

Fabrication of Microfluidic Disks

Prototyping line for lab-on-a-chip systems

To provide its customers with a smooth transition from prototype to product, Hahn-Schickard offers manufacturing capacities of up to 200.000 microfluidic disks per year under clean room conditions (class 10.000, ISO7). Hahn-Schickard herewith complements its services to offer all steps from vision to product for lab-on-a-chip systems.

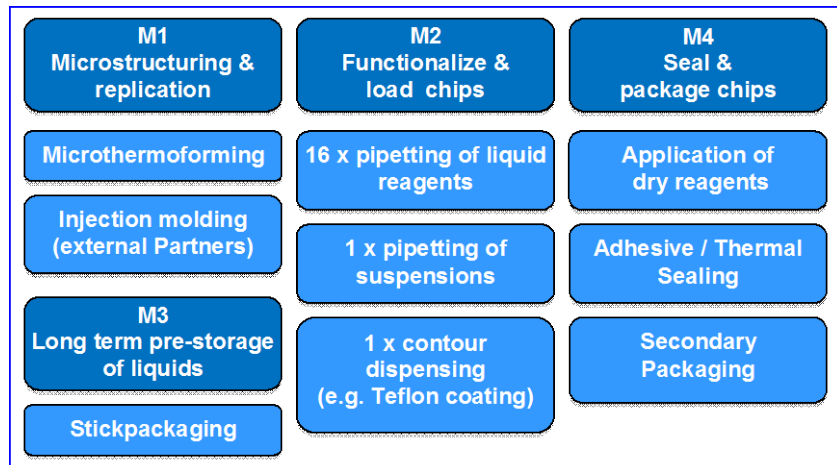
The process-line for lab-on-a-chip production consists of four modules to cover the whole process chain from substrate forming to back-end processing. The facilities are highly adaptable and enable a fast and cost-efficient transition from prototyping to small series production.

Module 1 – Microstructuring & replication

In the first module, foil-based cartridges are manufactured based on micro-thermoforming. The forming area has a diameter of Ø130 mm and allows structure depths in the range of 0,03-10 mm. If the application requires injection molded parts, Hahn-Schickard relies on competent external partners.

Module 2 – Functionalize & load chips

The second module consists of several liquid spotting stations to



Key features

- Full processing
- 50.000 – 200.000 chips / year
- Batch sizes starting from 1.000 chips

functionalize the chips with reagents. Surfaces can be coated with teflon or other substances. Suspensions (e.g. magnetic beads) and up to 16 different liquid reagents (e.g. primer, probes, enzymes) can be spotted in arbitrary positions within the workspace.

Module 3 – Long term pre-storage of liquids

In the third module liquid reagents can be pre-stored in aluminum pouches (“stickpacks”). An integrated frangible seal enables pressure-controlled release of reagents.

Fields of application

- Production in clean room ISO 7 (class 10.000)
- Clinical validations
- Certified by DIN ISO 9001:2008

Module 4 – Seal & Package Chips

The last module is used to apply dry reagents (e.g. stickpacks, lyophilisates, filters) on the chip and to seal the microfluidic network by adhesive or thermal sealing. As secondary packaging the chips can be sealed in foil bags filled with protective gas.