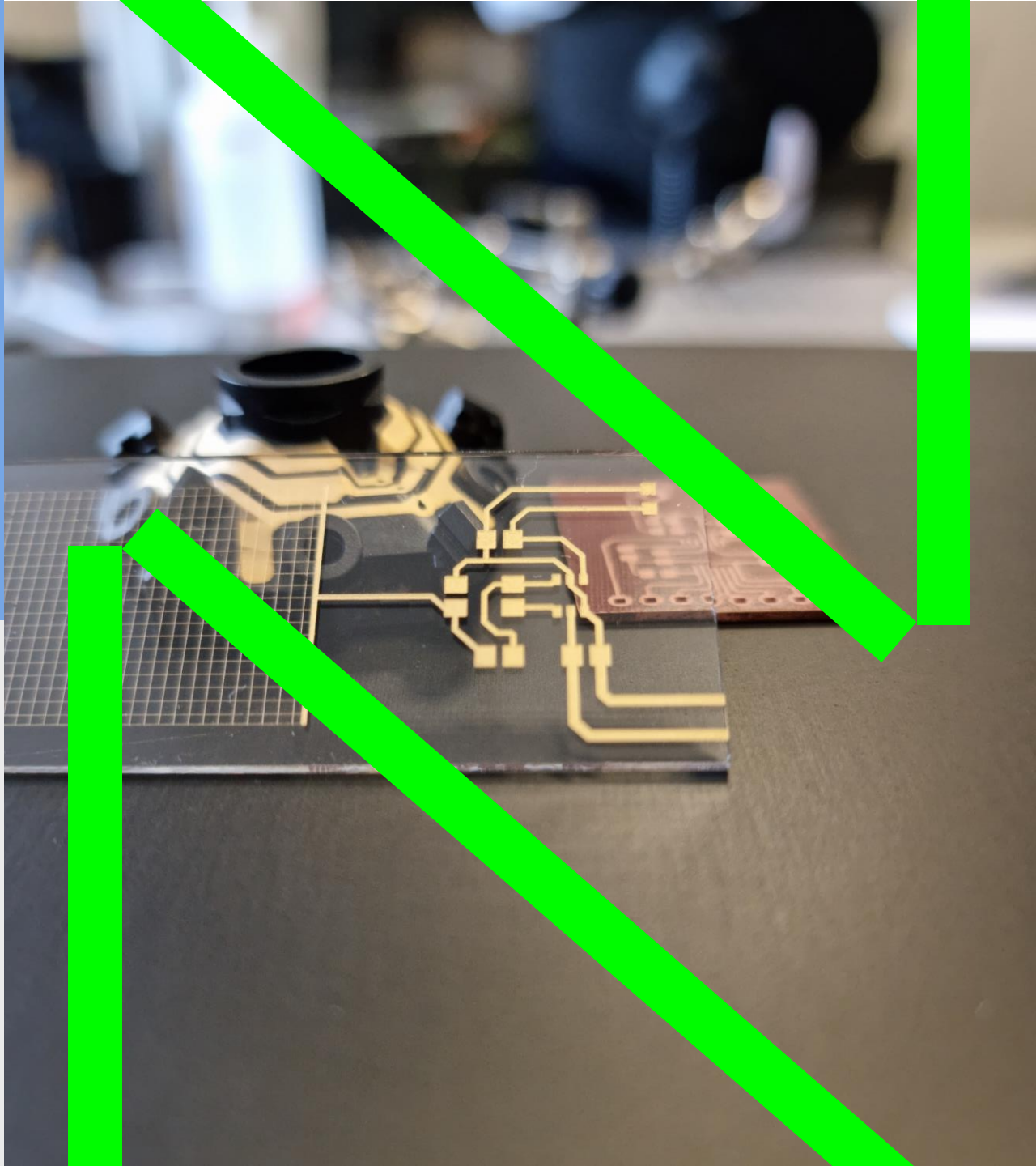
# AKONEER

## SSAIL

Patented and licensed by:



**CENTER**  
FOR PHYSICAL SCIENCES  
AND TECHNOLOGY



**Materials / Resolution /  
Speed / Adhession**

- PCB
- Printed Electronics
- MID
- Plastronics
- LIFT
- LDS



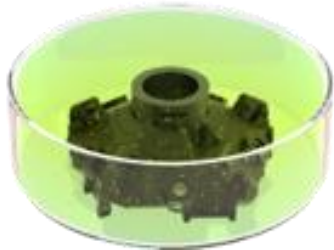


## 1. SSAIL

Laser surface  
modification

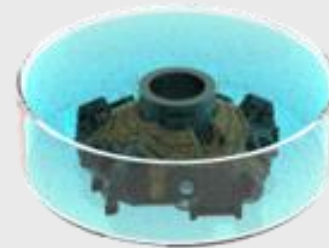


Rinsing & chemical  
activation



## 2.

Electroless plating



## 3.

Final part



# COMPARISON TO LDS

AKONEER

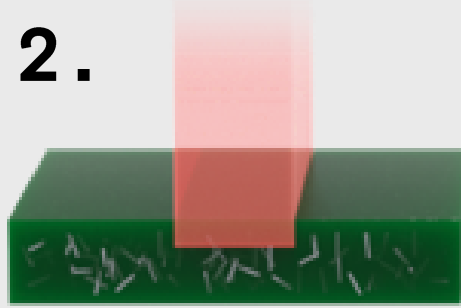
**LDS – based on additives in the material**

1.



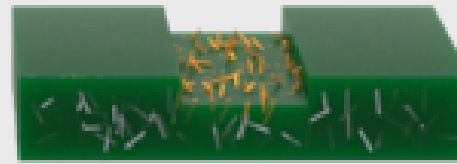
Fabrication

2.



Laser Activation

3.



Activated Surface

4.



Metalization

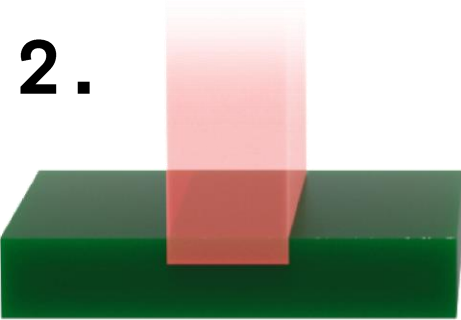
**SSAIL – no additives needed**

1.



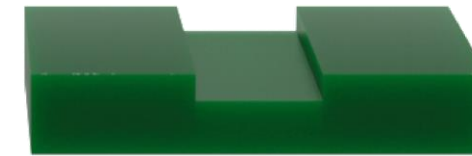
Fabrication

2.



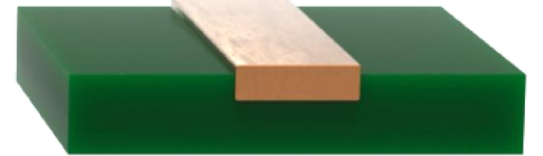
Laser Activation

3.



Activated Surface

4.



Metalization



**3D PARTS**

**AKONEER**



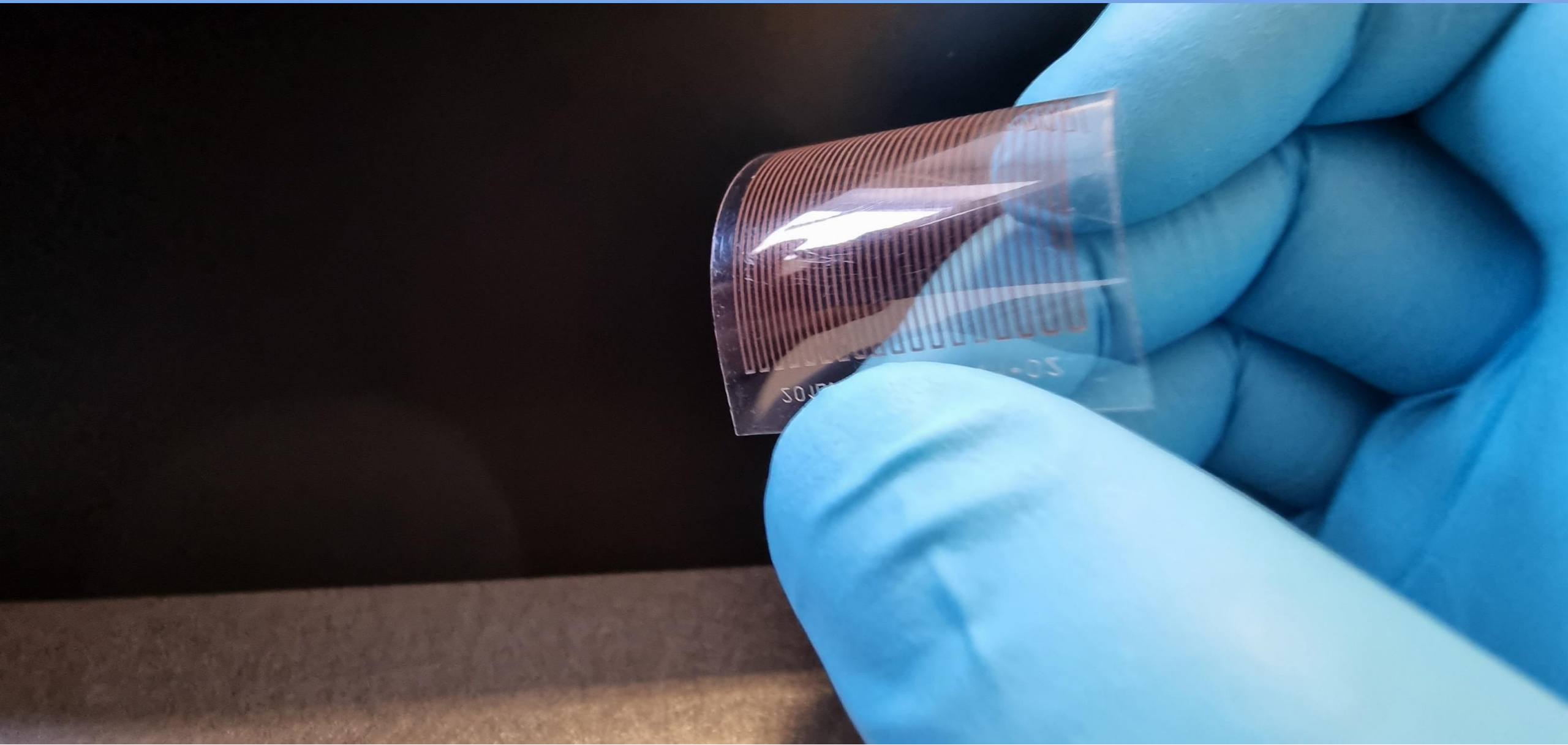
## Works on standard materials

- Various off-the-shelf materials
- 3D shapes to thin films
- No price increase on the material
- No change in material properties

No.	Material	No.	Material
1	PC/ABS	15	ABF
2	PA6	16	PA4
3	PVC	17	PBS
4	PMMA	18	PREP 200
5	PET	19	Getinax
6	PEEK	20	FR-4
7	PPA	21	Epoxy
8	LCP	22	RO3003™ Laminates
9	PBT	23	SITAL ceramic
10	PPS	24	Al <sub>2</sub> O <sub>3</sub> ceramic
11	PF	25	Glass (soda lime)
12	PI	26	Fused Silica
13	PC/ABS for 3D printing	27	Silicon
14	PTFE		

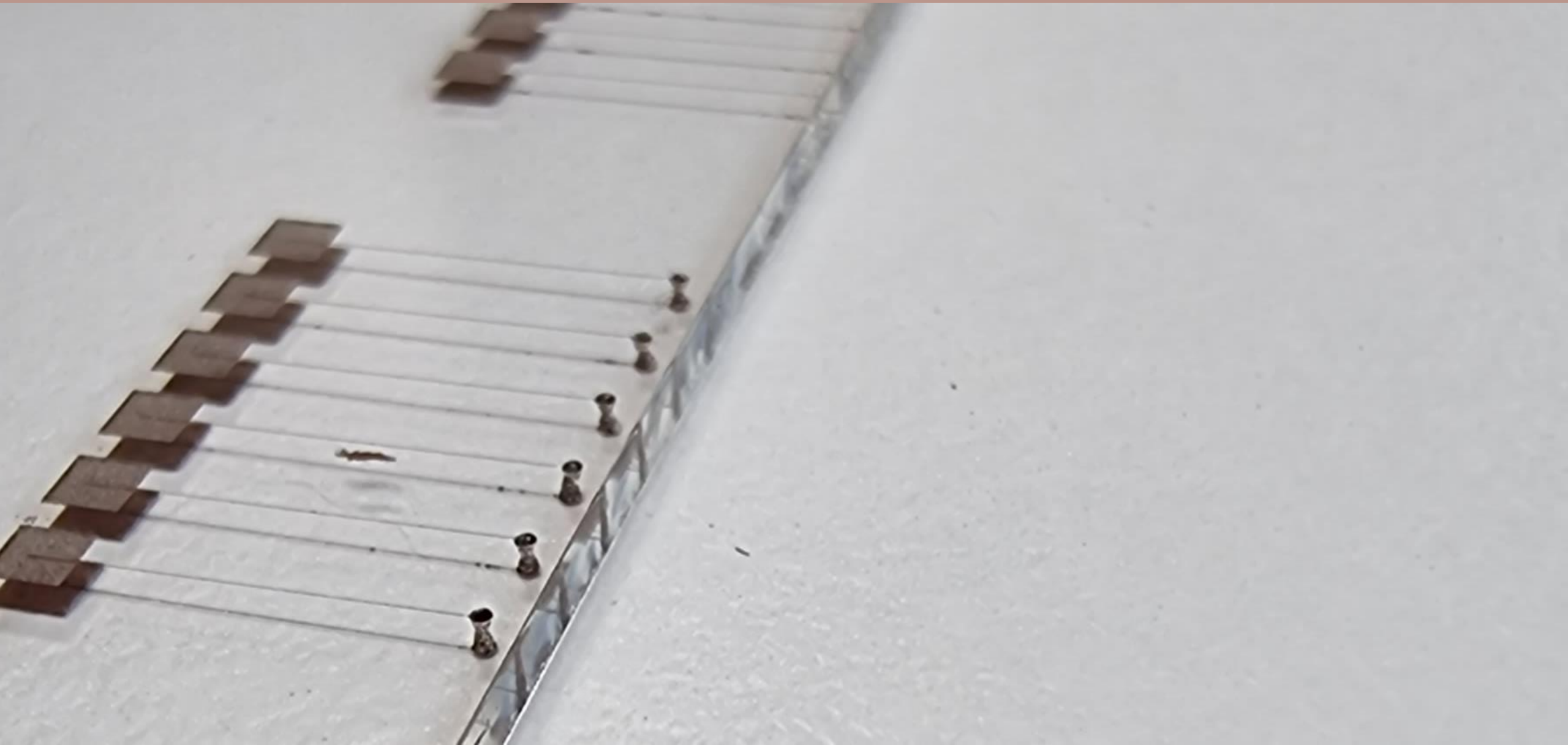
# FLEXIBLE PARTS

# AKONEER



# THROUGH VIA PLATING

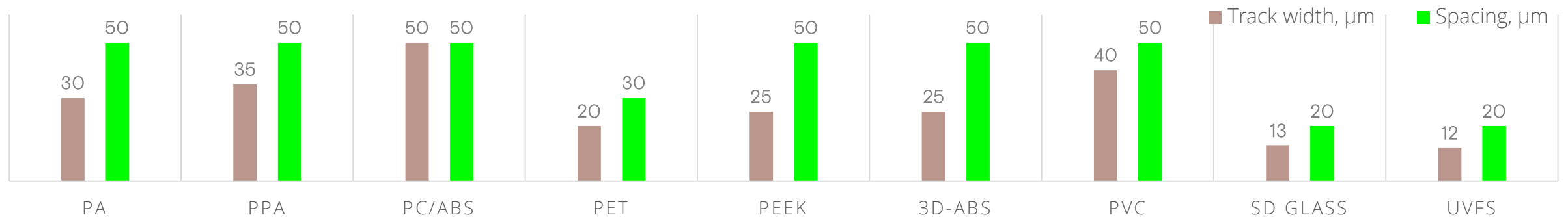
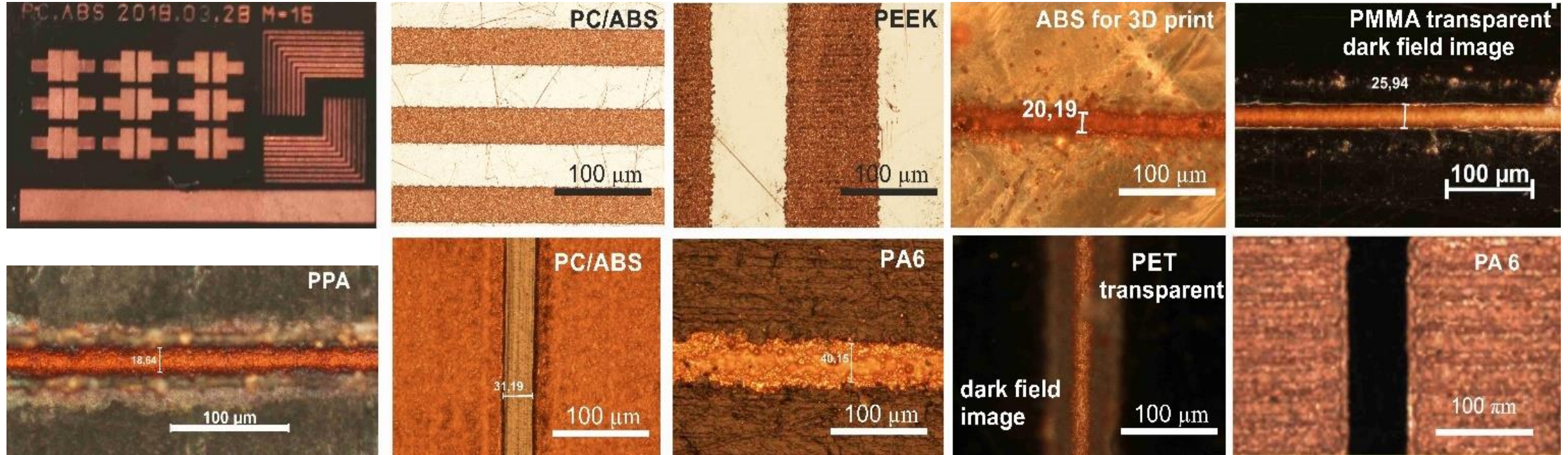
# AKONEER





# HIGH RESOLUTION

# AKONEER



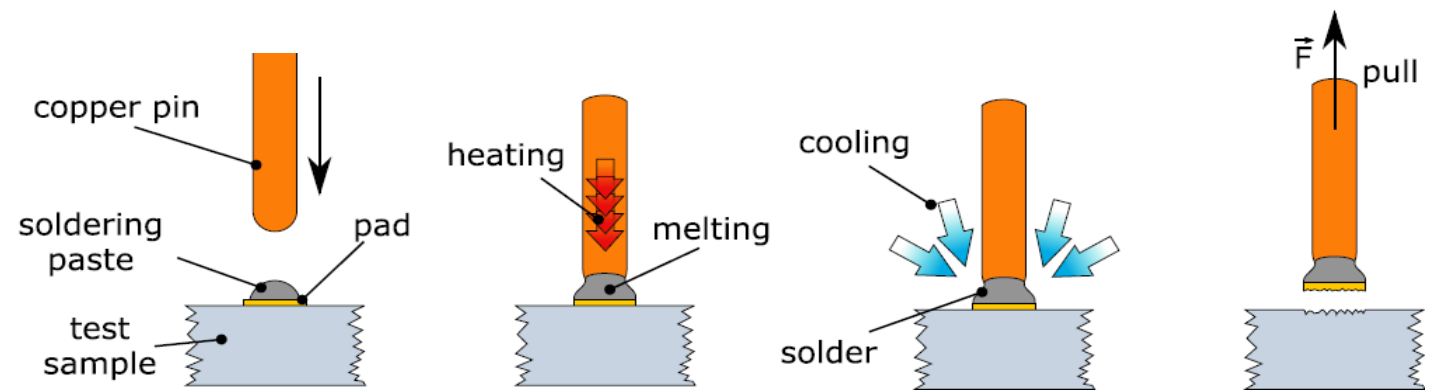
# HIGH ADHESION STRENGTH

# AKONEER

Tested by Hahn-Schickard Institut to comply with MID requirements

- High Adhesion strength
- Good plating selectivity
- Consistent electrical resistivity
- Environmental resistance

No:	Material	Adhesion strength
1	PEEK	36,1 MPa
2	LCP	27,8 MPa
3	Glass	27,2 MPa
4	Sital ceramic	7,3 MPa
5	PET	6,8 MPa
6	PMMA	10,3 MPa



# RELIABILITY

AKONEER

Complies to  
automotive  
requirements

- Hot Storage: 125 °C for 1000 hours
- 2000 cycles of -40->85 °C
- 85% RH / 85 °C for 1000 h
- Natural Salt Spray for 1000 h

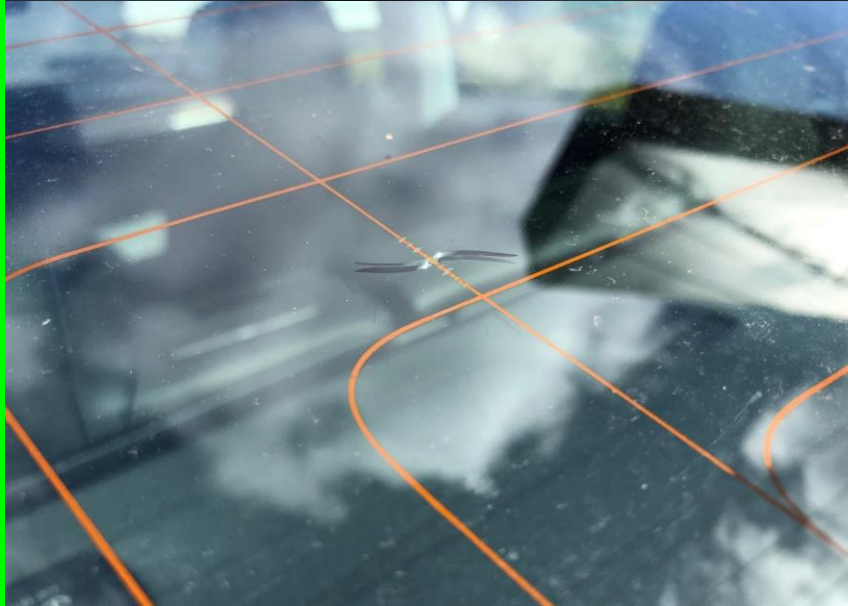
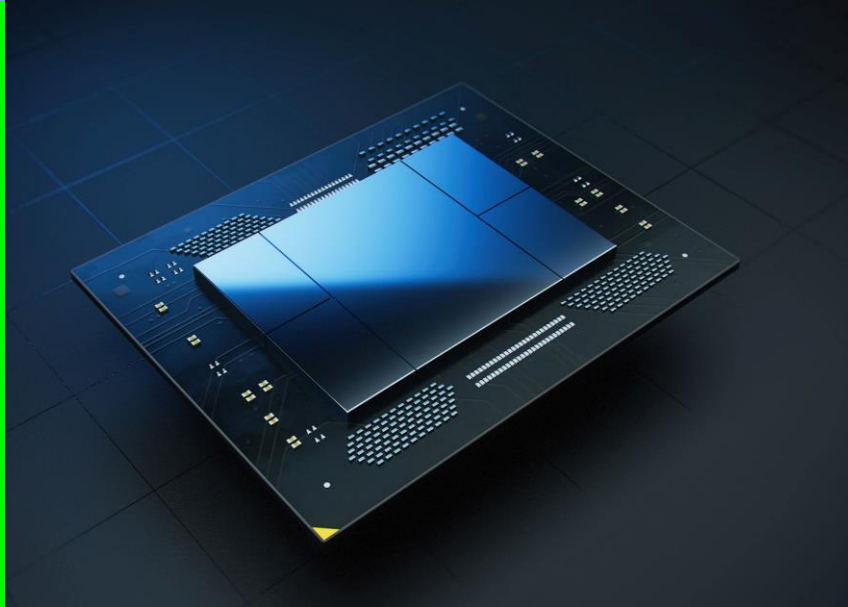




# BENEFITS

AKONEER

- Variety of materials
- High resolution
- Single part production
- Fast development
- Reliable parts





# COOPERATION

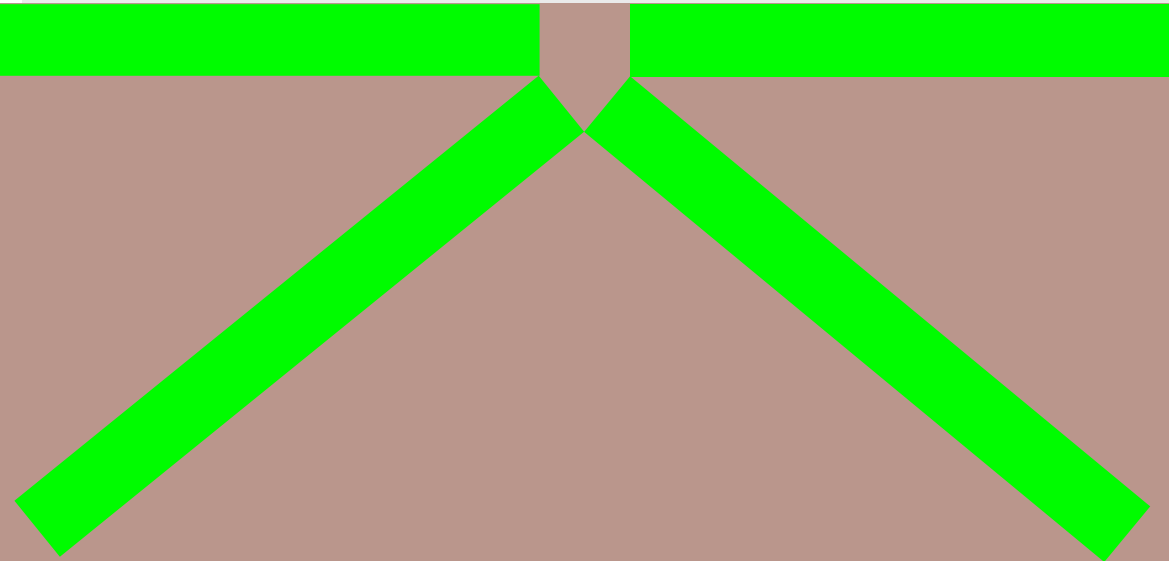
# AKONEER

## We provide

- Technology
- Samples
- Laser machines

## We are looking for

- Applications
- Partners for specific industries



# AKONEER

**Tadas  
Kildušis**

**President, CCO**



[akoneer.com](https://akoneer.com)