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.

XTPL delivers solution that includes unique printing heads - designed & dedicated for specific application field - as well as compatible, precisely adjusted nanoinks that enable ultra-precise printing of nanomaterials.

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.

What makes XTPL solution unique is ultimate simplicity, unparalleled precision & versatility. We can print on most substrates: conductive and nonconductive, flat and 2.5D, e.g. glass, silicon wafers, kapton, PEN, PC, PDMS, PET.

In order to achieve outstanding results XTPL creates its own conductive nanoink formulas based mostly on metallic nanoparticles (Ag, Au and Cu) and semiconductors (TiO2).

COMPANY & TECHNOLOGY

COMPREHENSIVE SOLUTION

PROCESS

PATTERNS

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.
XTPL offers a complete solution for printing electrically conductive & nonconductive structures on the micron scale. This includes proprietary technology, innovative printing heads and dedicated nanoinks. Patent applications are submitted in collaboration with the British law firm, Gill Jennings & Every LLP as well as American company K&L Gates. The patent protection will be extended to around 30 countries.

### INTELECTUAL PROPERTY

**PRINTED ELECTRONICS**
- Market value in 2017 - approx. USD 9.3 billion
- Estimated market value in 2027 - USD 73.4 billion
- CAGR 2017-2027 - 10%

**EXAMPLES OF APPLICATION SEGMENTS**

**SMART GLASS**
- Advantage: enabling technological advance & shortening the switching time of the glass from lighter to darker shades

**DISPLAYS**
- Advantage: repairing broken conductive lines already in production stage using additive, ultra-precise & versatile method, with no voltage applied; overall lower production cost

**OPEN DEFECT REPAIR**
- Advantage: facilitating the production of new generation TCFs and providing sought-after technological independence from indium & flexibility

**TRANSPARENT CONDUCTIVE FILMS**
- Advantage: allowing additive deposition of quantum dots material with unparalleled precision, versatility and simplicity

**QUANTUM DOTS**
- Advantage: enabling overall lower production cost and increased efficiency

**SEMICONDUCTORS**
- Advantage: obtaining desired patterns in single step process with submicron precision and no need for expensive mask

**ADVANCED PCB’S**
- Advantage: enabling ultimate miniaturization of conductive circuits and facilitating production using cheap and scalable methods of printing

**ANTICOUNTERFEITING**
- Advantage: complex system based on the fingerprint principle, invisible to the human eye

**BIOSENSORS**
- Advantage: providing highest performance and unparalleled size reduction, one that can be fabricated with inexpensive & scalable methods

**PHOTOVOLTAIC CELLS**
- Advantage: enabling overall low production cost and increased efficiency

**DISPLAYS**
- Advantage: facilitating the production of new generation TCFs and providing sought-after technological independence from indium & flexibility

**OPEN DEFECT REPAIR**
- Advantage: repairing broken conductive lines already in production stage using additive, ultra-precise & versatile method, with no voltage applied; overall lower production cost

**TRANSPARENT CONDUCTIVE FILMS**
- Advantage: allowing additive deposition of quantum dots material with unparalleled precision, versatility and simplicity

**QUANTUM DOTS**
- Advantage: enabling overall lower production cost and increased efficiency

**SEMICONDUCTORS**
- Advantage: obtaining desired patterns in single step process with submicron precision and no need for expensive mask

**ADVANCED PCB’S**
- Advantage: enabling ultimate miniaturization of conductive circuits and facilitating production using cheap and scalable methods of printing

**ANTICOUNTERFEITING**
- Advantage: complex system based on the fingerprint principle, invisible to the human eye

**BIOSENSORS**
- Advantage: providing highest performance and unparalleled size reduction, one that can be fabricated with inexpensive & scalable methods

**PHOTOVOLTAIC CELLS**
- Advantage: enabling overall lower production cost and increased efficiency

### OPEN FOR COOPERATION:

XTPL S.A.
Stabłowicka 147
54-066 Wrocław, Poland

XTPL Inc.
333 W Maude Ave #207
Sunnyvale, CA 94085, USA

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.

Find us on: [xtpl.com]