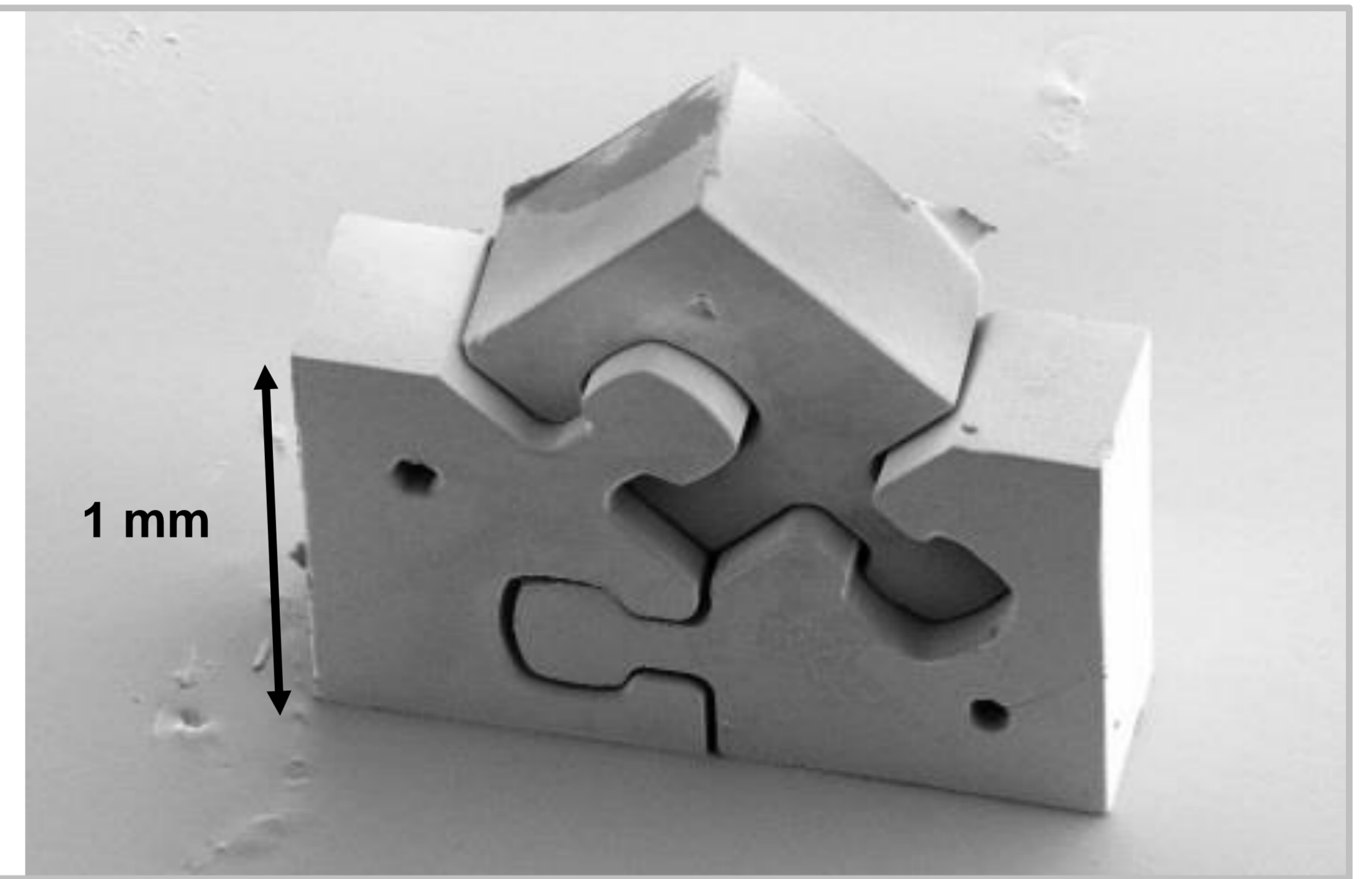


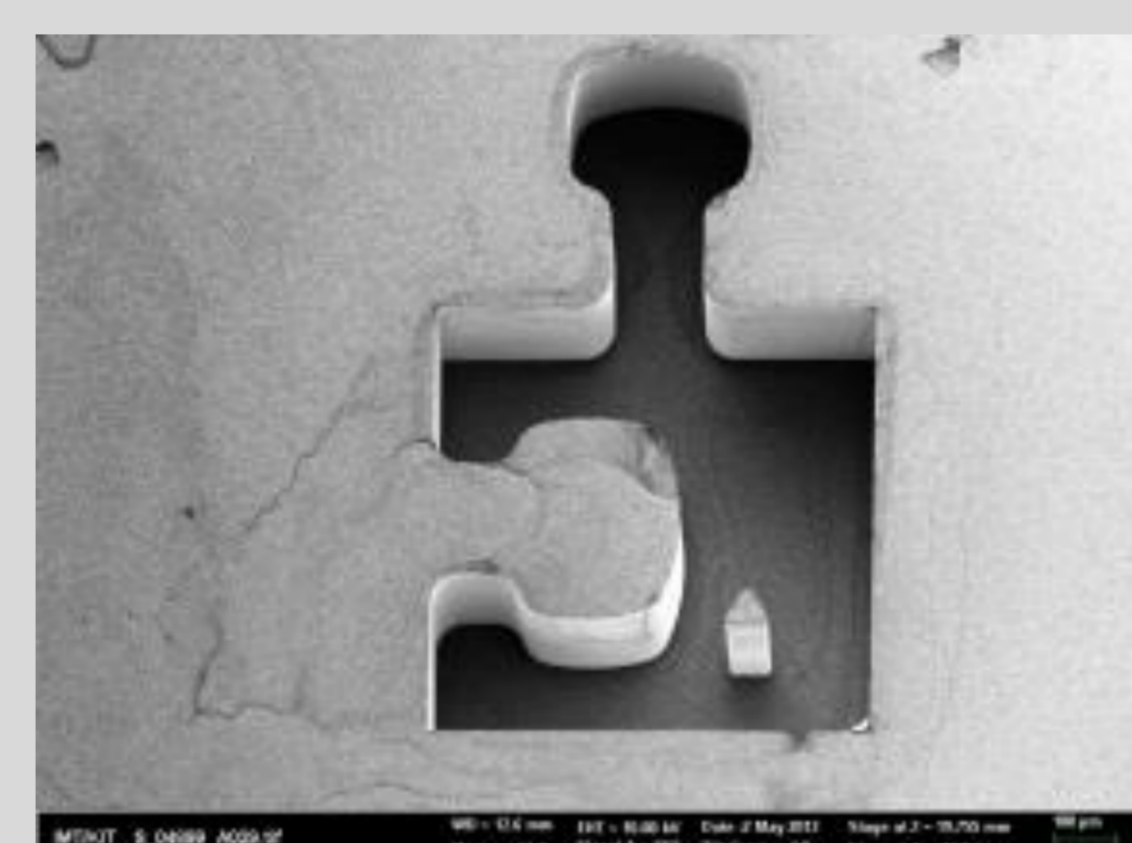
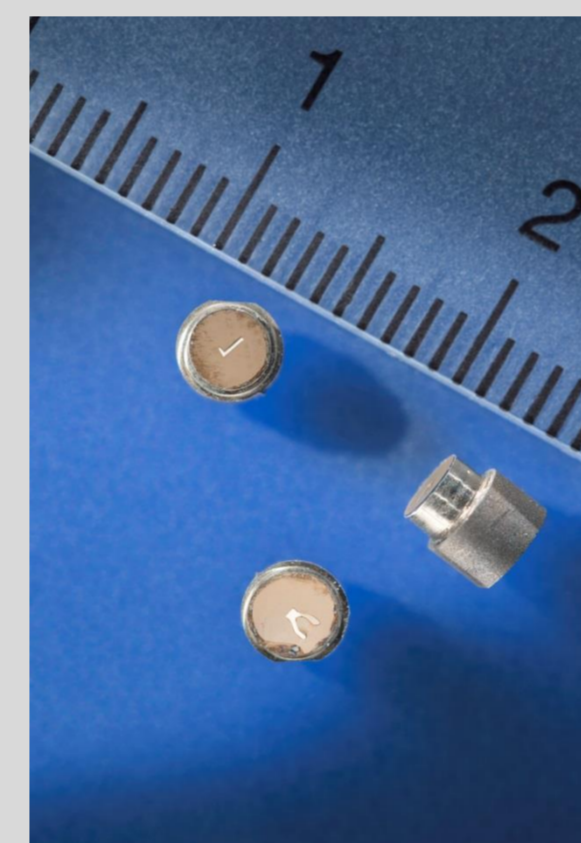
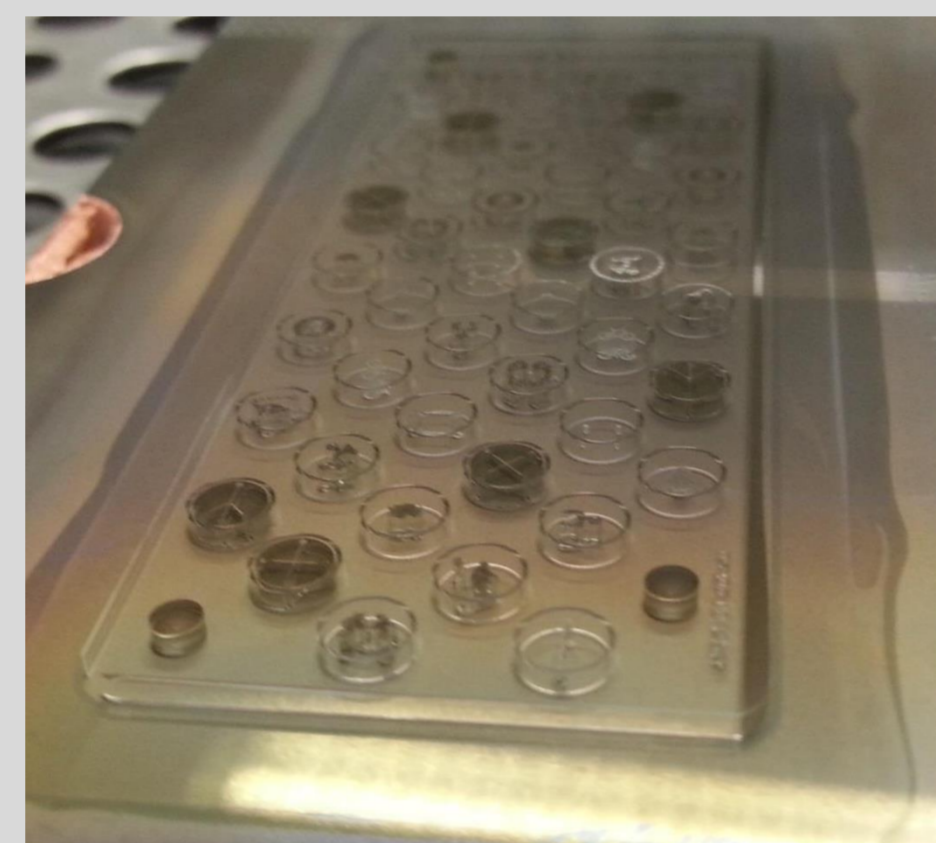
## Motivation

- suitable process for micro injection moulding
- high precision parts, high aspect ratios
- shorter cycle times, reduction of scrap production
- part volumes  $< 0.5 \text{ mm}^3$
- flexible arrangement of single cavities in a multi cavity mould
- rework free replicated parts
- high dimensional accuracy of replicated parts



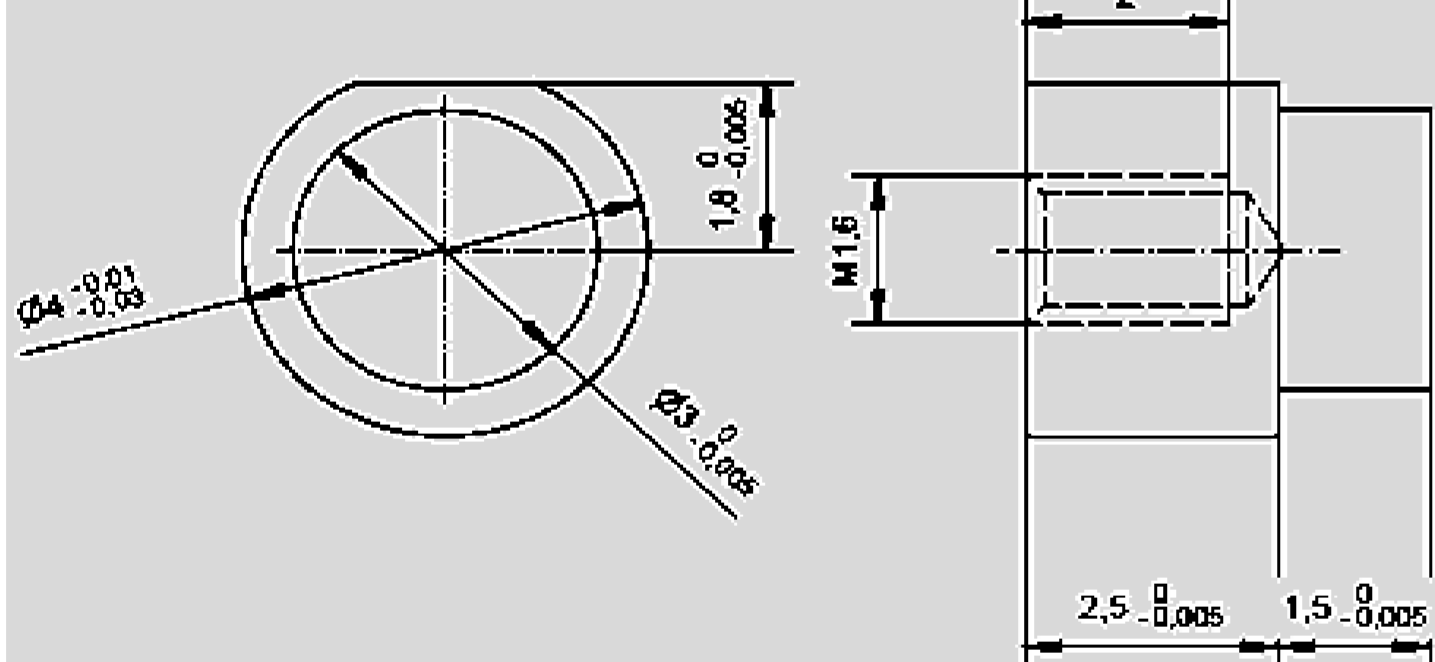
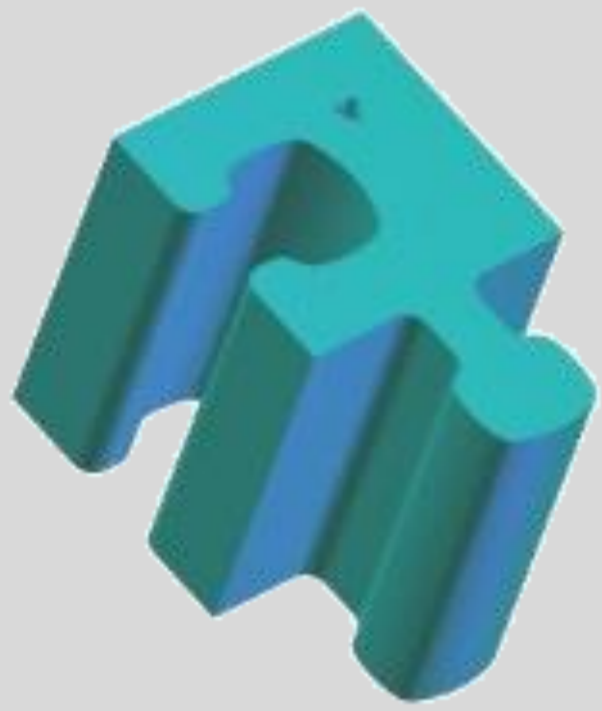
## Mould insert fabrication

LIG, X-ray lithography, nickel electroplating, mechanical processing



## Part design

using 3D CAD software



## Mould concept

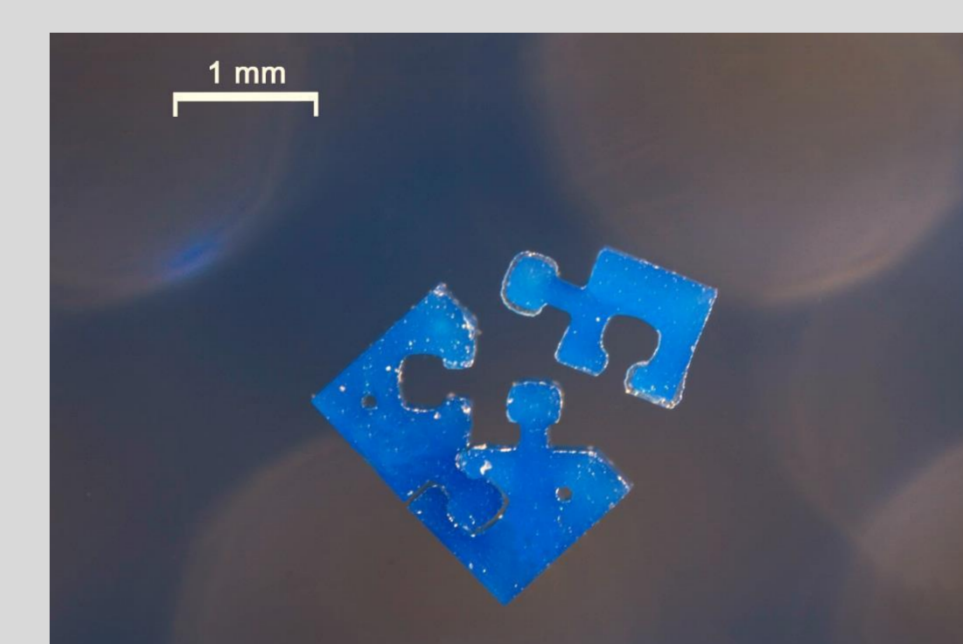
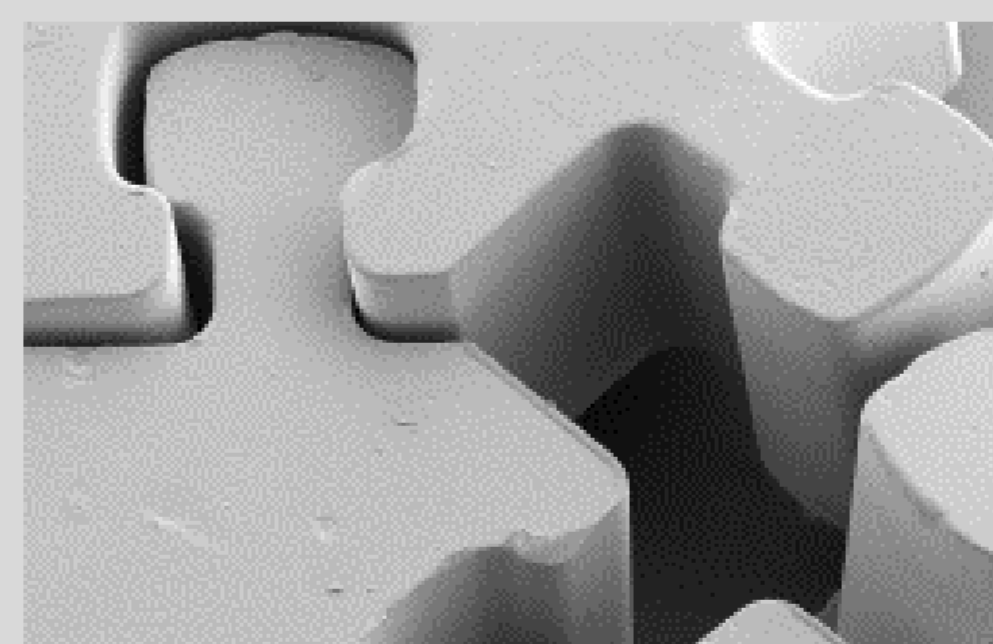
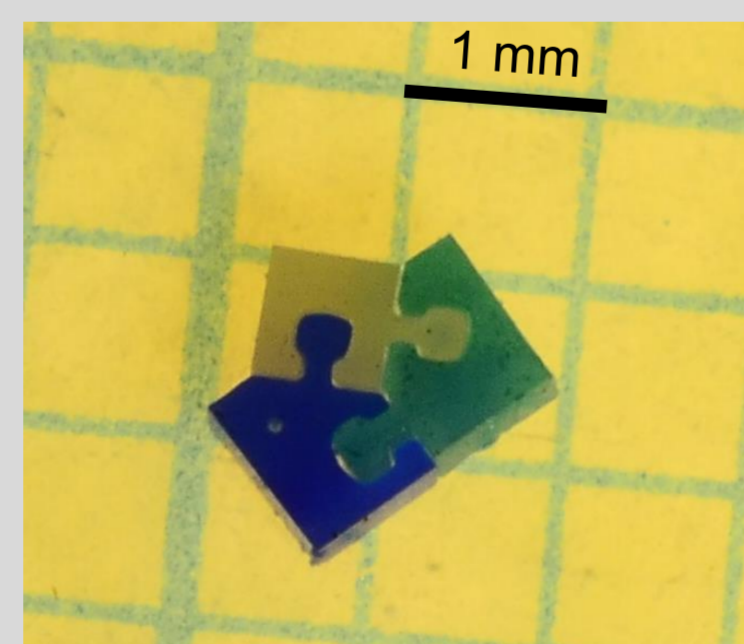
three plate multi cavity mould



**LIGA2.X** - A modified LIGA process sequence for the fabrication of polymeric single micro parts

## Micro injection moulding

part volume of the puzzle structures  $< 0.26 \text{ mm}^3$ , material POM, part height  $400 \mu\text{m}$



## Conclusion

- A new process sequence could be developed to fabricate LIGA micro parts without requiring any rework.
- The replication of LIGA2.X mould inserts with semi crystalline POM could be shown using a Microsystem 50 micro injection moulding machine.
- LIGA2.X is a new chance for the use of X-ray LIGA mould inserts in the plastic industry to fabricate cost effective LIGA micro-parts in large scale.

## Acknowledgements

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