

Master 2010

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Actuation and Characterization of micro-mechanical fluid structures

*ABSTRACT - Masterthesis*

The replacement of syringe treatment of Diabetes with insulin pumps brings up advantages like better metabolic control of the blood glucose level and a higher quality of life for the user. Microsystem technology is able to further reduce the size of these portable dosing systems. The following pages describe the development of an actuator unit for such a project by using piezoelectric bending elements. Measurements using a silicon diaphragm pump confirmed a better suitability of the set-up due to higher generated forces and a better backpressure independency in comparison to previous actuator unit.

Keywords: Micro pump, Insulin pump, Microsystem technology, Silicon, Diaphragm pump, Piezo actuator, CSII, MDI.