

OREL**TECH**

COLD METALLIZATION SOLUTIONS

New platform metallization technology

oreltech.com

In order to satisfy the needs of modern industry,
metallization processes need to be

SIMPLE / COST EFFICIENT / GREEN

ORELTECH's unique platform technology
easily satisfies these three criteria

- ORELETCH provides conductive inks for printing of highly conductive silver thin films on a variety of substrates:

PLASTIC / PAPER / TRANSPARENT SUBSTRATES / FABRIC / CERAMICS / 3D STRUCTURES

- ORELETCH inks do not contain nanoparticles, are significantly environmentally friendlier and more cost-effective than the alternatives.
- ORELTECH inks developed for variety of application:

TRANSPARENT ELECTRODES / PRINTED CIRCUITS / EMI SHIELDING / WEARABLES/ MEDICAL DEVICES/ SENSORS

- ORELETCH unique technology utilizes inkjet/aerosol printing and further development to metal by cold plasma. This allows keeping the process temperature at $<70^{\circ}\text{C}$ and working with even the most sensitive substrates.

ORELTECH products

- Metal-based inks for different application:
 - ✓ applied by inkjet or aerosol (viscosity 20-80 cP)
 - ✓ 2 types of silver transparent electrodes (65 %T 3 Ω /sq. and 85 %T 70 Ω /sq.)
 - ✓ silver electrodes or circuitry (0.1 Ω /sq)
 - ✓ gold electrodes or circuitry (0.5 Ω /sq)
- Assistance in integration of metallization technology into customer's production line:
 - ✓ ink formulation for customer printing application
 - ✓ assistance in plasma machine fit to customer application
- R&D for custom products:
 - ✓ ink formulation for custom application
 - ✓ development of inks based on other precious metals (platinum, palladium)



ORELTECH inks: applications for conductive films:

Electrodes printed on textile, paper, polymers and 3D objects

- Transparent conductive flexible and bendable electrodes for:

- ✓ OLEDs
- ✓ Solar cells
- ✓ Touchscreens

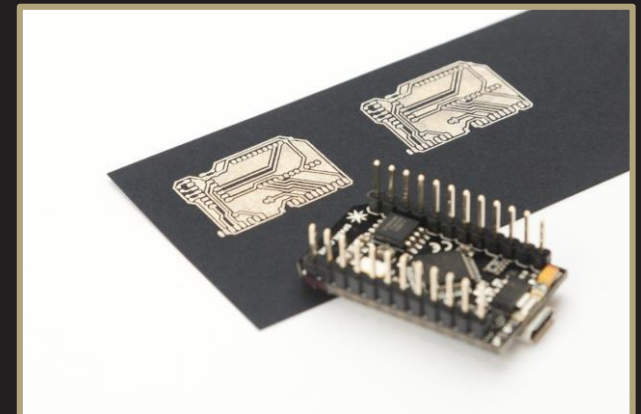
- Highly conductive electrodes:

- ✓ EMI shielding
- ✓ Medical devices
- ✓ Smart paper
- ✓ Wearables



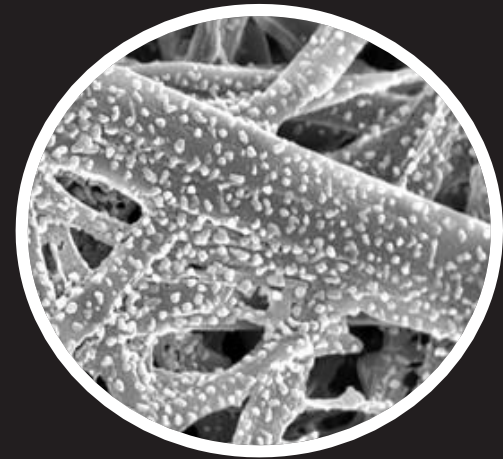
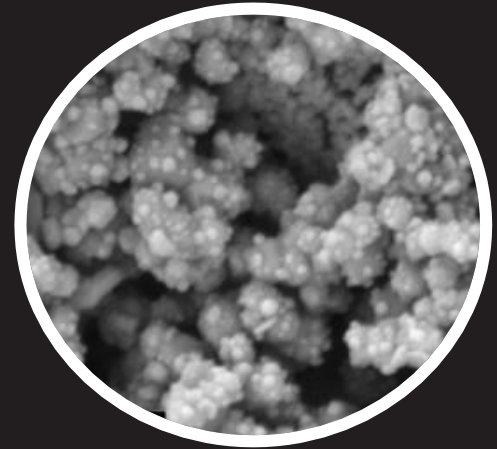
Transparent conductive inkjet printed and bendable pattern on PET

Inkjet printed silver electrodes on paper



ORELTECH inks: applications for filters and catalysts

- Nanoparticle/nanocrystal coatings:
 - ✓ Controllable particle size
 - ✓ Coating on flat, 3D structures and powders
 - ✓ No previous synthesis of nanoparticles required
 - ✓ Silver, gold, platinum and palladium metals
- Products and applications:
 - ✓ Purification filters
 - ✓ Porous metal catalysts
 - ✓ Energy storage devices
 - ✓ Dye-synthesized solar cells (DSSC)
 - ✓ Antibacterial coatings



Team



Dr. Natalia Zamoshchik
CEO

Natalia is co-founder and managing director of Oreltech for the last 3 years. She is an expert in organic electronic materials and their applications, thin-film growth and computational chemistry. She has a Ph.D. in chemistry from Weizmann Institute of Science.



Dr. Konstantin Livanov
CTO

Konstantin is an expert in surface chemistry and composite materials with experience in nanoparticle synthesis and electron microscopy. He has a Ph.D. in chemistry from Weizmann Institute of Science and leading R&D team for the last 2 years.



Dr. Ferdinand Bartels
Head of Advisory Board



Jakub Kelar
Engineering Advisor



Thank you!

Our collaborations:



Contact us at: natalia@oreltech.com