

Complementing Lithography with XTPL's Ultra-Precise Dispensing: Additive Direct-Write Nanofabrication

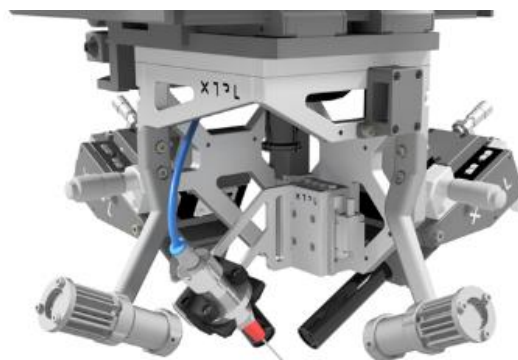
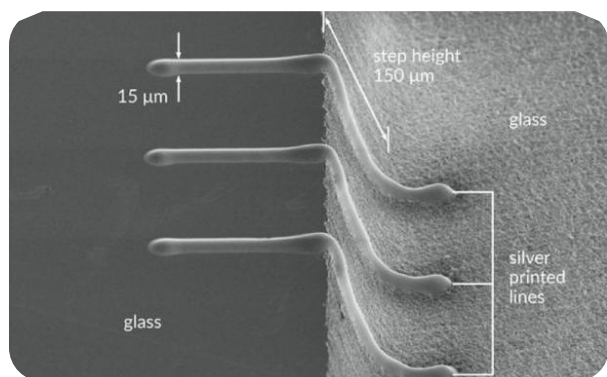
Maciej Patelka

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While photolithography remains central to microfabrication, direct deposition onto complex 3D topographies presents unique processing challenges. XTPL's Ultra-Precise Dispensing (UPD) technology complements traditional cleanroom lithography by offering an additive, direct-write approach capable of printing feature sizes down to 1 micrometer.

Utilizing highly concentrated nanopastes, UPD extends existing fabrication capabilities by enabling precise micro-dispensing across non-planar surfaces, flexible substrates, and high-aspect-ratio structures without physical masks.

Through real-world case studies including: microLED display repair, semiconductor packaging interconnects, and functional biosensors, this presentation demonstrates how UPD integrates seamlessly into R&D workflows. Aligning with ANFF's focus on advanced prototyping, additive direct writing gives researchers a flexible tool to extend microfabrication boundaries and accelerate novel device development.



About the Speaker:

Maciej Patelka is Business Development Manager at XTPL, bringing over 20 years of experience in advanced materials solutions, including more than 13 years in research and development. He holds a B.S. in Chemistry from Adam Mickiewicz University in Poland and has extensive expertise in materials for semiconductor devices, electronic packaging, passive components and solar cells. His technical specialisations include thermally and electrically conductive adhesives, die-attach materials, underfills and low-temperature sealing glasses for optoelectronic applications. With a strong background in R&D, manufacturing, quality control, project management and global technical support, Maciej bridges materials science and practical manufacturing solutions for advanced electronic and microelectronic technologies.