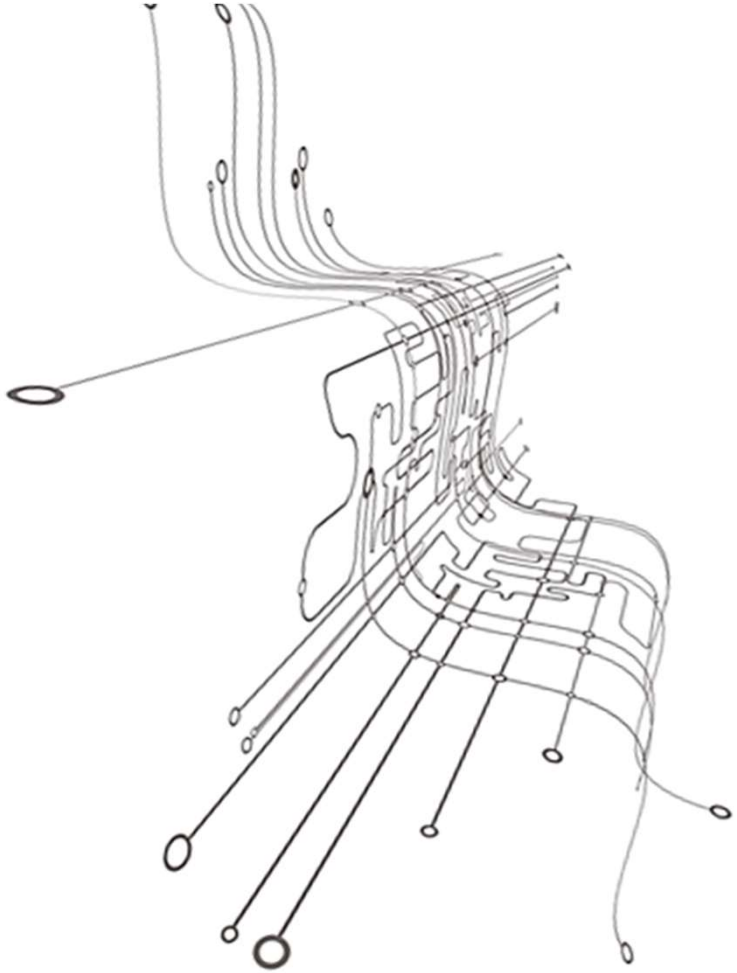

GENESINK

ENABLING DISRUPTIVE CONSUMER ELECTRONICS

GenesInk: Enabling novel functionalities for consumer electronics markets

Rita FADDOUL
RDI Project Manager
rita.faddoul@genesink.com

GenesInk's Mission

- We design **nano-inks** with **functionalities at their core** from particles synthesis to the end printed product.

- We free up **electronics** to enable a **new generation of consumer electronics products.**

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What problems are we solving?

It is nice but it is for the lab
Nanoinks are not available at industrial scale

New consumer electronics product designs require **smaller and more flexible** electronics to fit into smaller and more complex form factors

High conductivity is critical for consumer electronics applications

Since decades, production of PCB circuits has been both **environmental** and **operator unfriendly**

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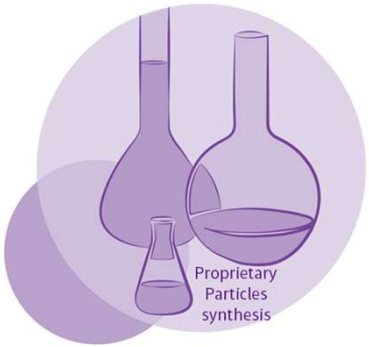
How do we resolve them?



It's for mass !
GenesInk nanoinks are available at industrial scale **No additional CAPEX** nor modification of the production chain

GenesInk's inks are designed with combined mechanical and optical functionalities at the core **flexibility, stretchability, thinness, transparency**

We design **ultra power efficient (conductive)** nanoinks. Up to **5x times more conductive** than market leaders

We design all GenesInk's nanoinks from synthesis, formulation and production to **be respectful of humans and the environment** and to be sustainable.

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Strong IP and off-the-shelf Product range

40 nanoinks retail products

3 Product families

60+ Patents filed

12 Patent families

SMARTINK
Silver conductive nano inks

TRANDUCTIVE
Transparent conductive nano inks

HELIOSINK
ZnO, AZO, and WO3 semi-conductive nano inks

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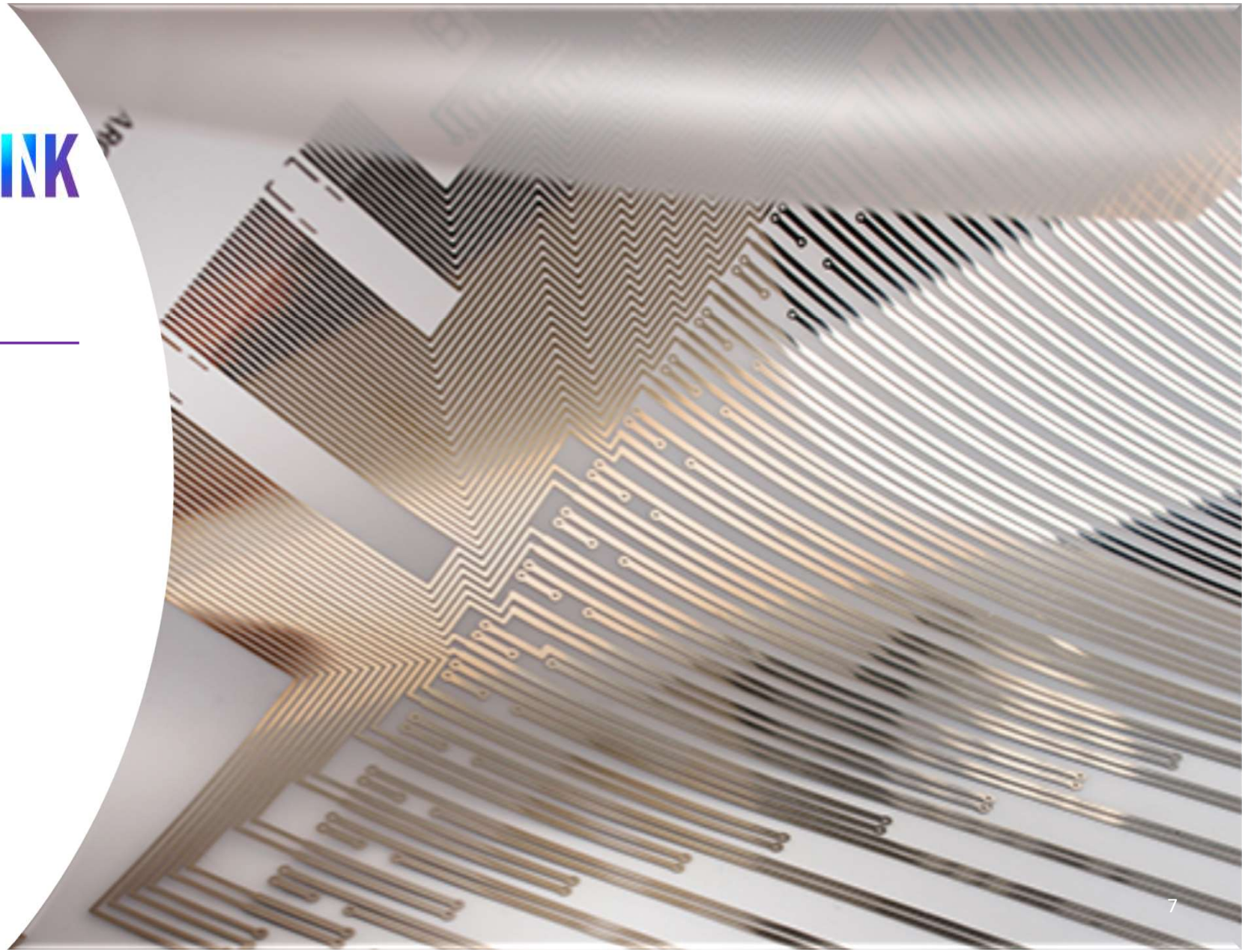
Applications and proposed GenesInk's solutions

Antennas and connectivity

Ag nanoinks

- Integrated circuits
- NFC
- RFID



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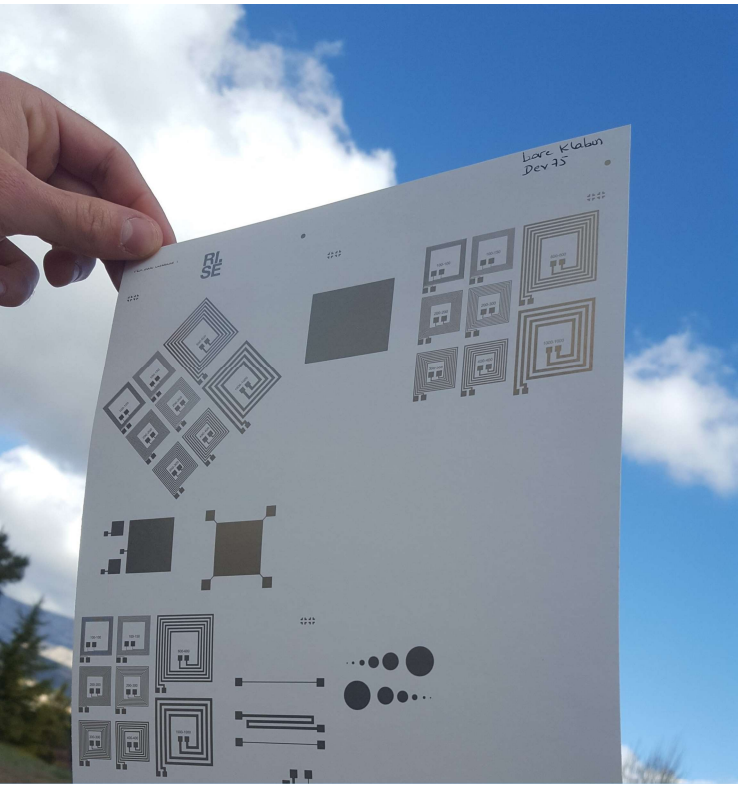
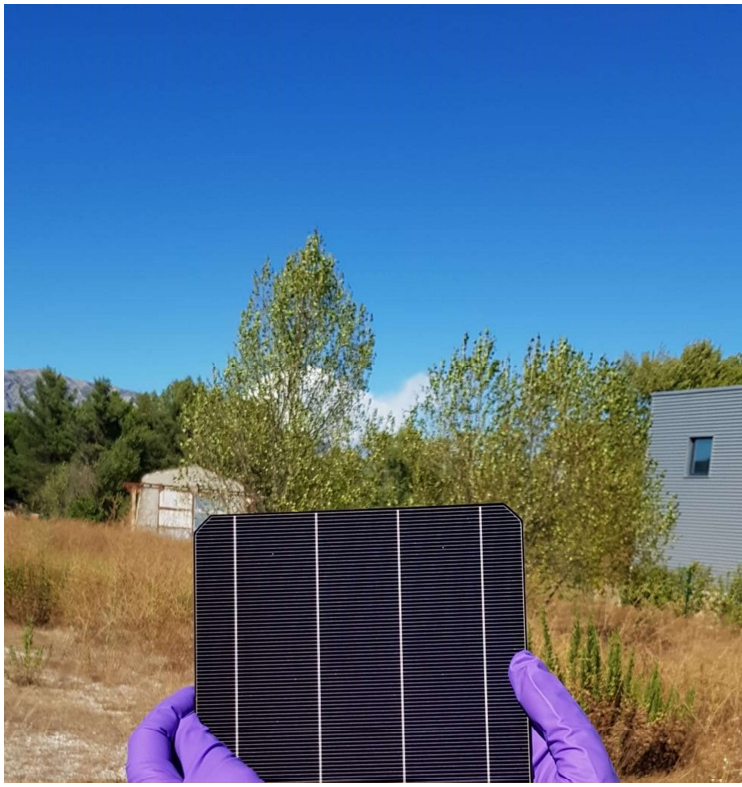




Compatible substrates

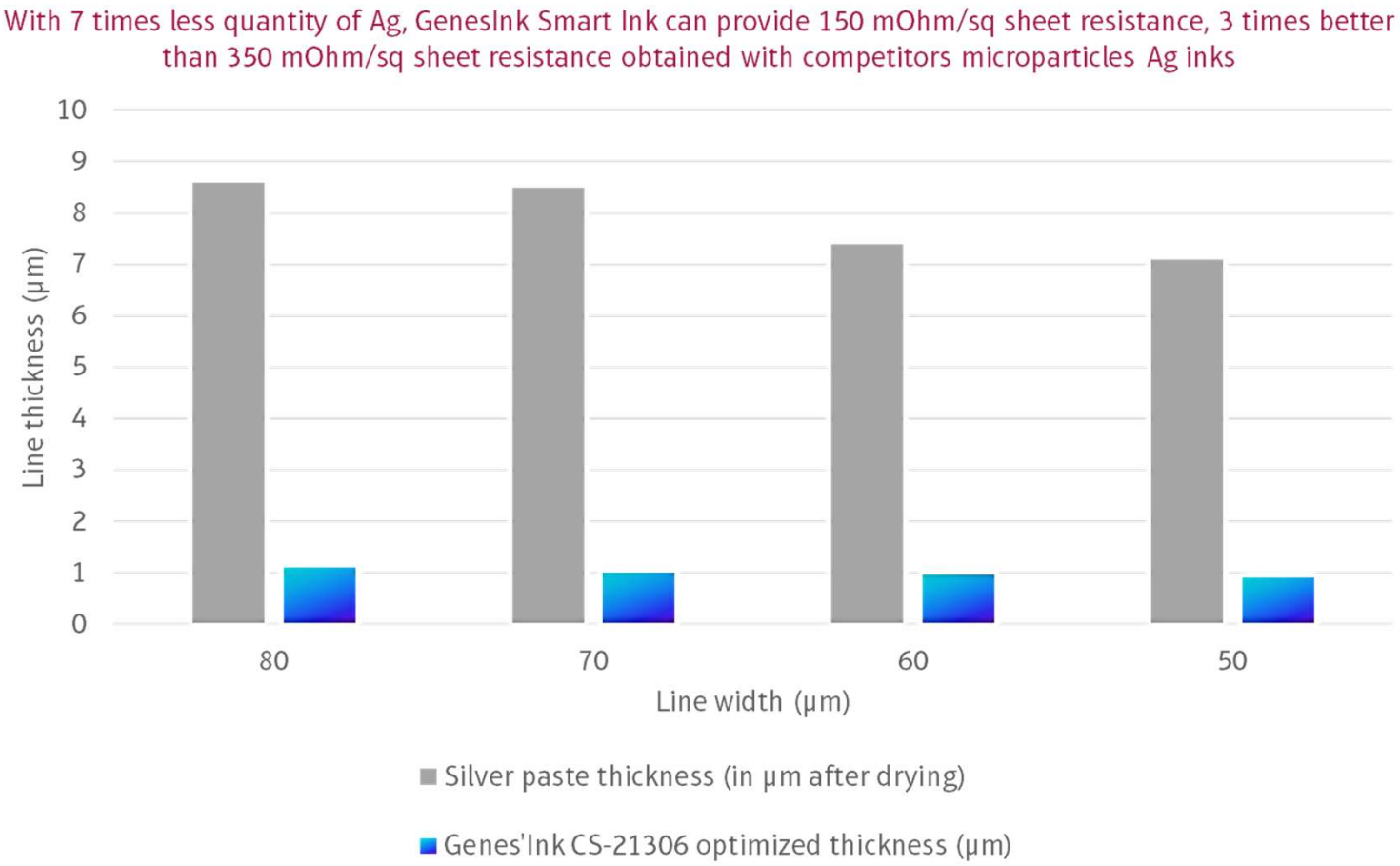
SmartInk can fit on various substrate types:

- Paper and NC substrates
- Polymer substrates
- Glass and Silicon-based substrates

GenesInk nano inks

SMARTINK

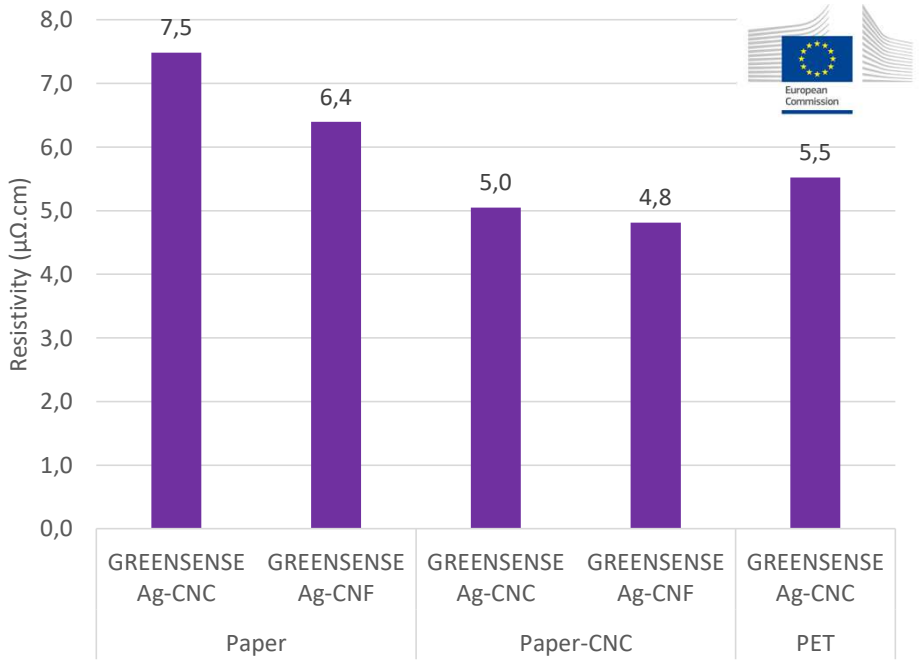
- Less active material needed to achieve better performance than microparticles or flakes-based inks.
- ***SmartInk*** for screen printing *vs* Ag microparticles based ink: lower sheet resistance with 7 times less Ag.

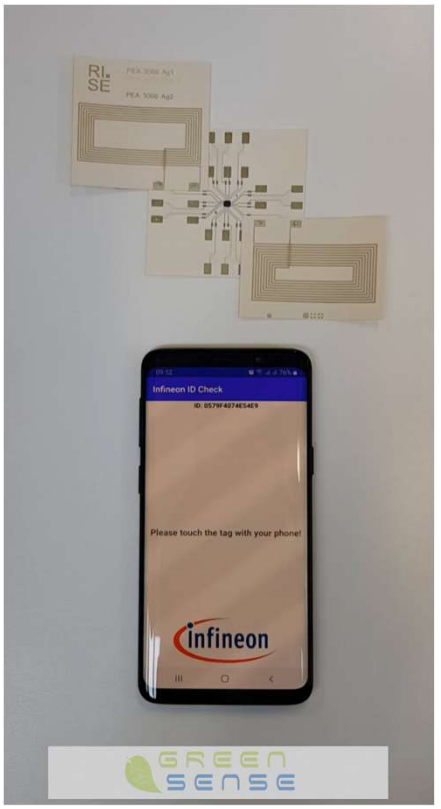


GENESINK
SMALLER, FURTHER, FASTER

SmartInk range
Antennas application

- GREENSENSE H2020 Project
- GenesInk role: Development of Ag/NC based conductive inks for antennas and connectivity applications



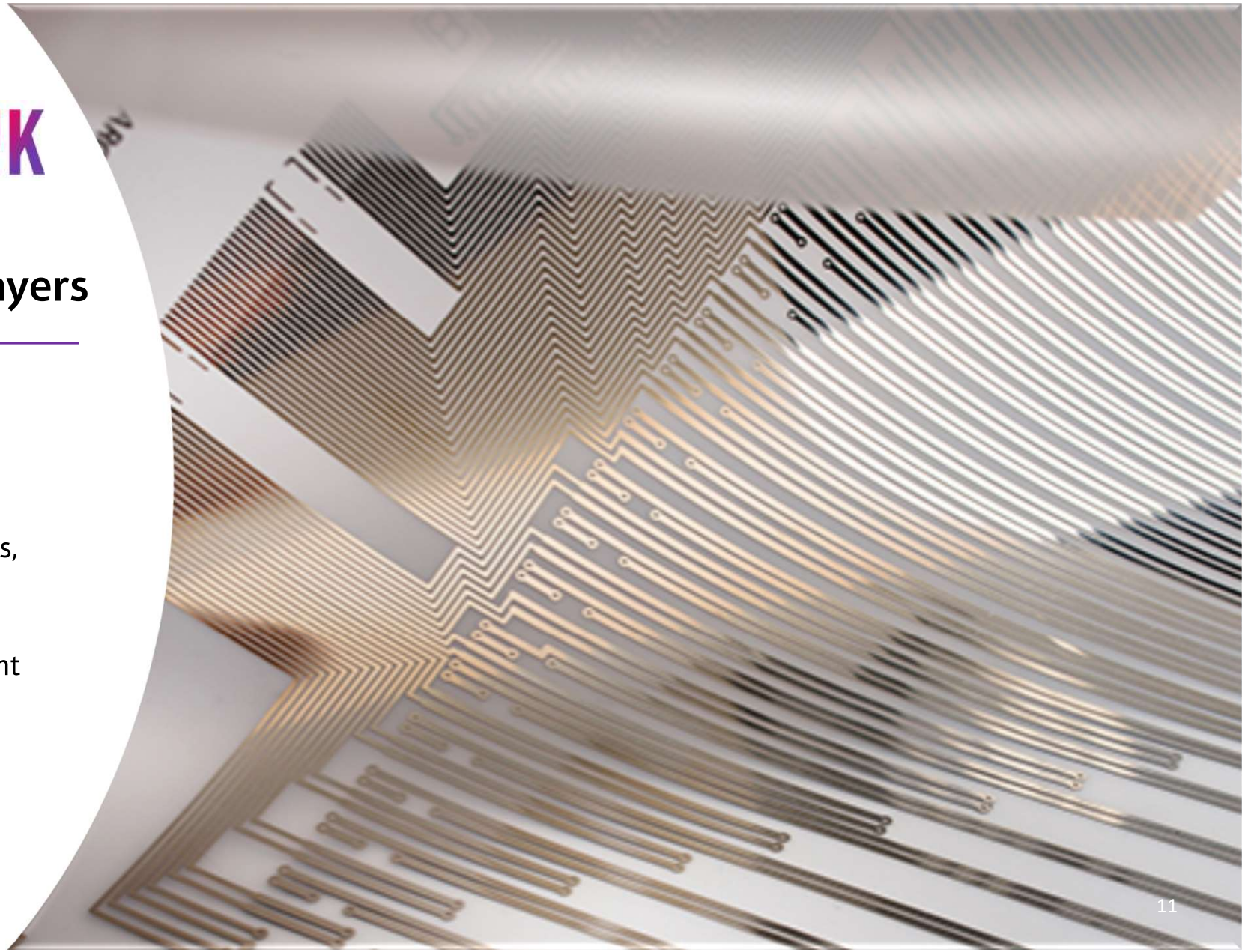


Printing and antennas mounting performed by Rise AB partner
valerio.beni@ri.se

Charge transport layers

WO_3 and ZnO based nanoinks

- HTL and ETL in photodiodes, display, OPV, OLED
- Compatible with transparent electrode and active layer



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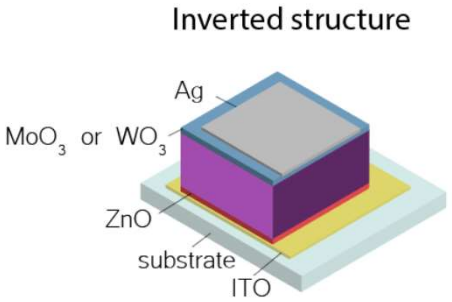
HeliosInk range
OPD application

- MADRAS H2020 Project
- GenesInk role:
  - Development and optimization of WO_3 based solution for HTL layers in photodiodes
  - Development of Ag NWs based inks for screen printing and flexography for TCE

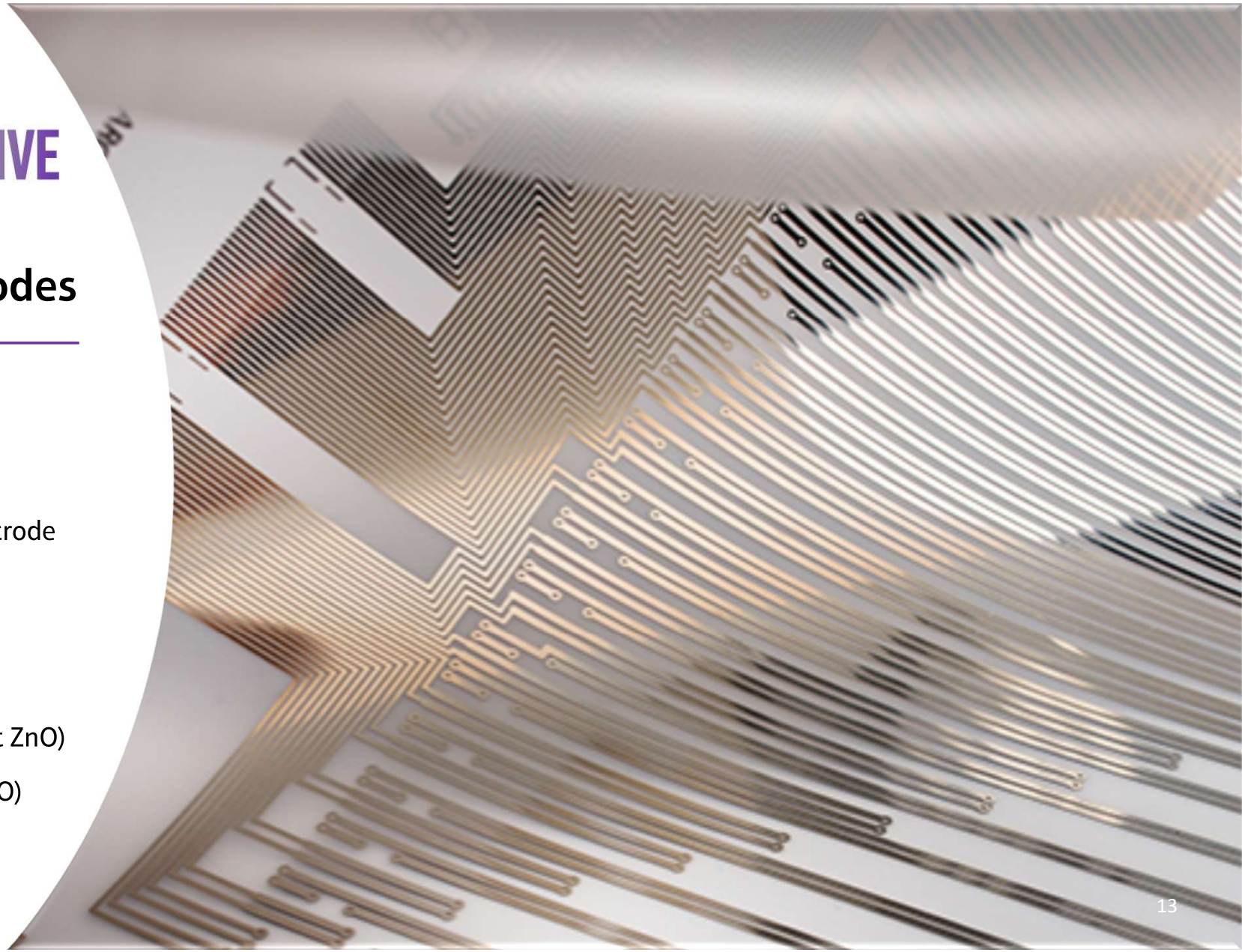


HTL	Voc (V)	Jsc (mA/cm²)	FF %	PCE %
Evaporated MoO_3	0,80	23	60	11
HTL = Printed WO_3 HeliosInk (GenesInk) 20 mm/s	0,77	22	54	**9**

OPDs realized by Eurecat partner
laura.lopezm@eurecat.org

TRANDUCTIVE

Transparent electrodes



Ag NWs based nanoinks

- Transparent conductive electrode (bottom or top)
- OLEDs, OPVs, Displays
- 2 ranges of Tranductive®:
  - Tranductive N (without ZnO)
  - Tranductive E (with ZnO)

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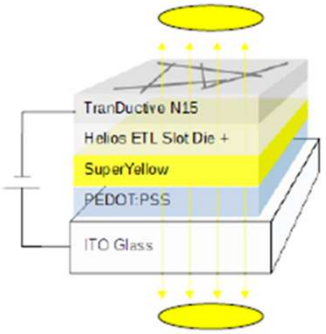
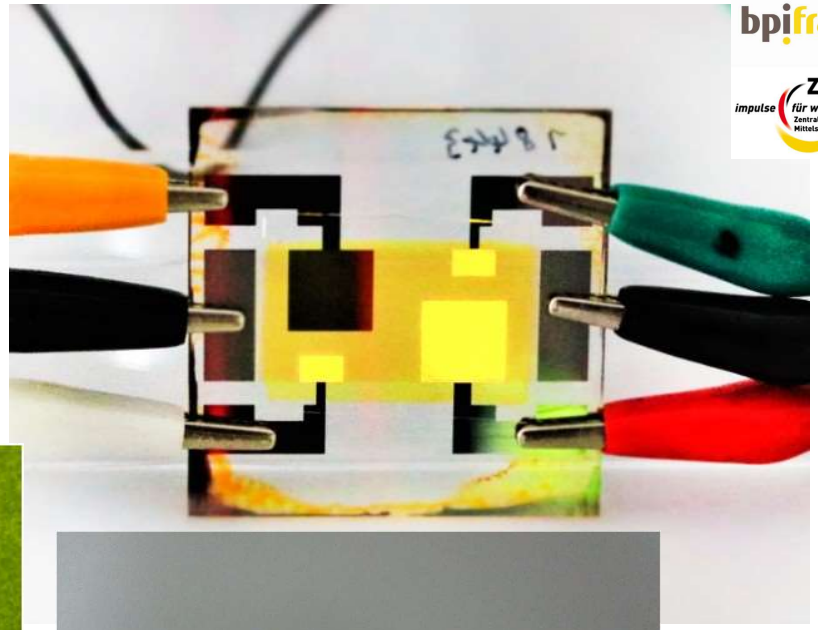
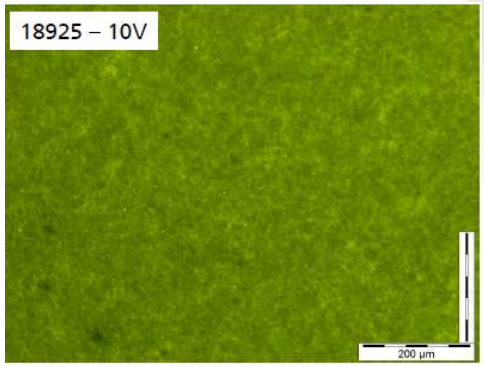
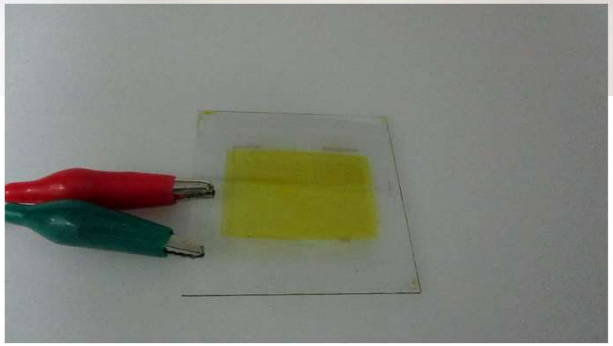
Tranductive® range OLEDs application

- FullOPrint Project
- GenesInk role:
  - Development and optimization of Ag NWs solutions for transparent OLEDs applications
  - High homogeneity films
  - Luminance > 100 cd/m²





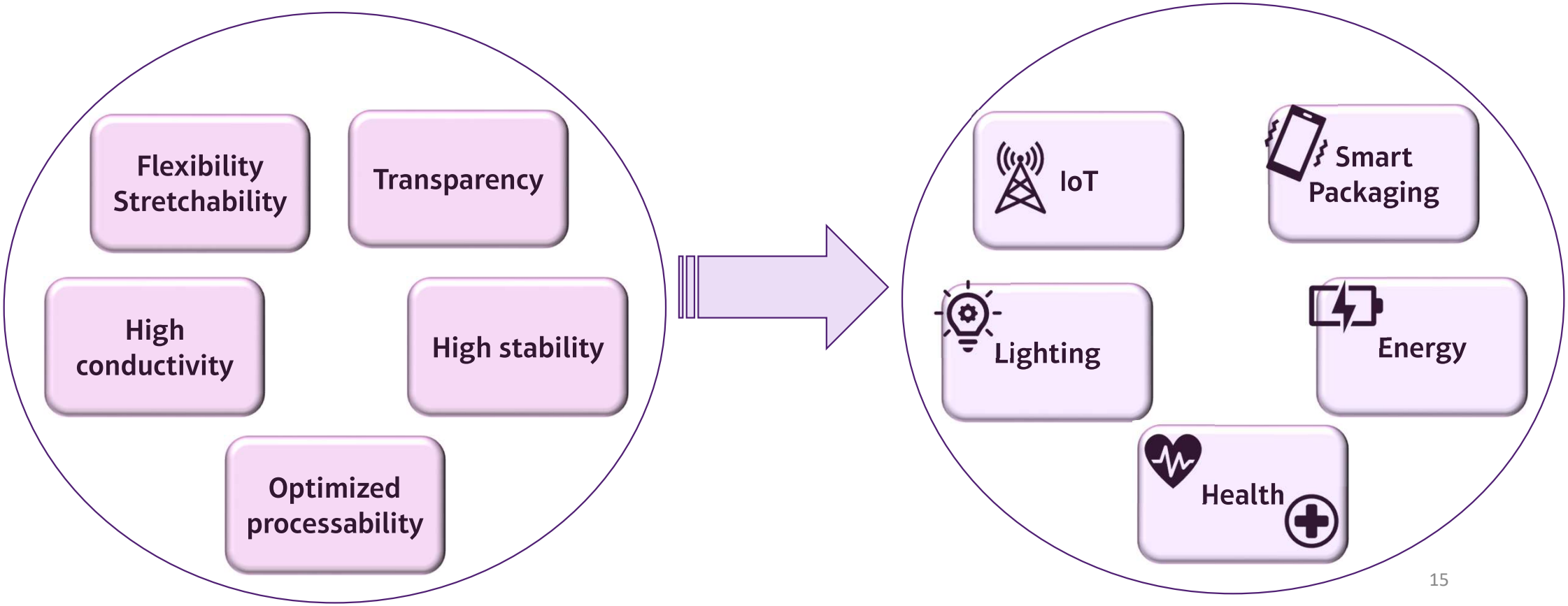




OLEDs realized by Fraunhofer IAP partner
manuel.gensler@iap.fraunhofer.de

GenesInk's Vision

At GenesInk, we create new functionalities to meet the requirements of consumer electronics market and Industry 4.0



Collaborators contact information

Virginie El QACEMI
RDI Chemist
@: virginie.elqacemi@genesink.com

Matthieu SOUBIROU
RDI Chemist
@: matthieu.soubirou@genesink.com

Benjamin DHUIEGE
Customer Pre-sales Group Manager
@: benjamin.dhuiege@genesink.com

Rita FADDOUL
RDI Project Manager
@: rita.faddoul@genesink.com

GENESINK
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Headquarter
39, Avenue Gaston Imbert, 13109 Rousset, France

Paris Office
10 avenue Georges V, 75008 Paris, France

Japan Office
1 Chome-23-5 Higashiazabu, Minato-ku, PMC Bldg. 6F, Tokyo 106-0044, Japan

Taiwan Office
C/O UBIK, 2F, 19 Fuguo Rd., Taipei 11158, Taiwan