



Modular active micro-optical systems based on LIGA technique

Forschungszentrum Karlsruhe, Institute for Microstructure Technology



BACKGROUND and BASICS

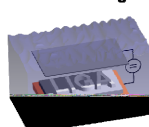
LIGA technique

- High positioning accuracy and aspect ratio
- Metallized and polymeric structures possible
- Bulk production by replication (e.g. hot embossing)

LIGA process



electroforming



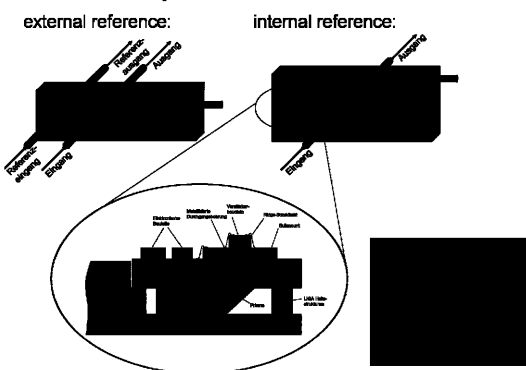
replication



Modular Concept

- Modular optical microsystem adaptable to different applications using standardized interfaces
- Different microactuators possible depending on the customers demands using a baseplate concept
- Fibre based optical or electrical output using a SMD circuit board

Modular concept

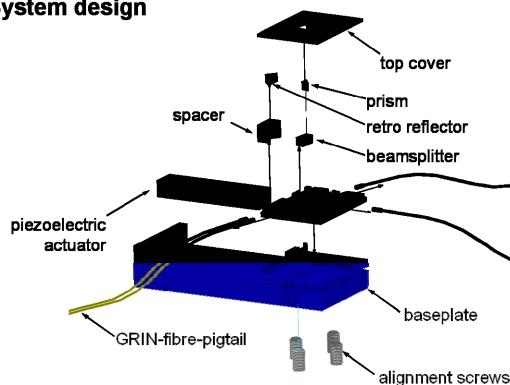


CONCEPT and SOLUTION

System Design:

- Standardized micro-optical benches (MOB) 11 x 8mm
- Different optical devices possible, e.g. interferometers
- MOB can be combined with different microactuators
- Usage of high quality optical elements

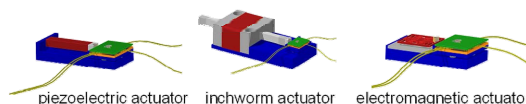
System design



Different microactuators:

- Currently three different microactuators available to cover different applications, e.g. wavemeters, distance or refractive index measurement or DQPSK in communication engineering

Different microactuators



STATUS and OUTLOOK

Prototypes:

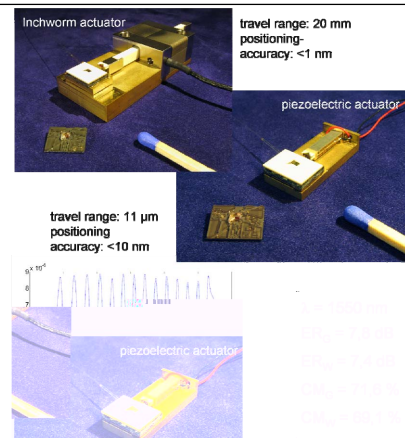
- Available with different specifications

Current R&D projects:

- Development of a circuit board for electronic detection
- Integration of high speed photodiodes
- Optimization of the optical quality

We are looking for:

- End-users with readiness to invest (R&D)
- Producers to support market introduction



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FORUM

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