Ultraprecise printing of nanomaterials.

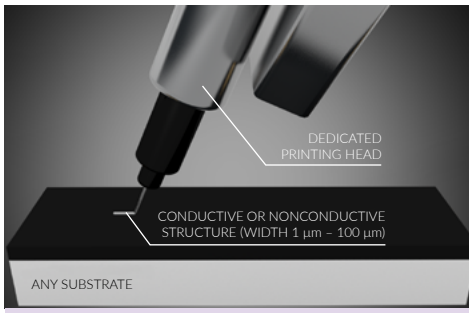
Micron-scale conductive & nonconductive structures for various applications.

shaping global nanofuture

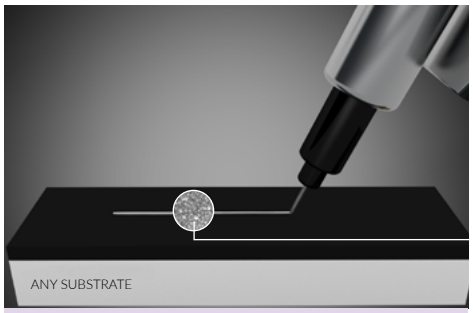
COMPANY & TECHNOLOGY

Innovations in additive manufacturing developed by XTPL enable ultra-precise printing of nanomaterials. Our technology derives from solving interdisciplinary challenges spanning the fields of solid state physics, inorganic chemistry, nanotechnology, machine learning, mechanics and control electronics. Unique XTPL printing system allows for precise deposition of an in-house formulated nanoink on a variety of substrates. Shape, length and spatial density of the micron-scale features obtained using our method are all customisable and can be adapted to a number of industrial and research applications. This unprecedented precision and versatility positions XTPL as a global player in the growing field of nanoprinting.

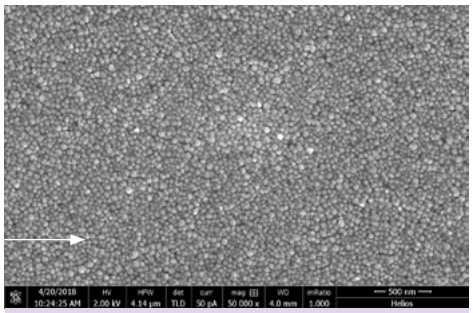
PROCESS



XTPL printing head equipped with a special nozzle deposits nanoink on the substrate using unique ultra-precise deposition (UPD) technology – the resolution of printed structures reaches values as low as 1 µm. This advanced solution works on most substrates, even ones that are flexible and non-flat.



What makes XTPL solution unique is ultimate simplicity, unparalleled precision & versatility. The shape of individual structures created with this method, their width, length and distance between them depend on the specific application requirements.

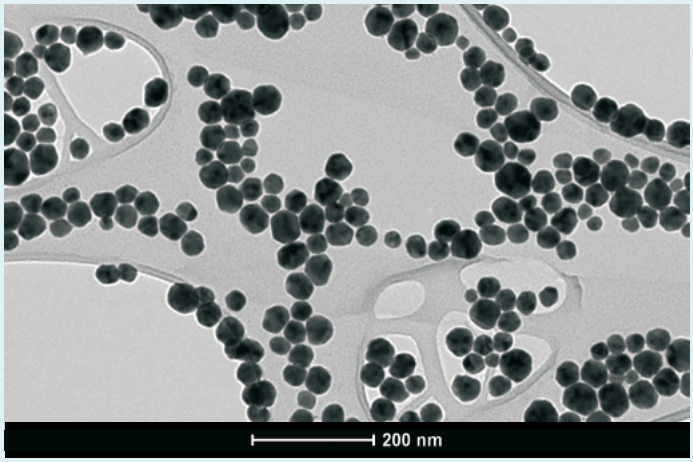


SEM image showing morphology of a silver conductive line printed using our UPD technology.

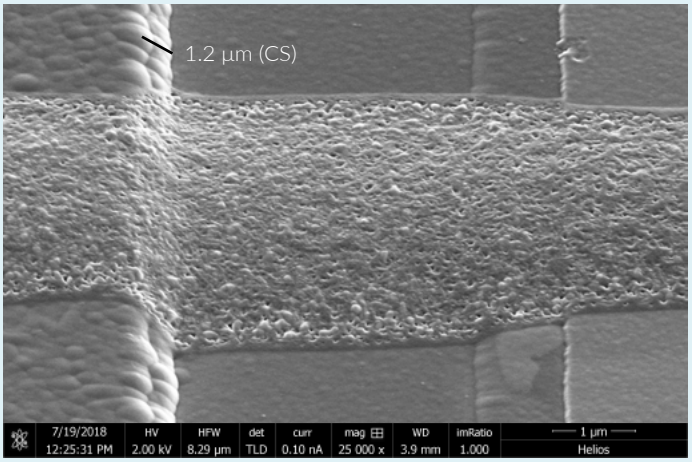
SPECIFICATION

Functionality:	electrically conductive, optically, biologically & chemically active
Printed materials:	large variety eg. conductive inks, nanoparticle based suspensions, semiconductor based suspensions, insulating inks, resists, solvent based inks and biological materials; in order to achieve outstanding results XTPL creates its own nanoink formulas; our key competence are nanoinks based on silver nanoparticles.

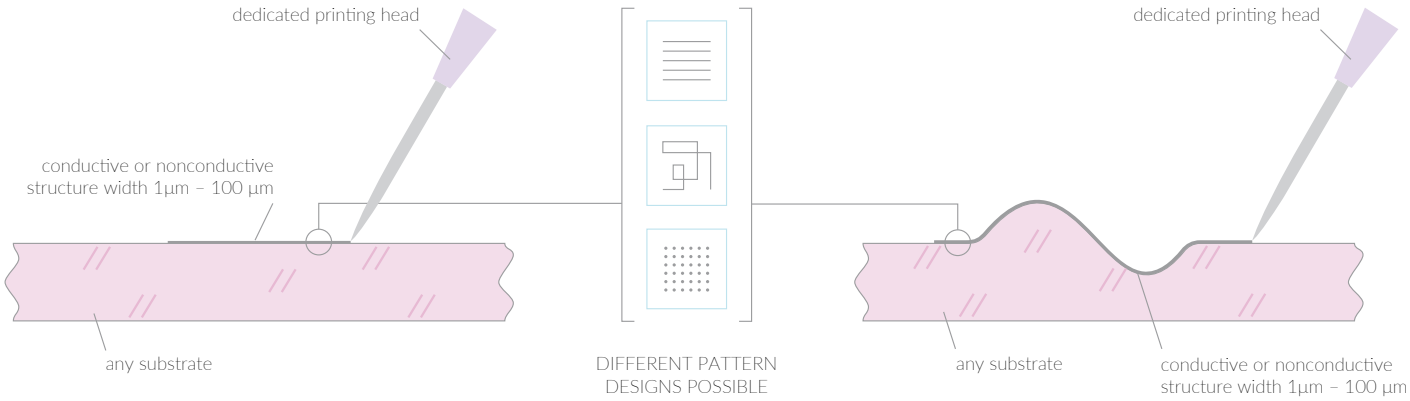
Structure width:	down to 1 µm
Substrates:	conductive and nonconductive, flat and 2.5D, eg. glass, silicon wafers, kapton, PEN, PC, PDMS, PET
Conductivity:	down to 28% of bulk Ag



In order to achieve outstanding results XTPL creates its own conductive nanoink formulas based mostly on metallic nanoparticles (Ag, Au and Cu) and semiconductors (TiO_2).

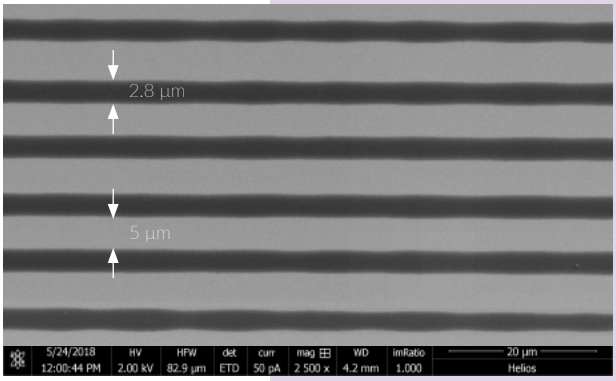


SEM image of a printed conductive silver line on 2.5D substrate.

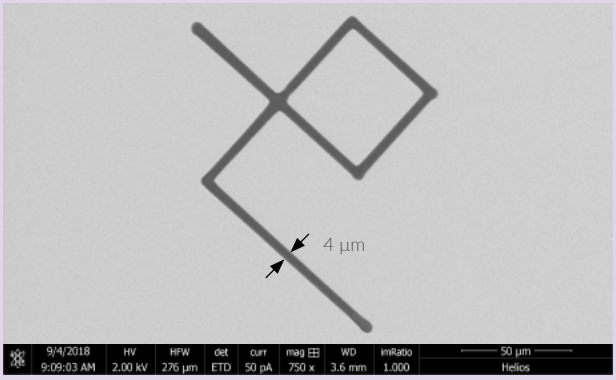


PATTERNS

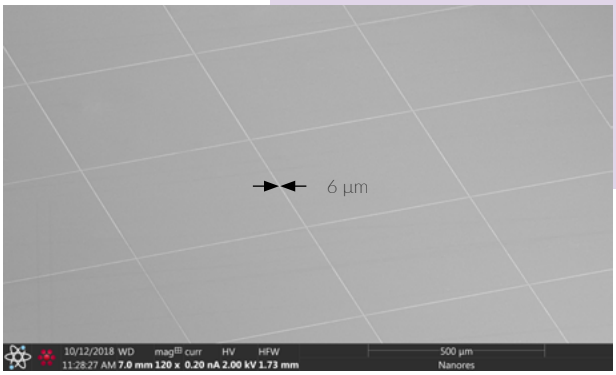
UPD technology can provide straight lines, as well as patterns and microdots.



SEM image of parallel lines printed with around 3 µm width and 5 µm distance between them.



SEM image of a printed trail with 4 µm width.

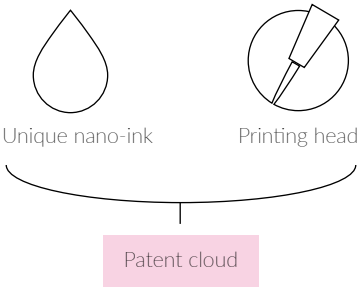


SEM image of the segment of TCF printed on glass using silver based nanoink designed & patented by XTPL. The width of the lines: 6 µm and the interline distance: 500 µm.

SEM image of the pattern of XTPL logo composed of microdots deposited on the glass. Dots obtained using technology available on the market achieve minimum feature size of 20 µm, while implementing XTPL method allows for depositing dots with diameter as low as 1 µm.

INTELECTUAL PROPERTY

XTPL offers a complete solution for printing electrically conductive & nonconductive structures in the micron scale. This includes proprietary technology, innovative printing head and dedicated nanoinks, all covered by patent applications submitted in collaboration with the British law firm, Gill Jennings & Every LLP. The patent protection will be extended to around 30 countries.



OPEN FOR COOPERATION:

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XTPL is constantly optimizing its innovative technology and adapting the process to different implementation requirements. XTPL aims to build partnerships and strategic alliances with well-established partners in selected sectors and cooperate in the form of joined development.

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Find us on: