Advanced Makerspaces for PiLot production by micro-Enterprises

Digital Printing

Rapid Prototyping printed electronics

Introduction

PrinLab has a Dimatix DMP-2800 inkjet printer for laboratory-scale fabrication of small structures and for testing printing materials.

In addition, the lab uses an nScrypt 3Dn tabletop dispensing system for depositing a wide range of materials onto various substrates, including three-dimensional objects

Applications

- Material and ink development and evaluation
- Printed electronics prototype and sample generation
- Ink and substrate interactions evaluation
- Printed electronics product development
- Optimization and evaluation of digital patterns
- Deposition of biological fluids

Dimatix inkjet material printer

How Do they Work?

The **Dimatix inkjet** printer jets tiny, precise droplets of functional liquids onto a substrate using a piezoelectric printhead. Custom fluids can be loaded into disposable cartridges, allowing rapid testing of new materials and easy patterning. Alignment and droplet-watching cameras ensure accurate placement and high-quality deposition.

The **nScrypt** Tabletop Series is a computer-controlled X/Y/Z **dispensing platform** that can deposit precise patterns of functional materials. It operates with several nScrypt pump types, allowing the system to dispense a wide range of viscosities. The printer can create 2D patterns or raise them into 3D, enabling conformal printing on uneven surfaces.

nScrypt 3Dn dispensing system

Technical Specifications

Inkjet

- Printable area: 210 mm x 315 mm
- Substrate thickness: up to 25 mm
- Repeatability: ±25 µm
- Drop Volume: 10 picoliter
- Vacuum platen temperature: up to 60°C
- Cartridge capacity: 1.5 ml, user-fillable

Dispensing

- Print area (X/Y travel): 300 mm × 150 mm
- X/Y accuracy: ±12 µm
- X/Y resolution: 0.5 µm
- Z travel (max): 100 mm
- Z accuracy: ±6 µm
- Max travel speed (X/Y/Z): 300 mm/s

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