

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**On-the-flow differentiation between cells based on native fluorescence spectroscopy on a chip** MARKUS BECK, MICHAEL BASSLER, PETER KIESEL, NOBLE M. JOHNSON, OLIVER SCHMIDT, Palo Alto Research Center, 3333 Coyote Hill Rd, Palo Alto, CA 94034 — Native fluorescence spectroscopy is a promising approach for the detection of pathogens without specific binding or tagging of the analyte. The distinction between different species is possible with (multi-color) UV excitation together with the detection of several spectral bands. We have developed a compact platform that combines a microfluidic quartz channel with chip-size wavelength-selective detection of the fluorescence from particles traversing the channel. The interaction between the UV excitation light and the analyte is enhanced by anti-resonantly guiding the light within fluid. We have recorded the intrinsic fluorescence of single cells (e.g. yeast, e-coli, and BT) passing the detection area. Knowing the particle speed and the physical dimensions of the observation window, we are able to determine particle positions with microscopic ( $\sim 10$  microns) resolution. A special modulation technique allows us to achieve a high signal to noise ratio even for high particle speeds. Combining our technique with a cell sorting mechanism would allow for on-the-chip characterization and sorting of untagged cells.

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Date submitted: 27 Nov 2007

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