Optothermally actuated capillary burst valve - DTU Orbit (13/05/2019)

Optothermally actuated capillary burst valve
We demonstrate the optothermal actuation of individual capillary burst valves in an all-polymer microfluidic device. The capillary burst valves are realised in a planar design by introducing a fluidic constriction in a microfluidic channel of constant depth. We show that a capillary burst valve can be burst by raising the temperature due to the temperature dependence of the fluid surface tension. We address individual valves by using a local heating platform based on a thin film of near infrared absorber dye embedded in the lid used to seal the microfluidic device [L. H. Thamdrup et al., Nano Lett. 10, 826–832 (2010)]. An individual valve is burst by focusing the laser in its vicinity. We demonstrate the capture of single polystyrene 7 μm beads in the constriction triggered by the bursting of the valve.

General information
Publication status: Published
Organisations: Department of Micro- and Nanotechnology, Optofluidics, NIL Technology ApS
Contributors: Eriksen, J., Bilenberg, B., Kristensen, A., Marie, R.
Number of pages: 4
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: Review of Scientific Instruments
Volume: 88
Article number: 045101
ISSN (Print): 0034-6748
Ratings:
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.32 SJR 0.585 SNIP 0.858
Web of Science (2017): Impact factor 1.428
Web of Science (2017): Indexed yes
Original language: English
Electronic versions:
Untitled.pdf
DOIs:
10.1063/1.4979164
Source: PublicationPreSubmission
Source-ID: 131405776
Research output: Contribution to journal › Journal article – Annual report year: 2017 › Research › peer-review