



OTech Fabric Ink –
Perfekt für tragbare Elektroden und
Innovationen mit Textilien

INKS FOR NEXT-GENERATION METALLIZATION

Smart Wearables – Green Edition
28. April 2021



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... in a nutshell



- Manufacturer of nanoparticle-free conductive inks
- Proprietary, next-generation metallization technology
- Ag, Au, Pt, Pd, others
- Based in Berlin, established 2018 by researchers of the Weizman Institute, Israel
- Looking for new customers and partnerships



OUR PRODUCTS

Silver



- OTech Jet
- OTech Aero
- OTech T
- OTech Fabric

Gold



- OTech Aurum

Platinum



- OTech Platinum

Customized

OrelTech tailors or develops new inks for every customer's specific requirements

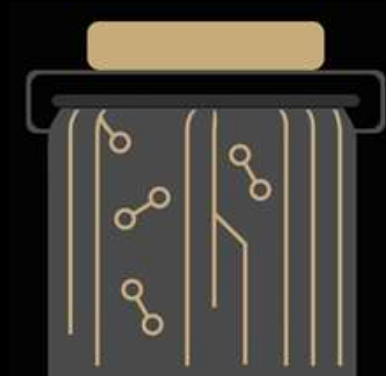
Other metals (Pd, Ir) available as beta-stage inks



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OUR PROCESS

Applying of ink



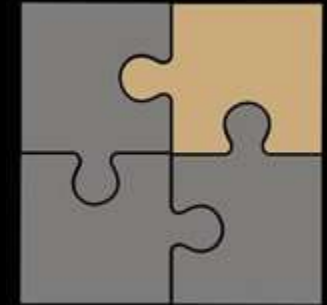
- Ink jet printing
- Dip dye
- Spray
- Wide range of substrates incl. plastic, paper, fabric, ceramic, other metals
- Ink non-toxic and easy to work with

Plasma curing



- Argon plasma treatment
 - Low temperature (<70° C)
 - No vacuum needed
 - Fast (3-15 Minutes)
- Off-the shelf plasma machines for roll-to-roll / stack-by-stack / sheet-by-sheet
- Green due to low energy use

Finished layer

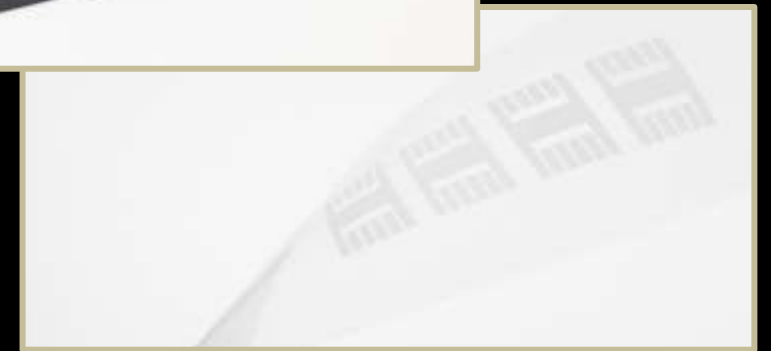
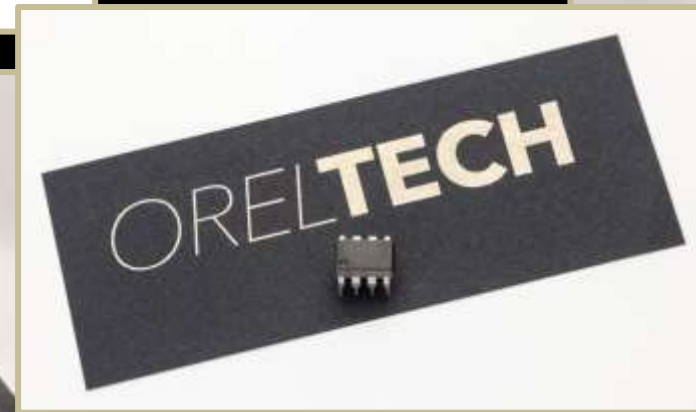


- Solid metal layer
- Highly conductive
- Thickness range of 200 – 1500 nm
- Highly flexible and still durable
- High control over surface properties

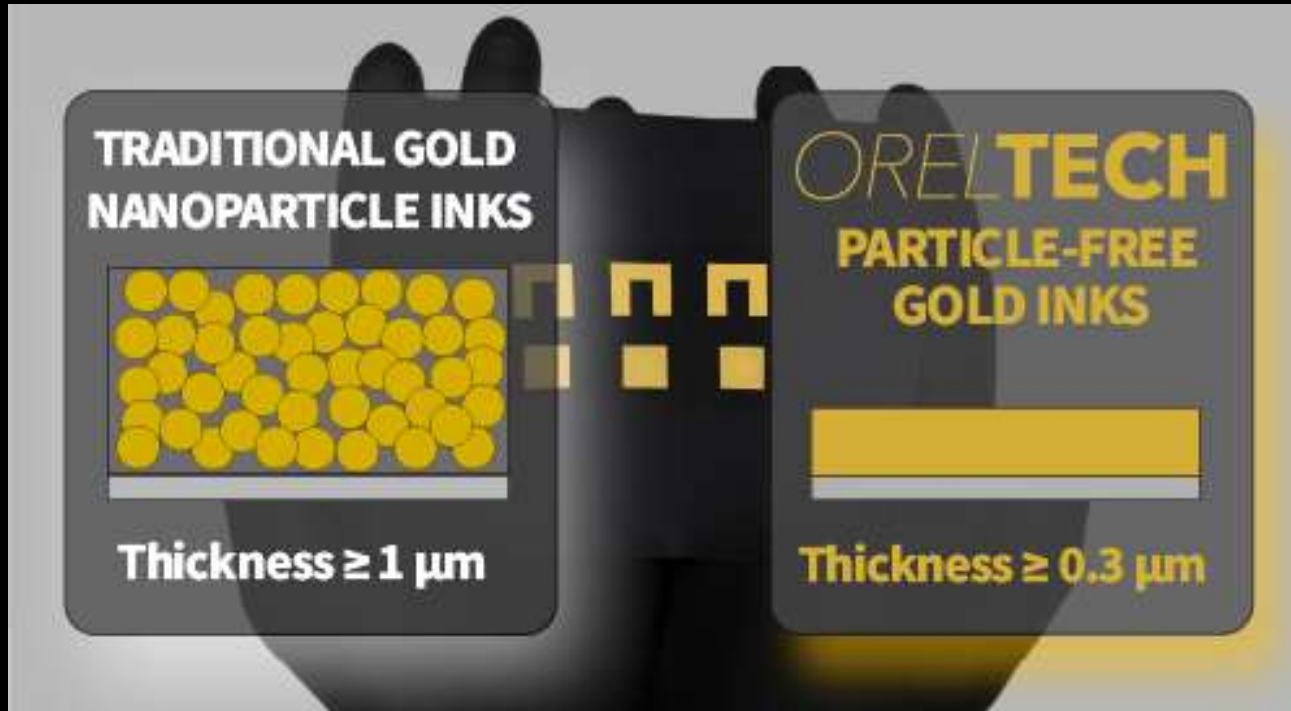


Wide range of applications and use cases

- Printed electronics incl. flexible OLEDs
- Catalytic surfaces
- Plating (on plastics)
- Fabrics and smart textiles
- Decorative applications



Technological superiority illustrated for gold ink



- OrelTech ink is free of flakes or nano particles
- Forms solid and pure metal layer
- Thinner layers with same conductivity and function
- Highly economic use of precious metal



OTech Fabric Aurum - gold electrode on textile



OTech Fabric Silver - silver electrode on textile



OTech Fabric:

- ~ 100-700 nm layer thickness
- Ag, Au, Pt, others
- sufficient conductivity
- Adhesion: tested on cotton, nylon, wool, others



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OTech Fabric Silver - silver electrode on textile



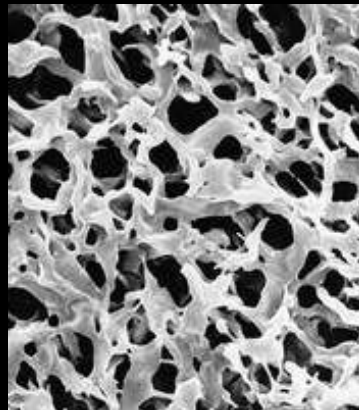
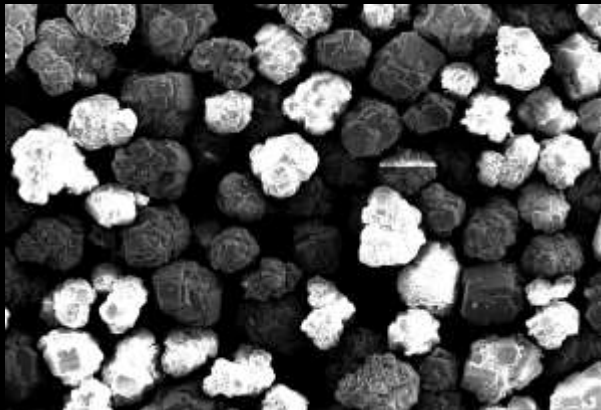
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Technology applicable to many substrates and materials



- Flat (roll) – PET, PEN, Kapton, etc.
- Fabrics, paper
- 3D – ABS, PU, PEEK, etc.



- Porous
- Powders
- Complex shapes



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Use case 1: Plating of medical components (electrodes, sensors)

OrelTech allows to significantly reduce the use of precious metals for same functionality



Disposable medical electrodes (ECG)

- Currently: 3000-1500 nm thick metal layers
- Production: ~\$ 1B/year



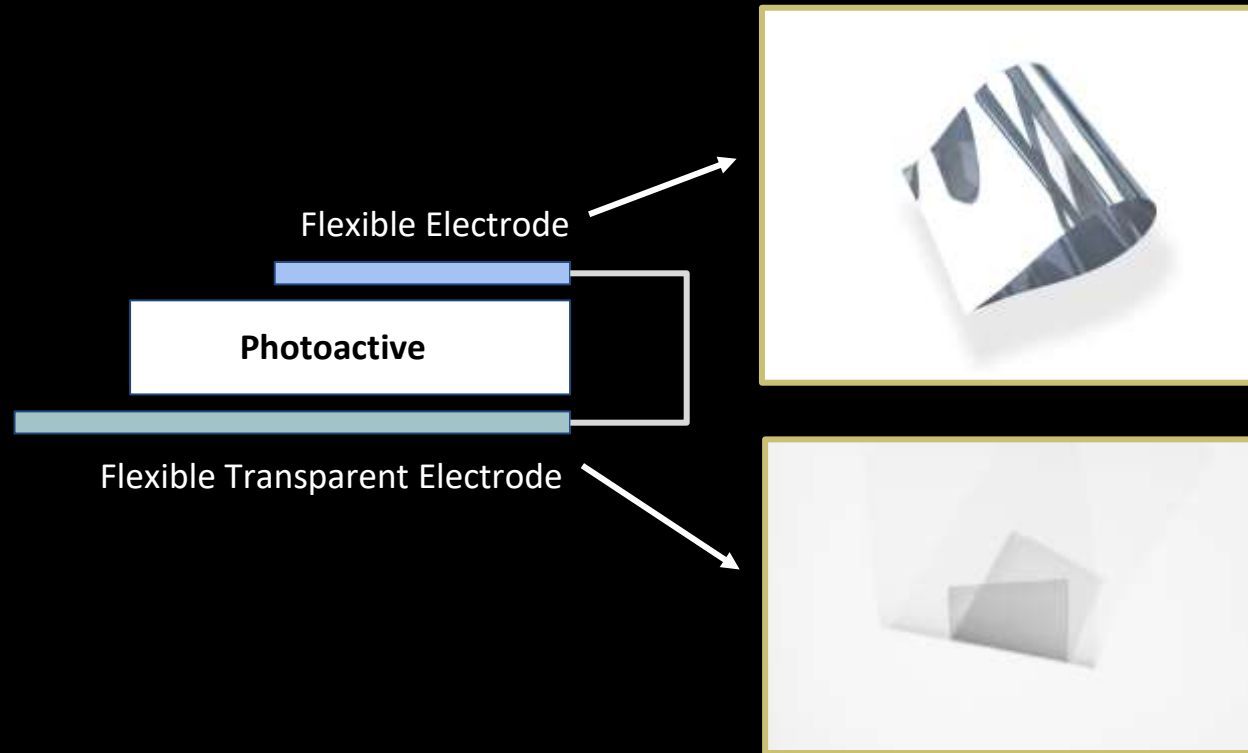
OTech Aero:

- ~ 300-150 nm layer thickness
- Ag, Au, Pt, others
- sufficient conductivity
- scalable deposition



Use case 2: Light emitting and collecting devices (OLEDs, PV)

OrelTech brings flexible, fully printable, one-stop solution



OTech Mirror:

- highly reflective
- flexible
- cost-efficient
- conductivity $0.1 - 3 \Omega/\square$

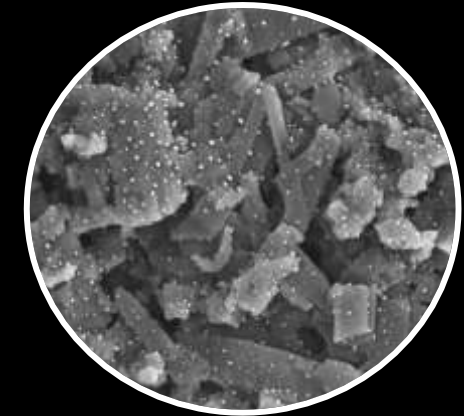
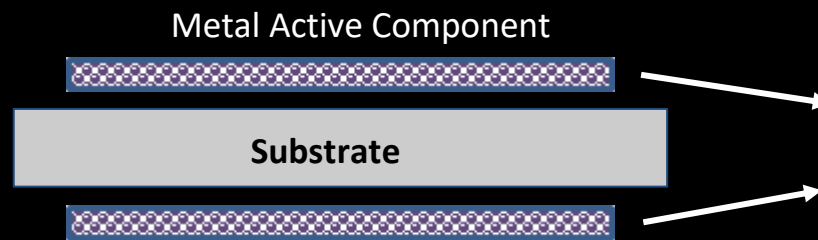
OTech T:

- highly transparent
- flexible
- conductivity $\leq 50 \Omega/\square$

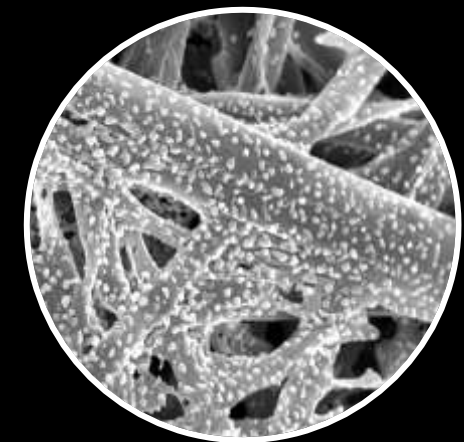


Use case 3: Catalytic surfaces, e.g. platinum loading of fuel cell membranes

OrelTech brings material-efficient, controllable way to introduce precious metals into complex structures



Ag, Au, Pt, Pd...



OUR TEAM



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Thank you!

Our collaborations and partners

HÜTTENES³

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WEIZMANN INSTITUTE OF SCIENCE



OES

HySPRINT
Helmholtz Innovation Lab

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RESEARCH CREATING REALITY

We are looking for new projects, new customers and new challenges.

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