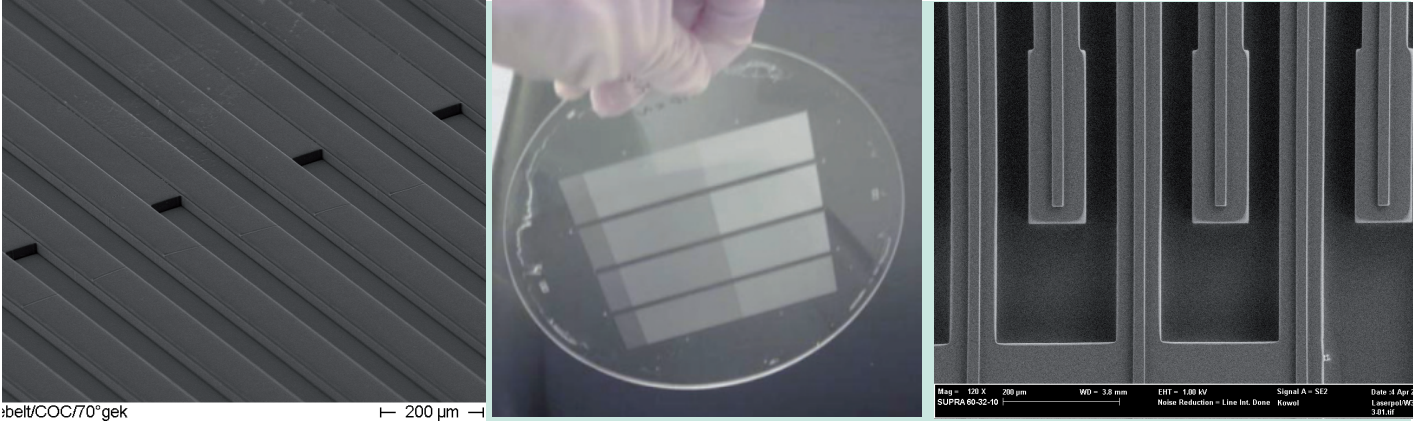


MICRO MOLDING FOR MICRO AND NANO STRUCTURED SURFACES



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All information contained in this datasheet is preliminary and subject to change. Furthermore, the described systems, materials and processes are not commercial products.

Description

Molding micro and nano structures by embossing them enables a precise formation of optical and fluidic structures using a master tool. The basic distinction is to make between hot and cold embossing processes. Here, the process temperature when hot embossing glass, unsintered ceramics and thermoplastics is slightly above the glass transition temperature TG of the respective material. The research work of the department does include the development of embossing processes and also the design and production of silicon master tools optional equipped with anti sticking layers. Furthermore also working stamp tools made from polymer materials like Ormostamp® could be realized as well as electroplated molded nickel tools (UV-LIGA).

Applications of molded structures are in the fields of micro fluidics, microoptics and interposer substrates using embedded conductive paths.

These molding technologies could also be combined with flexible substrate technologies like laser micro patterning, printing techniques and flexible PCB technologies.

Materials for molding

- Polymers (PMMA, PC, COC)
- Ceramics (LTCC green tapes)
- Metals (Al, Cu)
- Pastes and composites

Figures:

from left to right: thin COC polymer sheet patterned by hot embossing; soft tool (Polymer working stamp); Two depth patterned PMMA polymer sheet by hot embossing using a soft tool (Polymer working stamp)