

## **Rapid prototyping of microfluidics devices and their application in IR spectroscopy**

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Commercially available microfluidics solutions are typically based on photolithography of SU-8 photoresist that is either used directly to define the channel or used as a master mold for polymer casting of the final device. A frequently used polymer is Polydimethylsiloxane (PDMS) which is transparent for visible light, bio-compatible, and binds covalently to borosilicate glass. This master production is very costly and thus mainly used for large numbers of equal devices in visible spectroscopy. Here we present a fast and easy method of producing a master mold by sugar glass extrusion using a 3D-printer. The mold can be treated as any other, variations in the dimensions and geometry of the channels are easily controllable. The IR absorption of thin layers of PDMS appears to be suitable for IR difference spectroscopy. Its high permeability for gases enables CO-labeling of the reaction center without any dilution of the sample, a requirement for high repetition rates of the experiment.